



Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #48

Reporting Period: November 16 – November 22, 2014

Upper Lillooet River Hydroelectric Facility (Water File No. 2002561, Water licence No. C130613),
Boulder Creek Hydroelectric Facility (Water File No. 2003049, Water licence No. C129969) &
Transmission Line (TX Line)

Distribution List		Prepared By
Name	Organization	
Murray Manson	Fisheries and Oceans Canada	 J. Alex Sartori, RPBio <i>Independent Environmental Monitor (IEM)</i>  J. Stephen Sims, RPBio <i>Delegated IEM</i>
James Davies	MFLNRO – Water Allocation	
Danielle Cunningham	MFLNRO – Land and Resources	
Frank DeGagne	MFLNRO – Land and Resources	
Nathan Braun	BC Environmental Assessment Office	
George Steeves	True North Energy – Independent Engineer	
Jennifer McCash	True North Energy – Independent Engineer	
Thomas Hicks	Sartori Environmental Services	
Peter Ramsden	Innergex Renewable Energy Inc.	
Oliver Robson	Innergex Renewable Energy Inc.	
Greg Davis	Innergex Renewable Energy Inc.	
Julia Mancinelli	Innergex Renewable Energy Inc.	
Liz Scroggins	Innergex Renewable Energy Inc.	
Bas Brusche	Innergex Renewable Energy Inc.	
Matt Kennedy	Innergex Renewable Energy Inc.	
Renaud DeBatz	Innergex Renewable Energy Inc.	
Richard Blanchet	Innergex Renewable Energy Inc.	
Dara Mcdermott	Innergex Renewable Energy Inc.	
Claude Denault	CRT-ebc Construction Inc.	
Jonathan Drapeau	CRT-ebc Construction Inc.	
Éric Ayotte	CRT-ebc Construction Inc.	
Jordan Gagne	CRT-ebc Construction Inc.	
Ian McKeachie	CRT-ebc Construction Inc.	
D'Arcy Soutar	Westpark Electric Ltd.	
Pontus Lindgren	Westpark Electric Ltd.	
Harriet VanWart	Lil'wat Nation	
		Date Prepared: December 16, 2014 Date Submitted: December 19, 2014

Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4 & 5)
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
ULRHEF Instream Work Window Extension for Intake Works DFO File: 09-HPAC-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) 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) No. L49697
General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA (Amendment 1, 2)
Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033
Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR); 8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)
Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)
Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004
Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005
Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006
Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007
Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008
Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009
Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010
Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001
Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001
Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001
Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001
Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-01
Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001
Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001
Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001
Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)
Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381
Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383
Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717
SLRD Temporary Use Permit No. 34 – Boulder Creek HEF
SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF
Works Permit for Construction within FSR Right-of-Way No. 6123-14-01
Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014

Contractor Construction Permits and Approvals

Magazine Licence File No. UL76018
 Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
 Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental
 Management Act (Authorization No. 107204) Tracking No. 326969
 Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU14-95304 & SU13-90538, Fish Salvage Permit # SU14-95329
 Section 52 of the Fisheries (General) Regulations – Fish Salvage Licence # XR 139 2014
 BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014
 Municipal Wastewater Regulation - Authorization # 107032
 Water Supply System Construction Permits – VCH-14-613 for Main Camp
 Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp
 Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07
 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

ACRONYMS:

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

1.0 Summary of Site Inspections for Reporting Period

The table presented below summarizes the IEM team site presence, weather and monitoring locations by component:

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations & Activities
Sunday, November 16	TH, KM, DA	Sun and cloud	<p><i>ULRHEF Intake Diversion Channel – South Side</i></p> <ul style="list-style-type: none"> • Excavation and removal of the upstream diversion channel plug following a pre-work meeting • Installation of the final components of the Obermeyer weir and cleaning of the diversion channel • Re-shaping the spoil area <p><i>ULRHEF Intake Open Cut – North Side</i></p> <ul style="list-style-type: none"> • Hydro seeding the spoil area (EcoFibre mulch) <p><i>ULRHEF Downstream Tunnel Portal</i></p> <ul style="list-style-type: none"> • Final removal of all tunneling equipment and sealing of the tunnel portal with wire mesh <p><i>ULRHEF Penstock</i></p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p><i>ULRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Concrete pour <p><i>BDRHEF Intake Diversion Tunnel</i></p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel. <p><i>BDRHEF Powerhouse</i></p> <ul style="list-style-type: none"> • Formwork removal and site demobilization <p><i>TX-Line</i></p> <ul style="list-style-type: none"> • Segment 7 <ul style="list-style-type: none"> ➢ Ground works at structures 173 & 174 • Segment 8 <ul style="list-style-type: none"> ➢ Road upgrades and hand clearing of 197.2 access road • Segment 9 <ul style="list-style-type: none"> ➢ Hand clearing near structures 208 & 209
Monday, November 17	TH, KM, DA,	Sun and cloud	<p><i>ULRHEF Intake Diversion Channel – South Side</i></p> <ul style="list-style-type: none"> • Excavation and removal of the upstream diversion channel plug • Armouring upstream section of the diversion channel • Installation of the final components of the Obermeyer weir and cleaning of the diversion channel • Re-shaping the spoil area <p><i>ULRHEF Intake Open Cut – North Side</i></p> <ul style="list-style-type: none"> • Hydro seeding the spoil area (Promatrix engineered fiber mulch - EFM) <p><i>ULRHEF Penstock</i></p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations & Activities
			<p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and winterization • Concrete curing <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel. <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Formwork removal and site demobilization <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 7 <ul style="list-style-type: none"> ➢ Ground works at structures 174, 175, & 168 • Segment 8 <ul style="list-style-type: none"> ➢ Felled timber management between structures 182-183 ➢ Hand falling along right-of-way • Segment 9 <ul style="list-style-type: none"> ➢ Hand clearing near structures 208 & 209
Tuesday, November 18	TH, KM, DA, ML, TJ	Sun and cloud	<p>ULRHEF Intake Diversion Channel – South Side</p> <ul style="list-style-type: none"> • Excavation and removal of the upstream diversion channel plug • Armouring upstream section of the diversion channel • Installation of the final components of the Obermeyer weir and cleaning of the diversion channel • Re-shaping the spoil area <p>ULRHEF Intake Open Cut – North Side</p> <ul style="list-style-type: none"> • Construction of access ramp in preparation for upstream cofferdam construction <p>ULRHEF Penstock</p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and formwork removal <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Formwork removal and site demobilization <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 <ul style="list-style-type: none"> ➢ Framing structures between 81 & 97 • Segment 8 <ul style="list-style-type: none"> ➢ Road upgrading along access road 197.2 ➢ Hand falling near structure 186
Wednesday, November 19	ML, SS, TH, KM, VD, AA	Rain and snow	<p>ULRHEF Intake Diversion Channel – South Side</p> <ul style="list-style-type: none"> • Armouring upstream section of the diversion channel • Final testing of the components of the Obermeyer weir and cleaning of the diversion channel • Re-shaping the spoil area <p>ULRHEF Intake Open Cut – North Side</p> <ul style="list-style-type: none"> • Stockpiling material in preparation for construction of the

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations & Activities
			<p>upstream cofferdam</p> <p>ULRHEF Penstock</p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and formwork removal <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel <p>BDRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site demobilization complete <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 <ul style="list-style-type: none"> ➢ Framing structures 81, 85, 96, & 136 • Segment 8 <ul style="list-style-type: none"> ➢ Road upgrading along access road 197.2 ➢ Hand falling along right-of-way near structure 192
Thursday, November 20	SS, TH, KM, VD, AA, AS	Rain and snow	<p>ULRHEF Intake Diversion Channel – South Side</p> <ul style="list-style-type: none"> • Armouring upstream section of the diversion channel <p>ULRHEF Intake Open Cut – North Side</p> <ul style="list-style-type: none"> • Start of upstream cofferdam installation (Phase 1) <p>ULRHEF Penstock</p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and formwork removal <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 <ul style="list-style-type: none"> ➢ Framing structures 82 to 87 • Segment 7 <ul style="list-style-type: none"> ➢ Mobilizing equipment and poles to 2.5km staging area (Lillooet South FSR; outside of the Grizzly Bear WHA and Rohb Creek 500m buffer zone.) • Segment 8 <ul style="list-style-type: none"> ➢ Road upgrading along access road 197.2 ➢ Hand falling along right-of-way near structure 192
Friday, November 21	SS, TH, KM, VD, AA, AS	Rain and snow	<p>ULRHEF Intake Diversion Channel – South Side</p> <ul style="list-style-type: none"> • Sourcing material for the upstream cofferdam from the spoil area <p>ULRHEF Intake Open Cut – North Side</p> <ul style="list-style-type: none"> • Start of upstream cofferdam impermeable geo-membrane installation (Phase 2) <p>ULRHEF Penstock</p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations & Activities
			<ul style="list-style-type: none"> • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and formwork removal <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel <p>TX-Line</p> <ul style="list-style-type: none"> • Segment 5 <ul style="list-style-type: none"> ➢ Framing structures 82 & 83 • Segment 7 <ul style="list-style-type: none"> ➢ Framing structures 164 to 166 • Segment 8 <ul style="list-style-type: none"> ➢ Road upgrading along access road 197.2 past Hillaby Creek ➢ RVMA hand falling near structure 192
Saturday, November 22	KM, SS, ML, DA, TJ	Overcast	<p>ULRHEF Intake Diversion Channel – South Side</p> <ul style="list-style-type: none"> • No activity <p>ULRHEF Intake Open Cut – North Side</p> <ul style="list-style-type: none"> • Continued installation of the impermeable cofferdam geomembrane (Phase 2) <p>ULRHEF Penstock</p> <ul style="list-style-type: none"> • Continued bulk excavation from 3+900 – 4+100 • Continued ESC stabilization of fill side slopes between 2+725 – 3+025 outside of the daily operational shutdown periods within 200m of the Mountain Goat Migration Corridor <p>ULRHEF Powerhouse</p> <ul style="list-style-type: none"> • Site clean-up and formwork removal <p>BDRHEF Intake Diversion Tunnel</p> <ul style="list-style-type: none"> • Continued tunneling work (drilling/blasting/mucking/rock bolts) for the top section of the diversion tunnel <p>Tx-Line</p> <ul style="list-style-type: none"> • Segment 5 <ul style="list-style-type: none"> ➢ Excavator addressing drainage issues along the Lillooet River FSR from 22- 26km ➢ Dressing pole structures 88 to 95

IEM Team Personnel: AS – Alex Sartori; TH – Tom Hicks; KM – Kathy Mai; SS – Stephen Sims; BA – Blake Aleksich; ML – Mackenzie Lee; VD – Vanessa Dan; AA – Anthony Andrews; DA – Danita Abraham; TJ – Tammie Jenkins

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.
November 17, 2014	<i>Pre-work meeting</i>	INX, CE, SES	Reviewed the work plan for the upstream diversion channel plug removal, highlighting that all work would be completed in the dry, under the supervision of the IEM.	-
	<i>Monthly IE site inspection</i>	INX, CE, SES, JEM, MFLNRO	Inspected all work areas and discussed winterization of the site with focus on the spoil areas, cut-slopes, and drainage control for the ULRHEF and BDRHEF powerhouses.	-
November 18, 2014	<i>Email</i>	INX, CE, SES, Ecofish	CE's Engineer of Record (aka Construction Engineer) submitted a Notice to Commence the ULRHEF intake cofferdam construction and commissioning of the diversion channel. The decision to proceed was made based on the weather forecast, completion of the Obermeyer weir and the stockpiling of all material and equipment required for the diversion to proceed.	-
	<i>Email</i>	INX, CE, SES, JEM, MFLNRO	MFLNRO issued OLTC #L49717 Amendment (#6) and OLTC #L49697 Amendment (#6) thereby granting approval to clear an additional ~0.4 ha area required for construction of the ULHP penstock, and ~17.5 ha required for construction of a back-feed transmission line to power the ULHP construction camp, respectively.	-
November 19, 2014	<i>Pre-work meeting</i>	INX, CE, SES, Ecofish	Following issuance of the LTC for ULRHEF Diversion and Cofferdam Construction (November 16), a pre-work meeting was held to review the pre-construction checklist, including work plan procedures and monitoring plan. CE confirmed that the Obermeyer weir was constructed and tested according to manufacturer specifications and that gates were ready for use.	-
November 20, 2014	<i>Pre-work meeting</i>	WEL, SES	Pre-work meeting to discuss Tx-Line construction in Segment 8 and review environmental sensitivities and timing constraints associated with the installation of pole structures and conductors.	-
	<i>Field inspection</i>	INX, CE, SES, DFO, Lil'wat Nation	DFO and representatives from the Lil'wat Nation visited site independently to inspect instream works associated with the intake cofferdam construction.	-
	<i>Field communication, email</i>	INX, CE, SES, Ecofish, DFO, MFLNRO	The IEM allowed four pick-up trucks and one 5 ton truck to pass through the Mountain Goat Migration Corridor during the evening shutdown period between 3:15 - 3:20pm. The exception was granted because these vehicles had attempted to manage their travel through the Migration Corridor during approved times, but were delayed as the road was temporarily blocked by a flatbed truck that was stuck and unable to clear the road. See Section 4.14.1 for mitigation measures implemented for the travelling vehicles and for additional details.	-
	<i>Email</i>	INX, CE, SES, JEM, Ecofish, DFO, MFLNRO, EAO, Lil'wat Nation	INX submitted a summary of the first day of cofferdam construction activities and summarized results of the active monitoring program being performed according to the Cofferdam Construction Monitoring Plan	-

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
	Segments 1 –11, & 14	Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMA's.
		Old Growth Management Areas (OGMA's)	IEM monitoring is required when clearing within legally designated OGMA's, to ensure clearing area is minimized.
		Ungulate Winter Range (UWR)	IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.
		Suitable Class 1 & 2 Grizzly Bear forage habitat	IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing area is minimized. Blasting mats (or other noise reduction methods) are to be employed within 500m of Class 1 and Class 2 grizzly bear forage habitat during critical seasonal foraging periods (fall, September – October).
Tx-Line	Segment 5 & 7	Ungulate Winter Range (UWR)	<p>According to EAC #E13-01 Amendment 5 and the General Wildlife Exemption Measures Approval dated October 28, 2014, the following mitigation measures must be enacted to extend Tx-line construction activities beyond November 1 and up to December 15 within Moose Winter Range Forest Management Zone u-5-002 J55/54-204-RE in Segment 5 & up to December 31 within MWRFMZ u-5-002 J55/54-204-RO in Segment 7:</p> <ol style="list-style-type: none"> 1. The IEM must oversee all construction activities in Segment 5 & 7. 2. Helicopter flight paths must be determined by a QP in order to avoid, as much as possible, wildlife and wildlife habitat within the vicinity of proposed works. 3. Snow fall accumulation within the Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO; Segment 7) must be monitored daily along the Lillooet South FSR. If snow depth exceeds 30 cm and remains at that depth for 8 hours, construction must be suspended immediately and may not resume in 2014.
ULRHEF powerhouse, and Intake diversion	Within 50m of identified archeologically significant area	Archaeologically significant site EdRu-3	The ASMP recommends that an archaeological technician from the Lil'wat Nation be present to monitor initial ground-disturbance activities within 50m of the EdRu-3 site boundaries.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
channel	Within 30m of the Upper Lillooet River	Riparian area and fish bearing streams	IEM presence is required when working within 30m of the Upper Lillooet River. Instream acoustic pressure monitoring required when blasting within 30m of the Upper Lillooet River.
Lillooet River FSR; ULRHEF intake access; FSR realignment at Truckwash Creek	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake; including FSR realignment at Truckwash Creek	Mountain Goat UWR (UL 11, UL 19 and Migration Corridor)	<p>IEM was onsite to oversee daily construction equipment shutdowns beginning one hour before and two hours after sunrise as well as two hours before and one hour after sunset.</p> <p>If a goat is observed within 500m line-of-sight of construction operations, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to FLNR within 48 hours.</p> <p>Mountain Goat monitoring activities were performed during this reporting period as construction activities at the ULRHEF intake were performed within 500m of Mountain Goat UWR (UL 11), and associated travel occurred through the Migration Corridor.</p> <p>Construction noise must be minimized within 500m of legally established UWR during winter (November 1 – April 30) to the satisfaction of the IEM or designate. Noise monitoring equipment was installed on October 31 to monitor noise levels and exceedances of the 75dbA noise level maximum resulting from construction activities. No adaptive noise mitigation strategies have been implemented or are recommended at this time.</p> <p>Completion of daily snow depth monitoring within the Truckwash Creek Migration Corridor according to the Project's Mountain Goat Management Plan. A two week shutdown of work within the Mountain Goat Migration Corridor will be enacted once snow accumulation exceeds 30 cm at road monitoring sites or 10 cm at forested monitoring sites.</p>

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
BDRHEF intake	Portions of intake access road, crane pad, and diversion tunnel within UWR	Mountain Goat UWR	<p>IEM monitoring is required when clearing within UWR to ensure that clearing areas are minimized.</p> <p>During winter months (November 1 – April 30), access to BDRHEF intake must be gated at least 500 m from UWR to restrict motorized use within the UWR, unless otherwise directed by MFLNRO.</p> <p>On November 13, 2014 MFLNRO granted approval to delay the timing restrictions associated with construction activities, including blasting, in Mountain Goat UWR u-2-002 UL12 from November 15 to up to November 30 according to the following restrictions:</p> <ol style="list-style-type: none"> 1. The Contractor must cease construction works and demobilize if snow fall accumulation exceeds 10 cm depth within the forested portion of UWR u-2-002 UL12, and may not recommence in 2014. Snow depth within the UWR will be evaluated as an average depth from five sample sites selected by a QP that will be monitored daily by the IEM. 2. No helicopter flights will be permitted in or within 1,500 m of UWR u-2-002 UL12 <p>If a goat is observed within 500m line-of-sight of construction operations, construction must cease for at least 48 hours. The IEM must record and submit all goat observations to MFLNRO within 48 hours.</p>

4.0 Upper Lillooet River HEF – Monitoring Results

4.1 Intake (North & South Sides), Access Roads and Cofferdam Construction

Construction Activities:

- Works at the intake during this reporting period included:
 - contouring and hydro-seeding of the north spoil pile with standard mulch and engineered fiber mulch (EFM; Photo 1);
 - contouring and placement of organic material on the south spoil pile slopes (Photo 2);
 - completion of the diversion channel excavation, including cleaning loose sediment from the diversion channel floor and walls with a small excavator, pressurized air, and hand tools (Photo 3);
 - excavation of the upstream diversion channel plug (Photo 4);
 - armoring of the upstream slope of the diversion channel began on November 18, and was completed on November 20 (Photo 5);
 - completion and testing of the Obermeyer weir (Photo 6);
 - excavation of the cofferdam access ramp (Photo 7);

- stockpiling of material and equipment (Photo 8) in preparation for construction of the cofferdam;
- cofferdam construction (Day 1) – Placement pre-washed 500 – 1500mm rock to elevation 662m and flooding of the Diversion Channel/Obermeyer weir (Photo 9); and,
- cofferdam construction (Day 2 & 3) – Installation of impermeable geomembrane liners on the upstream side of the cofferdam to reduce seepage through the cofferdam (Photo 10 & Photo 11).

Environmental Summary:

- On November 20, the IEM allowed four pick-up trucks and one 5 ton truck to pass through the mountain goat migration corridor during the sunset shutdown period between 3:15 - 3:20pm. The exception was granted because all vehicles had attempted to manage their travel through the migration corridor during approved times, but were delayed as the road was temporarily blocked by a flatbed truck that was stuck and unable to clear the road. The following mitigation measures were reviewed with all drivers prior to proceeding through the mountain goat migration corridor during the evening shutdown period:
 - All vehicles were directed to travel together in a tight group at speeds below 40km/hr.
 - In the event of a mountain goat sighting, all drivers were advised to stop completely, shut-off their vehicles and contact the IEM for further direction.
 - The MG-OBS03 (Garibaldi Pumice Mine mountain goat observation site) was visited immediately prior to allowing the group of 5 vehicles to pass through the migration corridor to spot for travelling Mountain Goats; however zero visibility conditions were encountered due to low cloud cover.
 - The lead driver reported to the IEM once all vehicles were clear of the migration corridor, confirming that no mountain goats were sighted.
 - The 5 ton truck was advised to prevent using the engine breaks if possible.

No mountain goats were seen during travel through the migration corridor and all mitigations measures as outlined by the IEM were respected during this one-time event.

- Winterization of the ULRHEF north side spoil area (Photo 1) was completed on November 17, 2014. The winterization strategy included the reshaping of the spoil pile to reduce its overall height and the application of standard hydro mulch and EFM in the hydro-seed mix. It should be noted that the manufacturer specifications for ProMatrix™ EFM outline that it is designed to be applied on slopes less than 1H to 1V (with an application rate of 4500kg/ha) and that slope interruption devices or water diversion techniques are recommended when slope lengths exceed 15m. Based on the IEM's inspection of the application it appears that the EFM product has been heavily applied; however application has not been completed to manufacturer specifications. The IEM recommends that the spoil pile slopes are closely monitored during the spring melt for signs of erosion to prevent additional material from

extending beyond the OLTC limits. Winterization of the ULRHEF south side spoil area (Photo 2) was also performed during this reporting period, and involved reshaping the slopes and application of organic material. With these winterization measures complete, *ULR#20* has now been closed. The inspection and regular maintenance of ESC installations is an ongoing Project requirement and CE should ensure that the intake works area is winterized prior to site demobilization.

- Instream works associated with construction of the cofferdam began on November 20, 2014 during the extended 2014 instream works window as approved by DFO and MFLNRO. The IEM monitored all instream work, and communicated with CE and Ecofish via radio to receive real-time turbidity, flow stage, and Severity of Ill Effect Value (SEV) modeling information. This information helped guide field decisions made by the Construction Engineer. A detailed report will be prepared by Ecofish and will be appended to Weekly Environmental Report #49; therefore reporting and discussion of the data and SEV modelling information collected by Ecofish will not be duplicated in the body of this weekly report. The following points summarize the observations made by the IEM during each day of the cofferdam construction, highlight all key communications, and explain the reasons for any adaptive management decisions:

November 20, 2014 – Day 1

- Placement of pre-washed 500 – 1500mm rock proceeded from the north bank across the natural channel over the course of approximately 4 hours, during which time a gradual filling of the headpond was observed. Impacts to downstream turbidity was not visually perceptible for extended periods of time (> 5 minutes) during placement of the first 75% of the 500 – 1500mm material. Turbidity generation became more apparent during placement of the final 25% of the washed rock dam as flows were concentrated and commissioning of the diversion channel occurred. The turbidity peak was short lived and was caused by the first flush of the diversion channel (visual turbidity increase downstream at Keyhole Bridge observed to have lasted approximately 0.5 hours). Placement of the washed rock was completed to elevation 662m and it was estimated that 50% of the flows were diverted through the diversion channel at the end of day 1.
- Turbidity sampling was not performed by the IEM during Phase 1 of the cofferdam construction as the data transmission lag from the two turbidity gauges downstream of the works were found to be short during the initial works; however a significant lag in data transmission occurred during the peak turbidity and peak stage change period. As a result the IEM and Ecofish agreed that turbidity samples would be collected and analyzed by the IEM during the placement of the Phase 3 material (0-300mm) as a back-up to the turbidity gauges.

November 21 & 22, 2014 – Days 2 & 3

- Cofferdam height was increased by the placement of additional clean rock above the wetted area.
- Geo-membrane (liner) was installed on the upstream side of the cofferdam with the intent of reducing seepage through the cofferdam. Limitations of the equipment reach and depth of the headpond made the installation of the geo-membrane to the base of the cofferdam difficult. Modifications to the excavator (Photo 11) were made on Day 3 to extend its reach and geo-membrane installation was attempted. CE also installed several heavy bags (1m³) filled with clean crushed rock to the upstream side of the cofferdam to attempt to stem the seepage. At the end of Day 3 the goal of significantly reducing seepage volume through the cofferdam was not achieved and further geo-membrane installation will continue during the next reporting period.
- On Day 3, the IEM authorized the use of a second excavator (not equipped with bio-oil) to place cobble on top of the geo-membrane as the modified excavator (equipped with bio-oil) held the geo-membrane in place during the installation. The approval was granted as CE demonstrated that appropriate spill response equipment (spill booms, spill pads, poly-sheeting, spill kit, etc.) were available onsite. The excavator was pre-inspected and continuously monitored for leaks while operating on the cofferdam and within 30m of the Lillooet River. The second excavator was only needed for a short time and was removed from within 30m of the Lillooet River once it was no longer required.

Photos:



Photo 1 – Re-shaping and hydro-seeding of the north side spoil area at the ULRHEF intake (November 17, 2014).



Photo 2 – Slopes of the south side spoil area at the ULRHEF intake have been shaped and covered with organic material (November 16, 2014).



Photo 3 – Cleaning of the diversion channel with pressurized air and collection of the material with hand tools (November 16, 2014).



Photo 4 – ULRHEF intake diversion channel upstream plug excavation. No work occurred instream (November 16, 2014).



Photo 5 – Armoring of the ULRHEF diversion channel upstream slope (November 20, 2014).



Photo 6 – Final testing of the Obermeyer weir (November 19, 2014).



Photo 7 – ULRHEF intake north side cofferdam access ramp excavation (November 18, 2104).



Photo 8 – Stockpiled material near the ULRHEF intake (November 16, 2014).



Photo 9 – Washed rock cofferdam and flooding of the diversion channel (November 20, 2014).



Photo 10 – Placement of the geo-membrane on the front face of the cofferdam (November 21, 2014).



Photo 11 – Excavator modification for placement of the geo-membrane (November 22, 2014).

4.2 Penstock

Construction Activities:

- ESC stabilization and repair of the outside fill slope from penstock station 2+725 to 3+025m was completed outside of the daily mountain goat migration corridor shutdown periods.
- Bulk excavation continued from penstock station 3+090 to 4+095 (Photo 12).

Environmental Summary:

- No environmental issues were observed along the ULRHEF penstock alignment during this reporting period.

Photos:



Photo 12 – ULRHEF penstock excavation near station 4+095m (November 17, 2014).

4.3 Powerhouse

Construction Activities:

- The final structure pour for 2014 was completed on November 16 (Photo 13). During the remainder of the reporting period CE removed concrete form work, and demobilization equipment from site in preparation for the winter shutdown (Photo 14).
- Two pumps (6" and 10") previously installed in the sump draining seepage waters in the powerhouse excavation continued to convey water to the existing settling ponds. No flowing surface water was observed within the excavation and pump capacity appears to be adequate to maintain isolation from active work areas.

Environmental Summary:

- Dewatering of the ULRHEF powerhouse continued without environmental concerns. The IEM will continue to monitor the works area to confirm that future concrete pours

are adequately isolated from flowing waters and protected from precipitation during curing.

Photos:



Photo 13 – Structural concrete pour at ULRHEF powerhouse (November 16, 2014).



Photo 14 – Continued rebar and formworks at ULRHEF powerhouse (November 19, 2014).

4.4 Water Quality Results

As extensive water quality information was collected during this reporting period by real time turbidity gauges installed as part of the instream works monitoring program; therefore additional water quality sampling in the Lillooet River was not conducted by the IEM. A detailed discussion of the real time turbidity data collected during construction of the ULRHEF intake cofferdam will be included in Weekly Environmental Monitoring Report #49.

4.5 Recommendations

IEM recommendations for the ULRHEF are as follows:

- The IEM recommends that the north intake spoil pile slopes are closely monitored for signs of erosion to prevent additional material from extending beyond the OLTC limits. A final reclamation prescription for this spoil pile should be developed by a qualified professional.

4.6 Upcoming Works

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

- Installation of geo-membrane to the front face of the intake cofferdam will continue and completion of the remaining stages of the upstream cofferdam construction.

- Installation of the downstream cofferdam will begin upon completion of the upstream cofferdam.
- Continued cut/fill along the ULRHEF penstock alignment.

5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

5.1 Intake Diversion Tunnel Excavation

Construction Activities:

- Sequences of drilling, controlled blasts, and blast rock excavation continued on the top bench of the diversion tunnel throughout the reporting period (Photo 15). The blast rock was placed in a crane bucket and hoisted to the crane pad for stockpiling (Photo 16). Care was taken to prevent material from entering Boulder Creek and no environmental or water quality concerns were noted during this reporting period.

Environmental Summary:

- The IEM completed regular inspections of the BDREHF intake diversion tunnel excavation on day shift and night shift throughout this reporting period. No environmental issues were observed.

Photos:



Photo 15 – Conditions inside the BDRHEF diversion tunnel excavation (November 19, 2014).



Photo 16 – Continued mucking of blast material (November 18, 2014).

5.2 Tunnel Excavation and Powerhouse

Construction Activities:

- The removal of form works and winterization of the powerhouse site continued during this reporting period (Photo 17).
- All construction activities associated with the tunnel excavation were completed on November 16, 2014. CE installed a wire mesh closure to the tunnel portal entrance

to prevent unwanted entry into the tunnel during the winter shutdown period (Photo 18).

Environmental Summary:

- CE has temporarily installed an active water treatment system at the BDRHEF powerhouse to treat water emanating from the tunnel excavation. The active treatment system is being used in lieu of the sediment ponds which require maintenance. CE has informed the IEM that drainage emanating from the tunnel will be channel to the powerhouse, which will be permitted to flood once the powerhouse winterization is complete. An outlet ditch will be constructed to channel any water from the powerhouse excavation to a natural depression prior to reaching Boulder Creek.
- No environmental issues were observed during this reporting period at the BDRHEF powerhouse or downstream tunnel portal.

Photos:



Photo 17 – Current conditions at BDRHEF powerhouse, continued rebar/formworks and concrete structure pour (November 17, 2014).



Photo 18 – BDRHEF downstream tunnel portal with wire mesh installed to prevent access (November 19, 2014).

5.3 Water Quality Results

The following table presents the results of the routine water quality sampling program for the BDRHEF. The IEM is undertaking a weekly monitoring program according to the conditions outlined in the Surface Water Quality Protection Plan. The regular monitoring sites have been selected to quantify WQ conditions within the Lillooet River upstream and downstream of active construction areas. The IEM acknowledges the natural variability of instream WQ conditions in Boulder Creek due to seasonal fluctuations in snowmelt. In the event that an exceedance of *in-situ* water quality (turbidity or pH) is deemed to be caused by project-related activities, the IEM will highlight the exceedance, discuss the cause, and outline measures undertaken by the Contractor to correct the issue. When an exceedance cannot be attributed to project related activities, the exceedance will be marked by an asterisk (*).

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
Routine Water Quality During Diversion Tunnel Excavation						
November 16	21:50	BDR Background –Upstream of BDRHEF intake *accessed by crane operated man-basket*	7.8	5.55	n/a	3.2
November 16	22:00	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	6.87	6.34	n/a	3.6
November 17	03:30	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	6.91	5.40	n/a	2.1
November 17	21:20	BDR Background –Upstream of BDRHEF intake *accessed by crane operated man-basket*	7.4	4.02	n/a	3.3
November 17	21:30	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	6.81	3.21	n/a	3.1
November 18	2:45	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	6.92	4.12	n/a	3.4
November 19	20:30	BDR Background –Upstream of BDRHEF intake *accessed by crane operated man-basket*	7.51	7.01	n/a	3.2
November 19	20:35	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	7.64	9.65	n/a	2.9
November 19	5:02	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	7.53	5.02	n/a	3.1
November 20	1:28	BDR Background –Upstream of BDRHEF intake *accessed by crane operated man-basket*	7.8	5.4	n/a	2.2
November 20	1:30	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	8	5.56	n/a	2.1
November 20	3:31	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	7.9	4.9	n/a	2.4
November 22	21:30	BDR Background –Upstream of BDRHEF intake *accessed by crane operated man-basket*	7.62	6.46	n/a	3.7
November 22	21:35	BDR #1 – Downstream of BDRHEF intake *accessed by crane operated man-basket*	7.41	6.92	n/a	3.8
BDR #2 – Upstream of BDRHEF Powerhouse			No sampling - works did not impact downstream water quality			
BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge			No sampling - works did not impact downstream water quality			

5.4 Recommendations

IEM recommendations for the BDRHEF are as follows:

- The IEM has no recommendations at this time.

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):

- Excavation of the intake diversion tunnel (including drilling, blasting, and mucking), will continue until November 30, 2014 or until average snow depth exceeds 10cm within UWR according to the timing window extension approval granted by MFLNRO.

6.0 Transmission Line – Monitoring Results

6.1 *Transmission Line Construction Activities*

Right-of-Way Clearing:

- ROW clearing occurred in Segment 8 and Segment 9.
- RVMA clearing in Segment 8 near structure 192 and timber management occurred near structures 182 & 183.

Existing Road Upgrades and Access Road Construction

- Transmission line access road upgrades/construction (including brushing and ballasting) were conducted in Segment 8 (road 197.2; Photo 19).
- An excavator completed crossing ditching at spur road junctions with the FSR and improved ditching from 22 – 26.5 km of the Lillooet River FSR (Segment 5).

Transmission Line Pole Installation, Line Stringing and Clipping

- Foundation construction (ground works including blasting and use of heavy machinery) and structure framing works were completed in Segments 5 & 7 (Photo 20).

Environmental Summary:

- In accordance with EAC #E13-01 Amendment 5 and the General Wildlife Exemption Measures Approval dated October 28, 2014 the IEM was onsite to oversee construction activities in Segment 5 & 7 during this reporting period. Snow fall accumulation was recorded following new snow fall, within the Moose Winter Range Forest Management Zone (u-5-002 J55/54-204-RO) at 2.5km of the Lillooet South FSR, and did not exceed 30cm during this reporting period.
- 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, and within legally designated Old Growth Management Areas (OGMAs). All flagged boundaries were respected during clearing activities. No environmental issues were observed.

Photos:



**Photo 19 – Segment 8 road construction works
November 19, 2014).**



**Photo 20 – Segment 5 pole anchor installation
(November 18, 2014).**

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
Water quality was visually assessed in all areas of active construction during this monitoring period. No water quality concerns were noted.					

6.2 Recommendations

- The IEM has no recommendations at this time.

6.3 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):

- Road upgrades will continue in Segments 8.
- Transmission line construction activities will continue in Segments 5 & 7.

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) and will be submitted to the IEM on a weekly basis. Wildlife Observation forms will be summarized on a monthly basis and appended to the first WEMR of the following month. Observation or detection of the following species will trigger notification to identified parties according to the following table.

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

8.0 Mountain Goat Monitoring Program

The following mitigation measures were implemented for work activity within the Migration Corridor during this monitoring period;

1. Daily dawn and dusk shutdowns as outlined in the Mountain Goat Management Plan were followed. With one exception as noted in the ULRHEF Environmental Summary:
2. Noise level monitoring to ensure that the 75db noise level threshold is not exceeded as outlined in the Mountain Goat Management Plan.

As of October 31st, the IEM or designate was on site to monitor Mountain Goat activity within 500m of construction activities at the ULRHEF intake and the ULRHEF downstream tunnel portal. Mountain Goats were monitored from three sites:

- Truckwash Creek viewing river right of the Migration Corridor– MG-OBS01 (10U 467955 5612773);
- Keyhole Falls viewing the south side u-2-002 UL11 – MG-OBS02 (10U 466593 5613988); and
- Garibaldi Pumice mine site viewing u-2-002 UL 19 – MG-OBS03 (10U 467388 561408).

Monitoring effort was split between all three sites between sunrise and sunset, unless safety concerns precluding from doing so. The order of site visits rotated daily. Construction activities need to cease if a goat(s) are observed moving towards the ULRHEF intake and/or if a goat(s) are observed within a 500m line of site of a construction activity. No goats were observed within 500m line of sight of construction activities and no work stoppages were required.

Please refer to the attached Mountain Goat Monitoring Daily Observation Forms for a summary of observations from this reporting period.

9.0 Environmental Issues Tracking Matrix (ITM)

9.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
ULR#20	Complete	Various location at ULRHEF, BDRHEF and along the Lillooet FSR	FAM04 (attached) was issued to the contractor to address ESC concerns at HEF component sites	<ol style="list-style-type: none"> 1. ULRHEF Intake (north and south sides) <ol style="list-style-type: none"> a. Ditch installation/maintenance b. Slope protection c. Spoil area winterization (plan submitted October 17, 2014) 2. ULRHEF Powerhouse <ol style="list-style-type: none"> a. Slope protection 3. BDRHEF Intake Access Road <ol style="list-style-type: none"> a. Slope protection 	September 29, 2014	October 17, 2014	November 17, 2014
<i>next ITM – ULR#23</i>							

9.2 Transmission Line

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

MOUNTAIN GOAT DAILY OBSERVATION FORM

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s):

Date (YYYY-MM-DD):

Weather (cloud cover, precipitation and temperature):



106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to steve@sartorienv.com following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates (approximate center of observation area)	Daily Start Time (24hr clock)	Daily End Time (24hr clock)
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	12:20	14:20
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	10:20	11:55
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	8:45	10:15

Daily form #	1	of	1
--------------	---	----	---

If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site <i>(indicate if location other than OBS site)</i>	Time <i>(use 24hr clock)</i>	UTM Coordinates or Waypoint <i>(10U)</i>	Species Observed <i>(indicate Mountain Goat or other species)</i>	Observations <i>(be specific - visual sign, track, other sign)</i>	# of Animals	Age <i>(if known - refer to attached info sheet)</i>	Sex <i>(if known - refer to attached info sheet)</i>	Description of Activities <i>(feeding, moving, etc.)</i>	Comments <i>(habitat, snow conditions, etc.)</i>	Photo #s
MG - OBS03	9:40	10U 469155 5614960	MG	Visual	2	Adults	Unknown	Standing	top of mountain in snow and rocks	144-149
MG - OBS02	10:30	10U 466760 5613967	MG	None	0	n/a	n/a	n/a	could hear construction activity and feel ground vibrations from machines moving on road	150-151
MG - OBS01	12:35	10U 467898	MG	Visual	4	2 Adults 2 Kids	Nanny Billy 2 unknown	feeding and laying down	Southside of river; Moved down to bottom of rocky area with shrubs (photo #167)	152-167
MG - OBS01	12:45	10U 467898	MG	Visual	3	Adult	unknown	laying down	below rocky cliff on south side of river, near bottom	157-158; 168

MOUNTAIN GOAT DAILY OBSERVATION FORM

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s):

Date (YYYY-MM-DD):

Weather (cloud cover, precipitation and temperature):



106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to steve@sartorienv.com following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates <i>(approximate center of observation area)</i>	Daily Start Time <i>(24hr clock)</i>	Daily End Time <i>(24hr clock)</i>	Daily form #	1	of	2
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	11:00	12:20	If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	09:00	10:45				
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	12:30	14:00				

Observation Site <i>(indicate if location other than OBS site)</i>	Time <i>(use 24hr clock)</i>	UTM Coordinates or Waypoint <i>(10U)</i>	Species Observed <i>(indicate Mountain Goat or other species)</i>	Observations <i>(be specific - visual sign, track, other sign)</i>	# of Animals	Age <i>(if known - refer to attached info sheet)</i>	Sex <i>(if known - refer to attached info sheet)</i>	Description of Activities <i>(feeding, moving, etc.)</i>	Comments <i>(habitat, snow conditions, etc.)</i>	Photo #s
MG - OBS02	09:23	10U 466760 5613967	Mountain Goat	Visual	2	Adult, yearling	Male, unknown	Billy laying down, yearling feeding	Above bedding area beside slide, no snow.	178-194, 201-207
MG - OBS02	09:35	10U 466760 5613967	Mountain Goat	Visual	2	Adult, kid	Female, unknown	Laying down on mineral slide.	Didn't see kid at first till the billy went to to get them up. Video.	196, 208-259
MG - OBS01	11:30	10U 467898 5612845	Mountain Goat	Visual	3	Adult	Unknown	Feeding, laying down	Across the river, couldn't really see with all the smoke.	260-263

MOUNTAIN GOAT DAILY OBSERVATION FORM

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s):

Date (YYYY-MM-DD):

Weather (cloud cover, precipitation and temperature):



106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to steve@sartorienv.com following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates <i>(approximate center of observation area)</i>	Daily Start Time <i>(24hr clock)</i>	Daily End Time <i>(24hr clock)</i>	Daily form #	1	of	1
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	10:00	10:30	If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	10:35	11:00				
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	8:40	9:48				

Observation Site <i>(indicate if location other than OBS site)</i>	Time <i>(use 24hr clock)</i>	UTM Coordinates or Waypoint <i>(10U)</i>	Species Observed <i>(indicate Mountain Goat or other species)</i>	Observations <i>(be specific - visual sign, track, other sign)</i>	# of Animals	Age <i>(if known - refer to attached info sheet)</i>	Sex <i>(if known - refer to attached info sheet)</i>	Description of Activities <i>(feeding, moving, etc.)</i>	Comments <i>(habitat, snow conditions, etc.)</i>	Photo #s
MG-OBS03	9:43	10u4691555614960	0	0	0	0	0	Snow and rain not much visibility	Snow and rain low visibility	1table t
MG-OBS01	10:00	10u4678985612845	0	0	0	0	0	0	Fell down on the way in so came out, icy	0
MGOBS02	10:35	10u4667605614960	0	0	0	0	0	Rain and snow	White patch on ground?	3on tablet

