
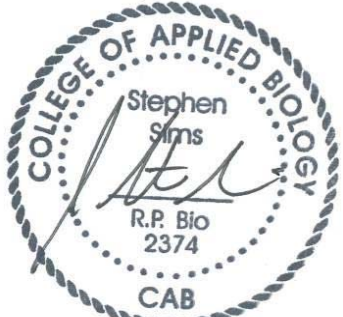


# Upper Lillooet Hydro Project

## Weekly Environmental Monitoring Report #42

Reporting Period: October 5 – October 11, 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	 <b>J. Alex Sartori, RPBio</b> <i>Independent Environmental Monitor (IEM)</i>   <b>J. Stephen Sims, RPBio</b> <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.	
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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.	<b>Date Prepared:</b> November 24, 2014 <b>Date Submitted:</b> November 27, 2014
Pontus Lindgren	Westpark Electric Ltd.	
Harriet VanWart	Lil'wat Nation	

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## Owner Construction Permits and Approvals

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*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)*  
*Letter of Advice for the Transmission Line No. 09-HPAC0-PA2-000303*  
*Leave To Commence Construction (ULRHEF) File No. 2002561*  
*Leave To Commence Construction (BDRHEF) File No. 2002453*  
*Leave To Commence Construction (TX Line) File No. 2002561/2002453*  
*Conditional Water Licence (ULRHEF C130613) File No. 2002561*  
*Conditional Water Licence (BDRHEF C129969) File No. 2002453*  
*Conditional Water Licence (BDRHEF C131153) File No. 2003601*  
*Licence of Occupation (ULRHEF #232384) File No. 2409871*  
*Licence of Occupation (BDRHEF #232386) File No. 2409998*  
*Licence of Occupation (TX Line #2423386) File No. 2410654*  
*Occupant Licence to Cut (ULRHEF Amendments 1, 2, 3, 4, 5) 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) No. L49697*  
*General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA*  
*Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033*  
*Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR);*  
*8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)*  
*Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)*  
*Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004*  
*Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005*  
*Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006*  
*Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007*  
*Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008*  
*Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009*  
*Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010*  
*Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001*  
*Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001*  
*Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001*  
*Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001*  
*Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-01*  
*Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001*  
*Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001*  
*Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001*  
*Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)*  
*Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381*  
*Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383*  
*Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717*  
*SLRD Temporary Use Permit No. 34 – Boulder Creek HEF*  
*SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF*  
*Works Permit for Construction within FSR Right-of-Way No. 6123-14-01*  
*Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014*

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**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 30<sup>th</sup>, 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:**

<b>AMBNS</b>	Active Migratory Bird Nesting Survey	<b>IEM</b>	Independent Environmental Monitor
<b>ASMP</b>	Archaeological Sites Management Plan	<b>INX</b>	Innergex Renewable Energy Inc.
<b>ARD/ML</b>	Acid Rock Drainage and Metal Leaching	<b>ISW</b>	Instream Works
<b>BCEAO</b>	British Columbia Environmental Assessment Office	<b>ITM</b>	Environmental Issue Tracking Matrix
<b>BCWQG</b>	British Columbia Water Quality Guidelines	<b>JEM</b>	JEM Energy Ltd. (Delegate Independent Engineer)
<b>BDRHEF</b>	Boulder Creek Hydroelectric Facility	<b>LTC</b>	Leave to Construct
<b>BG</b>	Background	<b>MFLNRO</b>	Ministry of Forests, Lands and Natural Resource Operations
<b>BKL</b>	BKL Consultants Ltd.	<b>MOE</b>	Ministry of Environment
<b>CE</b>	CRT-ebc Construction Inc.	<b>NCD</b>	Non Classified Drainage
<b>DFO</b>	Fisheries and Oceans Canada	<b>OLTC</b>	Occupational License to Cut
<b>DS</b>	Downstream	<b>PAG</b>	Potentially Acid Generating
<b>Ecofish</b>	Ecofish Research Ltd.	<b>RoW</b>	Right of Way
<b>Ecologic</b>	Ecologic Consulting	<b>RVMA</b>	Riparian Vegetation Management Area
<b>EDI</b>	Environmental Dynamics Inc.	<b>SES</b>	Sartori Environmental Services
<b>EIR</b>	Environmental Incident Report	<b>TX Line</b>	Transmission Line
<b>ESC</b>	Erosion and Sediment Control	<b>ULRHEF</b>	Upper Lillooet River Hydroelectric Facility
<b>FAM</b>	Field Advice Memorandum	<b>UWR</b>	Ungulate Winter Range
<b>FSR</b>	Forest Service Road	<b>VC</b>	Valued Component
<b>GWR</b>	Mountain Goat Winter Range	<b>WQ</b>	Water Quality
<b>Hedberg</b>	Hedberg and Associates Ltd.	<b>WEL</b>	Westpark Electric Ltd.
<b>IE</b>	Independent Engineer (True North Energy)	<b>WEMR</b>	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
Sunday, October 5	MF, VD, KM, AA	Sun and cloud	<p><b>ULRHEF Intake Diversion Channel – South Side</b></p> <ul style="list-style-type: none"> <li>Concrete pour within Obermeyer weir structure</li> <li>Continued dewatering of works area</li> </ul> <p><b>ULRHEF Intake Open Cut – North Side</b></p> <ul style="list-style-type: none"> <li>Bulk excavation (including drilling and blasting) continued below elevation 666m</li> <li>Drilling and installing horizontal rock bolts</li> <li>Installation of a sediment pond to treat seepage within the excavation commenced</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>Drilling, blasting and stabilization of the tunnel</li> <li>Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>ULRHEF Penstock</b></p> <ul style="list-style-type: none"> <li>No Activities</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>Continued dewatering of excavation to settling ponds</li> <li>Continued rebar installation and formwork</li> </ul> <p><b>BDRHEF Intake Access Road &amp; Crane Pad</b></p> <ul style="list-style-type: none"> <li>Continued access road construction</li> <li>Continued excavation and drilling/blasting on top level of crane pad</li> </ul> <p><b>BDRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>Drilling, blasting and tunnel stabilization</li> <li>Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>BDRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>Continued rebar installation and formwork</li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li><b>Segment 6</b> <ul style="list-style-type: none"> <li>RVMA clearing on south bank of Lillooet River Tx line crossing</li> </ul> </li> <li><b>Segment 8</b> <ul style="list-style-type: none"> <li>Bridge deck girders were installed at the Black Creek bridge site</li> </ul> </li> </ul>
Monday, October 6	MF, VD, KM, TJ, DA	Sun and Cloud	<p><b>ULRHEF Intake Diversion Channel – South Side</b></p> <ul style="list-style-type: none"> <li>Continued dewatering of Obermeyer works area</li> <li>Obermeyer weir concrete curing</li> <li>Installing interception ditch above slope</li> </ul> <p><b>ULRHEF Intake Open Cut – North Side</b></p> <ul style="list-style-type: none"> <li>Drilling and installing horizontal rock bolts and safety mesh</li> <li>Sediment pond installation continued</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>Drilling, blasting and stabilization of the tunnel</li> <li>Seepage from tunnel pumped from sump at portal entrance into settling ponds.</li> </ul> <p><b>ULRHEF Penstock</b></p> <ul style="list-style-type: none"> <li>Clearing continued along penstock alignment</li> <li>Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>Continued dewatering of excavation to settling ponds</li> <li>Rebar installation and formworks continued</li> </ul>

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations
			<ul style="list-style-type: none"> <li>• Hauling material from spoil area to the crushing/screening plant at the 38km laydown</li> <li><b>BDRHEF Intake Access Road &amp; Crane Pad</b></li> <li>• Continued access road construction included drainage works</li> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> <li><b>BDRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>BDRHEF Powerhouse</b></li> <li>• Continued rebar installation and formwork</li> <li><b>TX-Line</b></li> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➢ Grinder working near KM 29.5</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➢ RVMA clearing on south bank of Lillooet River Tx line crossing</li> <li>➢ Ground works at structure 143 and 154 – 156</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➢ Construction works continued for the permanent bridge crossing over Black Creek, including bridge deck installation</li> <li>➢ Road works continue past the bridge site towards the ROW</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➢ Continued heli-yarding</li> <li>➢ Road upgrades (including brushing) continued along the Salmon Main and Zorro Road</li> </ul> </li> <li>• <b>Segment 14</b> <ul style="list-style-type: none"> <li>➢ Continued road upgrades along Branch F and road 371.1</li> </ul> </li> </ul>
Tuesday, October 7	KM, MF, TJ, DA	Sun and cloud	<ul style="list-style-type: none"> <li><b>ULRHEF Intake Diversion Channel – South Side</b></li> <li>• Continued dewatering of Obermeyer works area</li> <li>• Rebar and form work</li> <li>• Hydro-seeding area around interception ditch and slopes above diversion channel</li> <li><b>ULRHEF Intake Open Cut – North Side</b></li> <li>• Drilling and installing horizontal rock bolts and safety mesh</li> <li>• Sediment pond installation continued</li> <li><b>ULRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and stabilization of the tunnel</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>ULRHEF Penstock</b></li> <li>• Clearing continued along penstock alignment</li> <li>• Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> <li><b>ULRHEF Powerhouse</b></li> <li>• Continued dewatering of excavation to settling ponds</li> <li>• Rebar installation and formworks continued</li> <li><b>BDRHEF Intake Access Road &amp; Crane Pad</b></li> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> <li><b>BDRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>BDRHEF Powerhouse</b></li> <li>• Continued rebar installation and formwork</li> <li><b>TX-Line</b></li> <li>• <b>Segment 3</b> <ul style="list-style-type: none"> <li>➢ Line crew stringing between structures 35 – 40</li> </ul> </li> </ul>

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations
			<ul style="list-style-type: none"> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➢ Grinder working near KM 29.5</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➢ RVMA clearing (island section) of the Lillooet River Tx line crossing</li> <li>➢ Ground works at structures 143, 154 – 156</li> <li>➢ Fallers clearing debris at structure locations from 145 – 159</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➢ Construction works continued for the permanent bridge crossing over Black Creek including bridge deck joint forming in preparation for grouting</li> <li>➢ Road works continue past the bridge site towards the ROW</li> <li>➢ Clearing ROW between structures 182 – 183</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➢ Continued heli-yarding</li> <li>➢ Road upgrades (including brushing) continued along the Salmon Main and Zorro Road</li> </ul> </li> <li>• <b>Segment 14</b> <ul style="list-style-type: none"> <li>➢ Continued road upgrades along Branch F and road 371.1</li> </ul> </li> </ul>
Wednesday, October 8	KM, MF, TH, TJ, AA	Sunny	<p><b>ULRHEF Intake Diversion Channel – South Side</b></p> <ul style="list-style-type: none"> <li>• Continued dewatering of Obermeyer works area</li> <li>• Rebar and form work</li> </ul> <p><b>ULRHEF Intake Open Cut – North Side</b></p> <ul style="list-style-type: none"> <li>• Drilling and installing horizontal rock bolts and safety mesh</li> <li>• Sediment pond installation continued</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and stabilization of the tunnel</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>ULRHEF Penstock</b></p> <ul style="list-style-type: none"> <li>• Clearing continued along penstock alignment</li> <li>• Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Continued dewatering of excavation to settling ponds</li> <li>• Concrete pour</li> </ul> <p><b>BDRHEF Intake Access Road &amp; Crane Pad</b></p> <ul style="list-style-type: none"> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> </ul> <p><b>BDRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>BDRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Continued rebar installation and formwork</li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• <b>Segment 3</b> <ul style="list-style-type: none"> <li>➢ Line crew stringing between structures 35 – 40</li> </ul> </li> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➢ Grinder working between KM 27.5 &amp; KM 33 of the Lillooet River FSR</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➢ RVMA clearing (island section) of the Lillooet River Tx line crossing</li> <li>➢ Ground works at structures 141, 143, 154 – 156</li> <li>➢ Fallers clearing debris at structure locations from 145 – 159</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➢ Black Creek bridge deck joint grouting</li> <li>➢ Road works continue past the bridge site towards the ROW</li> <li>➢ Clearing ROW between structures 182 – 183</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➢ Clearing small trees and brush within ROW from structures 210 – 214</li> </ul> </li> </ul>

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations
			<ul style="list-style-type: none"> <li>➤ Continued heli-yarding</li> <li>➤ Road upgrades (including brushing) continued along the Salmon Main and Zorro Road</li> <li>• <b>Segment 14</b> <ul style="list-style-type: none"> <li>➤ Continued road upgrades along Branch F and road 371.1</li> </ul> </li> </ul>
Thursday, October 9	KM, SS, MF, TH, TJ, AA		<p><b>ULRHEF Intake Diversion Channel – South Side</b></p> <ul style="list-style-type: none"> <li>• Continued dewatering of Obermeyer works area</li> <li>• Rebar and form work</li> </ul> <p><b>ULRHEF Intake Open Cut – North Side</b></p> <ul style="list-style-type: none"> <li>• Drilling and installing horizontal rock bolts and safety mesh</li> <li>• Sediment pond installation continued</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and stabilization of the tunnel</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>ULRHEF Penstock</b></p> <ul style="list-style-type: none"> <li>• Clearing completed</li> <li>• Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Dewatering of excavation to settling ponds</li> <li>• Rebar and form work</li> <li>• Hauling material from the spoil pile to the 38km laydown</li> </ul> <p><b>BDRHEF Intake Access Road &amp; Crane Pad</b></p> <ul style="list-style-type: none"> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> </ul> <p><b>BDRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> </ul> <p><b>BDRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Continued rebar installation and formwork</li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• <b>Segment 3</b> <ul style="list-style-type: none"> <li>➤ Line crew stringing between structures 35 – 40</li> </ul> </li> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➤ Structures 57 – 69 framing and preparations for stringing</li> </ul> </li> <li>• <b>Segment 5</b> <ul style="list-style-type: none"> <li>➤ Grinder working between KM 22 &amp; KM 26.5 of the Lillooet River FSR</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➤ RVMA clearing (island section) of the Lillooet River Tx line crossing</li> <li>➤ Ground works at structures 141, 142, &amp; 147</li> <li>➤ Fallers clearing debris at structure locations from 145 – 159</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➤ Black Creek bridge deck and approach construction</li> <li>➤ Road works continue past the bridge site towards the ROW</li> <li>➤ Clearing ROW near structure 182</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➤ Clearing small trees and brush within ROW from structures 210 – 214</li> <li>➤ Continued heli-yarding</li> <li>➤ Road upgrades (including brushing) continued along the Salmon Main and Zorro Road</li> </ul> </li> <li>• <b>Segment 14</b> <ul style="list-style-type: none"> <li>➤ Continued road upgrades along Branch F and road 371.1</li> </ul> </li> </ul>
Friday, October 10	KM, MF, AA		<p><b>ULRHEF Intake Diversion Channel – South Side</b></p> <ul style="list-style-type: none"> <li>• Continued dewatering of Obermeyer works area</li> <li>• Rebar and form work</li> </ul> <p><b>ULRHEF Intake Open Cut – North Side</b></p> <ul style="list-style-type: none"> <li>• Drilling and installing horizontal rock bolts and safety mesh</li> </ul>

Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations
			<ul style="list-style-type: none"> <li>• Sediment pond installation continued</li> <li><b>ULRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and stabilization of the tunnel</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>ULRHEF Penstock</b></li> <li>• Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> <li><b>ULRHEF Powerhouse</b></li> <li>• Dewatering of excavation to settling ponds</li> <li>• Rebar and form work</li> <li><b>BDRHEF Intake Access Road &amp; Crane Pad</b></li> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> <li><b>BDRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>BDRHEF Powerhouse</b></li> <li>• Continued rebar installation and formwork</li> <li><b>TX-Line</b></li> <li>• <b>Segment 3</b> <ul style="list-style-type: none"> <li>➢ Line crew stringing between structures 35 – 40</li> </ul> </li> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➢ Structures 57 – 69 framing and preparations for stringing</li> </ul> </li> <li>• <b>Segment 5</b> <ul style="list-style-type: none"> <li>➢ Grinder working between KM 25 &amp; KM 26 of the Lillooet River FSR</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➢ RVMA clearing (island section) of the Lillooet River Tx line crossing</li> <li>➢ Ground works at structures 140 - 142, &amp; 148</li> <li>➢ Fallers clearing debris at structure locations from 145 – 159</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➢ Black Creek bridge construction completed</li> <li>➢ Road works continue past the bridge site towards the ROW</li> <li>➢ NCD crossing performed using temporary puncheon</li> <li>➢ Clearing ROW near structure 184</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➢ Clearing small trees and brush within ROW from structures 210 – 214</li> <li>➢ Continued heli-yarding</li> <li>➢ Road upgrades (including brushing) continued along the Salmon Main and Zorro Road</li> </ul> </li> <li>• <b>Segment 14</b> <ul style="list-style-type: none"> <li>➢ ROW clearing</li> <li>➢ Continued road upgrades along road 371.1</li> </ul> </li> </ul>
Saturday, October 11	KM, MF, DA	Periods of rain	<ul style="list-style-type: none"> <li><b>ULRHEF Intake Diversion Channel – South Side</b></li> <li>• Continued dewatering of Obermeyer works area</li> <li>• Rebar and form work</li> <li><b>ULRHEF Intake Open Cut – North Side</b></li> <li>• Sediment ponds completed and dewatering began of the excavation began</li> <li><b>ULRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and stabilization of the tunnel</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>ULRHEF Penstock</b></li> <li>• Timber was decked roadside on pad near km 42.5 of the Lillooet River FSR</li> <li>• Stripping and grubbing began following pre-work meeting</li> <li><b>ULRHEF Powerhouse</b></li> </ul>



Date	IEM Team Personnel (on-site)	Weather Conditions	Key Monitoring Locations
			<ul style="list-style-type: none"> <li>• Dewatering of excavation to settling ponds</li> <li>• Rebar and form work</li> <li><b>BDRHEF Intake Access Road &amp; Crane Pad</b></li> <li>• Continued excavation and drilling/blasting on top level of crane pad</li> <li><b>BDRHEF Downstream Tunnel Portal</b></li> <li>• Drilling, blasting and tunnel stabilization</li> <li>• Seepage from tunnel pumped from sump at portal entrance into settling ponds</li> <li><b>BDRHEF Powerhouse</b></li> <li>• Continued rebar installation and formwork</li> <li><b>Tx-Line</b></li> <li>• <b>Segment 4</b> <ul style="list-style-type: none"> <li>➢ Stringing conductor for structures 57 - 81</li> <li>➢ Framing structures 73 and 47</li> </ul> </li> <li>• <b>Segment 6</b> <ul style="list-style-type: none"> <li>➢ Ground works at structure 143 and 156</li> </ul> </li> <li>• <b>Segment 7</b> <ul style="list-style-type: none"> <li>➢ Ground works at structure 181</li> </ul> </li> <li>• <b>Segment 8</b> <ul style="list-style-type: none"> <li>➢ Road works continue past the bridge site towards the ROW</li> <li>➢ NCD crossing performed using temporary puncheon</li> </ul> </li> <li>• <b>Segment 9</b> <ul style="list-style-type: none"> <li>➢ Continued heli-yarding</li> </ul> </li> </ul>

*IEM Team Personnel: TH – Tom Hicks; MF – Matt Fuller; KM – Kathy Mai; SS – Stephen Sims; BA – Blake Aleksich; 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.
October 5	<i>Site inspection, email</i>	CE, SES, INX	During the excavation of the BDRHEF crane pad a large rock (~3m <sup>3</sup> ) was dislodged and fell over the edge of the slope into Boulder Creek. All reasonable effort is being made by the operators to prevent material from falling into Boulder Creek.	-
October 6	<i>Email</i>	CE, SES, INX, PEP	CE notified PEP of a 300L diesel spill that occurred at the 38km laydown fueling station. The IEM and INX were also notified. The spill was given reference number DGIR 142-102. Further information is provided in the <i>Environmental Summary</i> component of Section 4.2.	<i>EIR013; ULR#21</i>
October 8	<i>Pre-work meeting</i>	CE, SES, INX	Following IEM/INX review and approval ULRHEF Tunnel Boreholes Work Plan, a pre-work meeting was held to review the work plan, visit the drilling location at 46.5km of the Lillooet River FSR, and discuss process water management. No LTC application was required as this work was investigative only.	-

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
October 9	<i>Pre-work meeting</i>	CE, SES, INX	Investigative test pitting for a source of sand was completed along a spur road at 36km of the Lillooet River FSR following IEM/INX review and approval of the proposed works. No trees were cut and the test pits were back filled prior to leaving the test pit sites. Test pits were located on pre-existing access roads within the Licence of Occupation of the Transmission Line. If the sand proves to be suitable for use, than an amendment to the Licence of Occupation will be required prior to initiating any borrowing activities.	-
	<i>Site Tour</i>	CE, SES, INX, JEM	Monthly IE site tour. Issues discussed included winterization measures for ULRHEF spoil areas, cutslopes, and temporary PAG storage piles.	
October 10	<i>Office Meeting</i>	SES, INX, Ecofish	Presentation regarding fish window extension application for ULRHEF intake diversion – Ecofish presentation to INX/IEM included details of SEV modelling, water quality monitoring and previous diversion experiences.	-
	<i>Pre-work meeting</i>	CE, SES, INX	Following issuance of the LTC for Penstock Grubbing and Stripping between Sta. 2+700 to 3+037 and St. 3+090 to 4+095 on October 9, a pre-work meeting was held to review stripping and grubbing activities and associated environmental constraints between the ULRHEF powerhouse and Truckwash Creek. A non-stripped buffer surrounding creeks ASTRO3 and ASTRO4 will be maintained pending the LTC for bulk excavation in the vicinity of these watercourses.	-
	<i>Email</i>	INX, MFLNRO, BCEAO, DFO, CE, Ecofish, SES	MFLNRO provided conditional approval via email of the ULHP Instream Work Window Extension for Cofferdam Construction application package.	-
October 11	<i>Pre-work meeting</i>	CE, SES, INX	Following issuance of the LTC for Penstock Bulk Excavation and Fill between Sta. 2+725 to 3+025 on October 10, a pre-work meeting was held to review bulk excavation and fill activities and associated environmental constraints between Truckwash Creek and watercourse ASTRO3. An LTC for the remaining bulk excavation sections will be issued once the IE receives and reviews the finalized IFC drawings.	-

### 3.0 Current Work Restrictions and Timing Windows

The table presented below outlines work restrictions applicable during the reporting period for each active Project component location:

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
Tx-Line	Segments 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 RVMAs.
		Old Growth Management Areas (OGMAs)	IEM monitoring is required when clearing within legally designated OGMAs, to ensure clearing area is minimized.
		Ungulate Winter Range (UWR)	IEM monitoring is required when clearing within identified deer and moose UWR, to ensure clearing area is minimized.
		Suitable Class 1 & 2 Grizzly Bear forage habitat	IEM monitoring is required when clearing within identified Class 1 & 2 Grizzly Bear forage habitat, to ensure clearing area is minimized.  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).  ULH-GB33 (Class 1 fall forage habitat) – Clearing and construction activities should avoid the fall season to avoid the displacement of bears ( <i>*see Section 6.3 of this report for further information regarding adjusted mitigations</i> ).
ULRHEF powerhouse, and Intake diversion channel	Within 50m of identified archeologically significant area	Archaeologically significant site EdRu-3	The ASMP recommends that an archaeological technician from the Lil'wat Nation be present to monitor initial ground-disturbance activities within 50m of the EdRu-3 site boundaries.
	Within 30m of the Upper Lillooet River	Riparian area and fish bearing streams	IEM presence is required when working within 30m of the Upper Lillooet River. Instream acoustic pressure monitoring required when blasting within 30m of the Upper Lillooet River.
Lillooet River FSR; ULRHEF intake access; FSR realignment at Truckwash Creek	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake; including FSR realignment at Truckwash Creek	Mountain Goat UWR	If a goat is observed within 500m 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.

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
BDRHEF intake	Portion of intake access road and crane pad within UWR	Mountain Goat UWR	IEM monitoring is required when clearing within UWR to ensure that clearing areas are minimized. If a goat is observed within 500m 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.

## 4.0 Upper Lillooet River HEF – Monitoring Results

### 4.1 Intake (North & South Sides) and Access Roads

#### Construction Activities:

- Rock anchor and wire mesh installation occurred throughout this reporting period on the vertical walls of the tunnel portal excavation (Photo 1).
- Construction of a settling pond began at the intake (north side) on October 5, and was completed and commissioned on October 10 (Photo 2). Prior to beginning construction the IEM expressed concerns with the pond’s ability to treat sediment laden seepage from the tunnel portal excavation. No discharge from the sediment ponds was observed on October 10 or October 11. The IEM will continue to monitor any discharge to the Lillooet River to document adherence to Surface Water Quality Guidelines.
- Bulk excavation (including drilling and blasting) continued at the ULRHEF upstream tunnel portal below elevation 666m once the sediment pond installation was completed. (Photo 2 and 8).
- ULRHEF intake diversion channel (south side) activities focused on construction of the Obermeyer Weir. Concrete for the base of the weir structure was poured on October 5 (Photo 4). Following the pour, wet curing of the concrete proceeded. Once the concrete sufficiently set, rebar and formworks (Photo 5) resumed for the weir structure and continued throughout the remainder of the week.

#### Environmental Summary:

- Throughout concrete activities (concrete pour, and concrete curing) at the Obermeyer weir, CE used a combination of two CO<sub>2</sub> injection/static mixer pH treatment systems, dewatering bags and pumping/trucking of alkaline water to an infiltration/wash pit as means to ensure that water directed to the Lillooet River remained within BCWQG. The IEM was onsite full-time to monitor turbidity and pH during the concrete pour and concrete wet curing, and activities were successfully managed to mitigate the potential for environmental incidents due to alkaline discharge.
- On September 29, the IEM issued *FAM04* to address ESC concerns at the ULRHEF intake. Primary concerns included slope protection and ditch

management/installation on the north and south sides of the Upper Lillooet River, and spoil pile stabilization at ULR-SP-01 and ULR-SP-02. The following items were completed during this reporting period:

- Installation of cut-off ditch above the south side cut slope and hydroseeding of the area once the ditching was completed (Photo 6)
- Maintenance of ditches along the north and south side intake access road and Lillooet River FSR (Photo 7)
- Construction of a sediment pond on the north side of the Upper Lillooet River adjacent to the upstream tunnel portal excavation (Photo 2)
- Outstanding issues from *FAM04* pertaining to slope stabilization and spoil pile winterization at the ULRHEF intake have been included in the Project's ITM as *ULR#20 – open*. The IEM continues to monitor construction activities within 30m of the Lillooet River during day and night shifts.

Photos:



**Photo 1 – Overview of wire mesh and rock anchor installation at the north side of the ULRHEF intake (October 9, 2014).**



**Photo 2 – ULRHEF north side sediment pond (October 10, 2014).**



**Photo 3 – ULRHEF intake tunnel portal excavation, once seepage was encountered (October 10, 2014).**



**Photo 4 – Obermeyer weir structure pour, alkaline water was treated with CO<sub>2</sub> injection as required system prior to discharge (October 5, 2014).**



**Photo 5 – ULRHEF intake diversion channel, rebar and formworks at Obermeyer weir (October 7, 2014).**



**Photo 6 – Hydroseeding and drainage ditch works above the south side cut slope at ULRHEF intake (October 7, 2014).**



**Photo 7 – Ditch improvements along the north side intake access road (October 8, 2014).**



**Photo 8 – ULRHEF north side overview (October 8, 2014).**

## **4.2 Downstream Tunnel Portal**

### Construction Activities:

- Drilling, blasting, mucking and stabilization (anchoring and shotcrete application) continued within the tunnel (Photo 9). Seepage water from the tunnel portal was conveyed effectively to the settling ponds for treatment and storage.
- The remaining ditch improvement work along the downstream portal access road was completed this week (Photo 10)

### Environmental Summary:

- The settling ponds installed adjacent to Truckwash Creek were used to treat the seepage and process water emanating from the tunnel. No surface discharge from the sediment ponds was observed this week (Photo 11); therefore no WQ measurements were taken by the IEM.

- Blast rock was hauled to the lower spoil area and managed according to the ULRHEF ARD/ML Monitoring and Control Plan.
- A gravity fed water extraction system was used for drilling activities according to the conditions of the Short Term Water Use Approval (No.A2006123).

Photos:



**Photo 9 – ULRHEF downstream portal work area (October 9, 2014)**



**Photo 10 – French drain installation of ULRHEF downstream tunnel portal access road completed on the woods side (October 9, 2014).**



**Photo 11 – ULRHEF downstream portal sediment ponds. No discharge was observed (October 11, 2014).**

### **4.3 Penstock**

#### Construction Activities:

- Clearing activities along penstock alignment were completed on October 9. Loading, hauling and decking of timber continued near KM 42.5 of the Lillooet River FSR (Photo 13).
- Stripping and grubbing and spoil area preparation began on October 10 following issuance of the LTC for Penstock Grubbing and Stripping between Sta. 2+700 to 3+037 and St. 3+090 to 4+095 and pre-work meeting (Photo 13 and Photo 14).
- On October 11, following issuance of the LTC for Penstock Bulk Excavation and Fill between Sta. 2+725 to 3+025 (dated October 10), a pre-work meeting was held to review bulk excavation and fill activities and associated environmental constraints between Truckwash Creek and watercourse ASTR03. An LTC for the remaining bulk excavation sections will be issued once the IE receives and reviews the finalized IFC drawings.

#### Environmental Summary:

- The IEM was onsite to monitor stripping and grubbing activities with 100m of ASTR03 and within 30m of Truckwash Creek. A 15m buffer from Truckwash creek was left undisturbed, and a vegetated buffer was left on either side of ASTR03. No environmental concerns were noted.

#### Photos:



**Photo 12 – Loading decked timber at the 42.5 km of the Lillooet River FSR (October 8, 2014).**



**Photo 13 – Stripping and grubbing activities between stations 2+725 to 3+025 (October 11, 2014).**





**Photo 14 – Stripping and grubbing activities between stations 3+090 to 4+095 (October 11, 2014).**

#### **4.4 Powerhouse & Access Road**

##### Construction Activities:

- Rebar installation and form works for the powerhouse foundation continued throughout the reporting period (Photo 15). Another stage of the concrete foundation was poured on October 8.
- 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:

- Slope protection on cut slopes above the ULRHEF powerhouse via hydroseeding/engineered fiber matrix application remains outstanding. This item is tracked in the in the Project's ITM as *ULR#20 – open*.
- Dewatering of the ULRHEF powerhouse continued without environmental concerns (Photo 16). 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 15 – Current conditions at ULRHEF powerhouse (October 8, 2014).**



**Photo 16 – Condition of the sediment ponds used for ULRHEF powerhouse dewatering (October 8, 2014).**

### 4.5 Water Quality Results

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

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
<b>Routine Water Quality</b>						
October 10, 2014	9:16	ULR Background – ULRHEF Intake	7.9	72.6	Na	3.6
	9:35	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.7	66.4	Na	5.3
	10:20	ULR #1 – Upstream of ULRHEF Powerhouse	7.3	62.0	Na	4.5
	10:37	ULR #2 – Downstream of ULRHEF Powerhouse between 40.5k and 41k	7.3	63.7	Na	5.9
	15:00	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.7	41.9	Na	5.9
	15:47	ULR #4 – Lillooet River FSR 24km – D/S of all works and Meager confluence	7.4	26.3	Na	6.7

## 4.6 Recommendations

IEM recommendations for the ULRHEF are as follows:

- ULRHEF intake north side bulk excavation – Communications continued in regards to ongoing treatment of potentially sediment laden water when drilling/blasting activities (and subsequent tunnel activities) reach elevations where seepage water entering into the excavation needs to be actively managed (via pump) and treated prior to discharge to the Lillooet River. Following an alteration to the Work Plan pertaining to the location and usage of a sediment pond, the IEM reinforced the importance of adequately treating water to within acceptable BCWQG prior to discharge and recommended that if proposed/implemented treatment could not maintain BCWQG then a more robust system would be required.
- As a follow up to *FAM04*, the IEM recommends addressing ESC concerns specific to the ULRHEF in a timely manner. In addition, the IEM expects that the contractor should take a proactive approach in identifying ESC concerns throughout the Project site. Once areas of concern are identified, contractor's focus should be firstly towards erosion source control (e.g., topsoil placement, hydroseeding, fibre matrix application, armouring, erosion control blankets, slope texturing/recontouring, etc.), and secondly towards sediment (or runoff) control (e.g., cut-off ditches, armoured ditching, slope drains, check dams, sub-surface drains, rolls/wattles, silt fencing, settling ponds, filter bags, etc.).

## 4.7 Upcoming Works

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

- Bulk excavation at the north side ULRHEF intake open cut below elevation 666m will continue and dewatering of seepage water to the newly constructed sediment pond will continue to be closely monitored in the coming week.
- Concrete works ULRHEF intake Obermeyer weir will continue for the structure foundation and walls.
- Grubbing and bulk excavation will continue along the ULRHEF penstock alignment following completion of clearing and issuance of the LTC.
- Completion of outstanding ESC items outlined in *FAM04* will continue.

## 5.0 Boulder Creek Hydroelectric Facility – Monitoring Results

### 5.1 Intake Access Road & Crane Pad

#### Construction Activities:

- Sequences of drilling, small controlled blasts, and blast rock excavation proceeded on the top bench of the crane pad throughout the reporting period (Photo 17). Care was taken to prevent material from escaping down the slope adjacent to the

excavation; however some large boulders were lost to Boulder Creek during this monitoring period.

- Intake access road construction continued (Photo 21).

*Environmental Summary:*

- On September 29, the IEM issued *FAM04* (attached) to address ESC concerns relating to slope protection on newly contoured slopes below the BDRHEF intake access road. In response, CE indicated that the hydroseeding/engineered fiber matrix will be applied following road sign-off by Hedberg. Outstanding issues pertaining to slope protection along the BDRHEF intake access road have been included in the Project's ITM as *ULR#20 – open*.
- On October 5, a large boulder escaped down the embankment of Boulder Creek during excavation activities at the BDRHEF intake crane pad. The IEM understands that all practical measures are being taken to mitigate the potential for material to enter Boulder Creek, and communicated to the contractor the expectation that lost material (including blasting mats) should be tracked and once the crane is installed and access is feasible, be removed to the extents possible.
- Construction activities occurred along the BDRHEF intake access road and crane pad with the IEM onsite for construction activities within 30m of Boulder Creek. No environmental issues were observed.

*Photos:*



Photo 17 – BDRHEF crane pad excavation and drilling/blasting at top level of crane pad (October 11, 2014).



Photo 18 – BDRHEF Intake access road construction (October 9, 2014).

## **5.2 Downstream Tunnel Portal and Powerhouse**

*Construction Activities:*

- Rebar installation and formworks (Photo 19) at the powerhouse continued throughout the reporting period.

- Drilling, blasting, mucking and stabilization (anchoring and shotcrete application) continued within the tunnel.

Environmental Summary:

- On October 6, CE reported a 300L spill of diesel fuel at the 38km Laydown fueling station. CE notified PEP (6:20am; DGIR#142-102), INX and IEM and began spill response measures immediately after the spill was first noted. CE will prepare an Environmental Incident Report (*EIR#13*) outlining the root cause(s) of the spill, spill responses measures enacted, contaminated material testing and confirmatory sampling results, and material storage/disposal methods. The full report will be provided once lab analyses of the confirmatory samples are received. The target date for completion of the *EIR#13* is October 21. This incident will be tracked as ULR#21 in the Project ITM, until *EIR#13* is submitted and the spill remediation is confirmed.
- On September 29, the IEM issued *FAM04* (attached) to address ESC concerns relating to slope protection on slopes above the BDRHEF downstream tunnel portal. Hydro-seeding had been previously applied but had generally been unsuccessful to date. CE applied additional hydroseed during this reporting period and the IEM will continue to monitor germination and slope protection effectiveness in the coming reporting periods.
- The gravity fed water diversion system was used in tunneling and shotcrete process works in accordance with Short Term Water Use Approval (*No.A2006123*). No WQ or environmental concerns were noted within Boulder Creek.
- Seepage flowing out of the tunnel continues to be collected at the portal tunnel entrance in a sump and this water is then pumped from the sump to the oil/water separator, pH adjustment holding tank, and settlement ponds for treatment. No discharge from the treatment ponds occurred during this reporting period; therefore, the IEM did not collect WQ results. The first pond is now completely full of sediment, second pond is at full capacity and the third pond has started to fill (Photo 20). The maintenance of these ponds is pending the results of confirmatory samples taken to determine whether the sediment (mostly rock fines from the tunnel drilling activities) should be treated as PAG or non-PAG, as discussed with CE's Environmental Coordinator.
- Water from the Boulder Creek water withdrawal site authorized in the Short Term Water Use Approval (*No.A2006123*) was used effectively for dust suppression above KM 37.5 of the Lillooet River FSR and on active construction site access roads.

Photos:



Photo 19 – Current conditions at BDRHEF powerhouse, continued rebar/formworks (October 9, 2014).



Photo 20 – BDRHEF powerhouse settling pond, no discharge observed; however pond #1 remains full of sediment and requires maintenance (September 30, 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)
<b>Routine Water Quality</b>						
NA	NA	<b>BDR Background</b> –Upstream of BDRHEF intake *not currently accessible*	-	-	-	-
NA	NA	<b>BDR #1</b> – Downstream of BDRHEF intake *not currently accessible*	-	-	-	-
October 10, 2014	12:00	BDR #2 – Upstream of BDRHEF Powerhouse	7.4	26.3	Na	6.7
	12:20	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.2	24.9	Na	7.3

### 5.4 Recommendations

IEM recommendations for the BDRHEF are as follows:

- As a follow up to *FAM04*, the IEM recommends addressing ESC concerns specific to the BDRHEF in a timely manner. In addition, the IEM expects that the

contractor should take a proactive approach in identifying ESC concerns throughout the Project site. Once areas of concern are identified, contractor's focus should be firstly towards erosion source control (e.g., topsoil placement, hydroseeding, fibre matrix application, armouring, erosion control blankets, slope texturing/recontouring, etc.), and secondly towards sediment (or runoff) control (e.g., cut-off ditches, armoured ditching, slope drains, check dams, sub-surface drains, rolls/wattles, silt fencing, settling ponds, filter bags, etc.).

- Settling ponds at the downstream portal should be continually monitored to ensure appropriate treatment of seepage from tunnelling activities is occurring. With rain forecast for the upcoming reporting period, increased water volumes in the form of increased infiltration rates within the tunnel excavation may result in discharge from the ponds. The maintenance of the ponds was discussed with CE's Environmental Coordinator and it was agreed that confirmatory samples would be taken to characterize whether the sediment/slurry (mostly rock fines from the tunnel drilling activities) should be treated as PAG or non-PAG. Results are pending.

### ***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):

- Construction is scheduled to continue on the intake access road and crane pad which extends within the 30m Boulder Creek riparian buffer and UWR.

## **6.0 Transmission Line – Monitoring Results**

### ***6.1 Transmission Line Construction Activities***

#### *Right-of-Way Clearing:*

- ROW and RVMA clearing (south bank of Lillooet River, and island) occurred in Segment 6 (Photo 21), Segment 8, Segment 9, and Segment 14 (south side of Pemberton Creek).
- Helicopter yarding occurred in Segment 9.
- Brushing and clearing of Branch F.
- A grinder continued processing slash in Segment 4 (27.5 km & 33 km of the Lillooet River FSR) and in Segment 5 (22 - 26.5 km of the Lillooet River FSR).

#### *Existing Road Upgrades and Access Road Construction*

- Transmission line access road upgrades/construction (including brushing, ballasting and drilling/blasting where necessary) were conducted in Segment 8 (beyond Black Creek bridge – Photo 22), Segment 9 (along Salmon Main and Zorro Road) and Segment 14 (Branch F and 371.1).
- Construction of the permanent bridge over Black Creek in Segment 8 was completed on October 10. Activities this week included girder installation, bridge deck

placement, form work, grouting, and final approach installation and grading (Photo 23).

*Transmission Line Pole Installation, Line Stringing and Clipping*

- Foundation construction (ground works including blasting and use of heavy machinery) was conducted in Segments 6 – 7.
- Structure framing and conductor line stringing occurred in Segments 3 and 4 (Photo 24).

*Environmental Summary:*

- Construction activities for the installation of the permanent bridge over Black Creek were monitored fulltime during the reporting period. The installation did not involve any instream works and no fording of machinery was required. Water quality was closely monitoring during grouting works but remained visually unaffected as no grout escaped the form work. No environmental concerns were noted.
- 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 21 – Segment 6 RVMA clearing on the Lillooet river island (October 7, 2014).**



**Photo 22 – Segment 8 road upgrading (October 11, 2014)**





**Photo 23 – Segment 8, Black Creek permanent bridge approach final backfill and grading (October 9, 2014).**



**Photo 24 – Segment 4, structure framing works (October 8, 2014).**

## 6.2 Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded at active Tx-line work areas during this reporting period. Construction and clearing activities had no visual effect on WQ.					

## 6.3 Recommendations

IEM recommendations for the Tx Line are as follows:

- Following extended discussions between WEL, INX, Ecofish, IEM and subsequently MFLNRO pertaining to the management of ULH-GB33 Class 1 fall forage habitat, it was determined that construction activities in Segment 8 could proceed within the construction restriction window of September 2 – October 31 as indicated in the Human-Bear Conflict Management Plan provided road building and transmission line clearing/installation is completed by October 15, and are consolidated to consecutive construction days. Rational behind the alteration to Project mitigations were rationalized as in the opinion of Project’s QP (Ecofish), and through discussions with MFLNRO Ecosystem Biologist, “*bears are currently not food limited and the area does not represent critical limited foraging habitat. Further, the berry production was good this year. In addition, in good years, bears have more capacity to be able to take advantage of other foraging habitats. Nevertheless, it was agreed that works should be completed as soon as possible, to better avoid disturbing grizzly bears foraging on coho salmon in Rohb Creek and South Creek. Based on baseline surveys, coho are present from October 15th and peak spawning occurs in early December*”. It is recommended by the IEM that construction activities occur as per the adjusted mitigation measures.

### **6.4 Upcoming Works**

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

- Construction of the permanent Black Creek Bridge in Segment 8 will be completed during the following reporting period with sensitive works including deck placement and grouting.
- Road upgrades will continue in Segment 9 on the Salmon Main and Zorro Road. Upgrades are expected to require culvert installations and IEM presence will be required.

### **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 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**

Mountain Goat Monitoring has been temporarily suspended until the fall monitoring period as outlined in the Mountain Goat Management Plan.

No Mountain Goats were observed within 500m line of sight of construction activities during this reporting period; therefore no work stoppages were required.

## 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			
ITM Tracking Legend:		<table border="1"> <tr><td>Work Item Open</td></tr> <tr><td>Work Item Complete</td></tr> <tr><td>Issue Closed</td></tr> </table>						Work Item Open	Work Item Complete	Issue Closed
Work Item Open										
Work Item Complete										
Issue Closed										
ULR#17	Open	BDR Intake Access Road	Damage to standing timber and impacts outside of minimized clearing boundary & approved OLTC limit (both within and adjacent to UWR)	<ol style="list-style-type: none"> <li>Prepare and submit EIR#011 outlining the root cause of the incident and how it will be avoided in future.</li> <li>Assess damage to standing timber and impacts outside of the minimized clearing boundaries and approved OLTC (both within and adjacent to UWR). Preliminary information has been provided to satisfy the requirements of ULR#18, however detailed survey is necessary to confirm impacted areas and access is currently not available due to slope stability issues.</li> </ol>	July 25, 2014	July 30, 2014	August 1, 2014			
ULR#20	Open	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"> <li><b>ULRHEF Intake (north and south sides)</b> <ol style="list-style-type: none"> <li>Ditch installation/maintenance</li> <li>Slope protection</li> <li>Spoil area winterization</li> </ol> </li> <li><b>ULRHEF Powerhouse</b> <ol style="list-style-type: none"> <li>Slope protection</li> </ol> </li> <li><b>BDRHEF Intake Access Road</b> <ol style="list-style-type: none"> <li>Slope protection</li> </ol> </li> </ol>	September 29, 2014	October 17, 2014	-			
ULR#21	Open	38km Laydown	Reportable spill – 300L of diesel spilled to ground at the fueling station	<ol style="list-style-type: none"> <li>Prepare and submit EIR#013 outlining the root cause of the incident and how it will be avoided in future.</li> <li>Provide confirmation that the spill has been fully remediated through the lab analyses of the confirmatory samples.</li> </ol>	October 6, 2014	October 21, 2014	-			

next ITM – ULR#22

## 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 Issue Closed
<i>No outstanding environmental issues (next ITM – Tx#2)</i>							