



# Upper Lillooet Hydro Project

## Weekly Environmental Monitoring Report #87

Reporting Period: January 31 – February 13, 2016

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

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		<b>Date Prepared:</b> March 24, 2016 <b>Date Submitted:</b> March 30, 2016

## Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4, 5, 6, 7)  
 Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1, 2)  
     Letter of Advice for the Transmission Line No. 09-HPAC0-PA2-000303  
         Leave To Commence Construction (ULRHEF) File No. 2002561  
         Leave To Commence Construction (BDRHEF) File No. 2002453  
     Leave To Commence Construction (TX Line) File No. 2002561/2002453  
         Conditional Water Licence (ULRHEF C130613) File No. 2002561  
         Conditional Water Licence (BDRHEF C129969) File No. 2002453  
         Conditional Water Licence (BDRHEF C131153) File No. 2003601  
         Licence of Occupation (ULRHEF #232384) File No. 2409871  
         Licence of Occupation (BDRHEF #232386) File No. 2409998  
         Licence of Occupation (TX Line #2423386) File No. 2410654  
     Occupant Licence to Cut (ULRHEF) No. L49717 (Amendments 1, 2, 3, 4, 5, 6, 7)  
         Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698  
         Occupant Licence to Cut (BDRHEF) No. L49816 (Amendments 1, 2, 3)  
     Occupant Licence to Cut (TX Line) No. L49697 (Amendments 1, 2, 3, 4, 5, 6, 7, 8, 9)  
 General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA  
     Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033  
 Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR); 8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)  
     Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)  
     Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004  
         Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005  
         Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006  
         Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007  
         Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008  
         Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009  
         Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010  
     Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001  
     Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001  
     Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001  
     Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001  
     Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-001  
     Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001  
     Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001  
     Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001  
     Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)  
     Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381  
 Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383  
     Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717  
         SLRD Temporary Use Permit No. 34 – Boulder Creek HEF  
         SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF  
         SLRD Building Permit (10864) – Upper Lillooet River HEF Powerhouse  
         SLRD Building Permit (10865) – Boulder Creek HEF Powerhouse  
     Works Permit for Construction within FSR Right-of-Way No. 6123-14-01  
     Works Permit for Construction within FSR Right-of-Way No. 7977-15-01  
     Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014  
 MOTI Permit to Construct, Use and Maintain Works Upon the Right-Of-Way of a Provincial Public Highway No. 2014-06099  
     Magazine Licence File No. UL76018 (Renewal 1)  
     Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)  
     Section 8 - Special Use Permit issued for the operation of an avalanche weather station on Crown land (File No. S25988)

## *Contractor Construction Permits and Approvals*

*Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental Management Act (Authorization No. 107204) Tracking No. 326969 (Renewal 1)*  
*Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU15-164805; Fish Salvage Permit # SU15-174722*  
*Fisheries and Oceans Canada – Anadromous Fish Salvage Permit #XR 178 2015*  
*BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014*  
*Municipal Wastewater Regulation - Authorization # 107032*  
*Water Supply System Construction Permits – VCH-14-613 for Main Camp*  
*Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp*  
*Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07*  
*SLRD Building Inspection Report dated August 13, 2014 - Construction Camp Building Permit No. 10830*  
*Lillooet River FSR Temporary Road Closures Approval File No. 11250-32/6123 (Amendment 1, 2)*  
*Lillooet South FSR Temporary Road Closures Approval File No. 11250-32/7977*  
*SLRD Building Permits for Mechanic Shop (10862) and Carpentry Shop (10836) March 18, 2015*  
*SLRD Building Permit Stages 1 - 4 – Boulder Powerhouse Architectural, Electrical and Mechanical (10865) October 8, 2015*  
*SLRD Building Permit Stages 1 - 4 – Upper Lillooet Powerhouse Architectural and Mechanical (10864) October 6, 2015*

### **ACRONYMS:**

<b>AMBNS</b>	Active Migratory Bird Nesting Survey	<b>INX</b>	Innergex Renewable Energy Inc.
<b>Andritz</b>	Andritz Hydro Canada Inc.	<b>ISW</b>	Instream Works
<b>ANFO</b>	Ammonia nitrate fuel oil (industrial explosive)	<b>ITM</b>	Environmental Issue Tracking Matrix
<b>ASMP</b>	Archaeological Sites Management Plan	<b>JEM</b>	JEM Energy Ltd. (Delegate Independent Engineer)
<b>ARD M/L</b>	Acid Rock Drainage and Metal Leaching	<b>LTC</b>	Leave to Construct
<b>BCEAO</b>	British Columbia Environmental Assessment Office	<b>MFLNRO</b>	Ministry of Forests, Lands and Natural Resource Operations
<b>BCWQG</b>	British Columbia Water Quality Guidelines	<b>MOE</b>	Ministry of Environment
<b>BDRHEF</b>	Boulder Creek Hydroelectric Facility	<b>MOTI</b>	Ministry of Transportation and Infrastructure
<b>BG</b>	Background	<b>NCD</b>	Non Classified Drainage
<b>BKL</b>	BKL Consultants Ltd.	<b>OLTC</b>	Occupational License to Cut
<b>CE</b>	CRT-ebc Construction Inc.	<b>PAG</b>	Potentially Acid Generating
<b>DFO</b>	Fisheries and Oceans Canada	<b>ROW</b>	Right of Way
<b>DS</b>	Downstream	<b>RVMA</b>	Riparian Vegetation Management Area
<b>EAC</b>	Environmental Assessment Certificate	<b>SES</b>	Sartori Environmental Services
<b>EAO</b>	Environmental Assessment Office	<b>SLRD</b>	Squamish-Lillooet Regional District
<b>Ecofish</b>	Ecofish Research Ltd.	<b>Stringer Line</b>	Temporary Backfeed Transmission Line
<b>Ecologic</b>	Ecologic Consulting	<b>TX Line</b>	Transmission Line
<b>EIR</b>	Environmental Incident Report	<b>ULRHEF</b>	Upper Lillooet Hydroelectric Facility
<b>ESC</b>	Erosion and Sediment Control	<b>UWR</b>	Ungulate Winter Range
<b>FAM</b>	Field Advice Memorandum	<b>VC</b>	Valued Component
<b>FSR</b>	Forest Service Road	<b>WEL</b>	Westpark Electric Ltd.
<b>Golder</b>	Golder Associates	<b>WEMR</b>	Weekly Environmental Monitoring Report
<b>GWR</b>	Mountain Goat Winter Range	<b>WHA</b>	Wildlife Habitat Area
<b>Hedberg</b>	Hedberg and Associates Ltd.	<b>WQ</b>	Water Quality
<b>HWM</b>	High water mark		
<b>IE</b>	Independent Engineer (True North Energy)		
<b>IEM</b>	Independent Environmental Monitor		

## 1.0 Summary of Site Inspections for Reporting Period

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

Date	IEM Team Personnel	Key Monitoring Locations & Activities
January 31 – February 6, 2016	SE, DA, TH, AS	<p><b>Construction Camp, Laydown Areas and the Lillooet River FSR</b></p> <ul style="list-style-type: none"> <li>• Snow clearing and road maintenance on the Lillooet River FSR</li> </ul> <p><b>ULRHEF Intake &amp; Upstream Tunnel</b></p> <ul style="list-style-type: none"> <li>• Borehole drilling, casing, and grout injection</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization (including shotcrete)</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Dewatering of clean ground water seepage to the Lillooet River</li> <li>• Construction activity is on hold</li> </ul> <p><b>BDRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization</li> </ul> <p><b>BDRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Mechanical and electrical component installation</li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• No activity</li> </ul>
February 7 – 13, 2016	SE, BA, DA, TH, AS	<p><b>Construction Camp, Laydown Areas and the Lillooet River FSR</b></p> <ul style="list-style-type: none"> <li>• Snow clearing and road maintenance on the Lillooet River FSR</li> </ul> <p><b>ULRHEF Intake &amp; Upstream Tunnel</b></p> <ul style="list-style-type: none"> <li>• Grout injection</li> <li>• Drilling, blasting and tunnel stabilization</li> </ul> <p><b>ULRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization (including shotcrete)</li> </ul> <p><b>ULRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Dewatering of clean ground water seepage to the Lillooet River</li> <li>• Construction activity is on hold</li> </ul> <p><b>BDRHEF Downstream Tunnel Portal</b></p> <ul style="list-style-type: none"> <li>• Drilling, blasting and tunnel stabilization</li> </ul> <p><b>BDRHEF Powerhouse</b></p> <ul style="list-style-type: none"> <li>• Mechanical and electrical component installation</li> </ul> <p><b>TX-Line</b></p> <ul style="list-style-type: none"> <li>• No activity</li> </ul>

**IEM Team Personnel:** TH – Tom Hicks; SS – Stephen Sims; BA – Blake Aleksich; DA – Danita Abraham; SE – Stephanie Ellis; AS – Anne Sutherland

## 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.
February 1, 2016	<i>Email</i>	SES, Snowline Safety, INX, CE	SES notified INX and CE of a noise level exceedance recorded at the lower Truckwash noise monitoring station on January 27, 2016. The exceedance was caused by the detonation of two small (1kg) avalanche control charges at KM45.5 of the Lillooet River FSR. The same avalanche control work had been successfully complete at this location in the past without exceeding the noise level threshold of 75 dBA. Snowline Safety will continue to minimize charge weights during avalanche control works at this location.	-
February 2, 2016	<i>Email</i>	INX, CE, SES, JEM, WEL	INX distributed the ULHP BC EAO Inspection Report for Fall 2015. BC EAO determined that at the time of inspection that the ULHP was in compliance with the Environmental Assessment Certificate. The inspection report is attached to the end of the monitoring report.	-
February 5, 2016	<i>Email</i>	SES, CE, INX	SES distributed an email summarizing discussions had with CE concerning water quality management in advance of the first blast following grouting operations at the ULRHEF upstream tunnel heading. In particular, SES was concerned that in the event of a water quality exceedance CE had no back-up system in place to redirect water above BCWQGs from flowing into the Lillooet River. An alternative mitigation measure was discussed involving the temporary discharge of water to vegetation for infiltration until the water treatment system was capable of adequately treating process water. CE elected to rely on the water treatment system (including two back-up pH treatment points; flocculant and coagulant injection; and sufficient settlement in the 7-cell pond system) for the treatment of the process water, and no other back-up systems were in place prior to the first blast.	-
February 6, 2016	<i>Email, verbal communications</i>	SES, INX, CE	SES provided an update on the results of water quality monitoring following the first blast following grouting operations at the ULRHEF upstream tunnel heading. Water quality of the discharge from the ULRHEF intake water treatment ponds remained with BCWQGs following the blast.	-



### 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
Lillooet River FSR & ULRHEF	Access roads above the lower limit of the 200m buffer Truckwash Creek Migration Corridor to the ULRHEF intake	Mountain Goat UWR & Migration Corridor	<p>Noise monitoring equipment is in place to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from blasting activities. Adaptive drilling/blasting noise mitigation strategies will be developed and implemented should activities show persistent exceedances of the noise level threshold.</p> <p>Mountain Goat monitoring activities will occur daily throughout the winter and spring (November 1 – June 15) when construction activities are occurring at the ULRHEF lower tunnel portal and/or the ULRHEF intake.</p> <p>If a mountain 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>
BDRHEF intake	Portion of intake access road and crane pad within UWR	Mountain Goat UWR	<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>If a mountain goat is observed within a 500m line of site of a construction activity within UWR u-2-002 UL 12, construction activities will cease for at least 48 hours. Approval from the IEM must be obtained prior to recommencing construction activities.</p>

### 4.0 Upper Lillooet River HEF – Monitoring Results

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

Activities:

- Routine maintenance of construction equipment within the mechanic shop and fuel management continued at the KM 38 laydown. All hazardous substance materials (waste oil, contaminated soil, used oil/hydraulic fluid containers, etc.) were stored temporarily for off-site disposal in a designated area at the laydown. The materials were all well contained and protected from the weather.
- The electric fences surrounding the construction camp were maintained and operational throughout this reporting period.
- Snow removal on the Lillooet River FSR and site access roads continued (Photo 1).

Environmental Summary:

- No environmental issues were observed or reported at the construction camp, KM38 laydown area, access roads or the Lillooet River FSR.

Photos:



Photo 1 – Snow removal on the Lillooet River FSR  
(February 4, 2016).

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

Construction Activities:

- Grout injection operations at the ULRHEF upstream tunnel portal continued from January 31 – February 4 and from February 10 – 13 (Photo 2).
- The excavation of short rounds (~3 metres each; involving drilling, blasting and tunnel stabilization) continued between grouting operations from February 5 – 9.
- Dewatering to ULRHEF intake sediment basins (Photo 2 – Photo 4).

Environmental Summary:

- During grout injection and tunnel excavation rounds in the upstream tunnel, all seepage water was directed to the ULRHEF intake sediment basins for treatment (Photo 2). CE's environmental management team ensured that the active treatment system was functioning and well maintained.
- The IEM visited the ULRHEF intake daily to conduct water quality monitoring during grout injection and tunnel excavation works. During works, the IEM conducted sampling in the cells downstream of the treatment system and at the outlet to the Lillooet River. The water treatment was successful and water quality remained within project guidelines (pH 6.5 – 9; and, <8NTU over background) throughout the monitoring period. Please see Section 4.5 Water Quality Results.

Photos:



Photo 2 – The first cell of the ULRHEF sediment basins during tunnel grouting (February 3, 2015).



Photo 3 – The second cell of the ULRHEF sediment basins following a blast in the tunnel; water was visibly clear downstream of treatment system (February 8, 2015).



Photo 4 – Discharge from ULRHEF sediment basins to Lillooet River during mucking in the tunnel (February 8, 2015).

### 4.3 *Downstream Tunnel Portal*

Construction Activities:

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

Environmental Summary:

- On January 31, water discharging from the water treatment system temporarily exceeded BCWQGs for turbidity (NTU = 68.3; See Section 4.5). Upon identification of the exceedance CE directed water back to the infiltration ponds until the system was repaired on February 3, 2016 (Photos 5 and 6). The cause was identified as a clogged sand filter, which rendered sand filtration ineffective. The filters were cleaned and once the system was operational, CE directed treated water (within BCWQGs) back to Truckwash Creek.



- On February 4, the IEM observed that the system was not functioning properly once again and CE's environmental management team diverted water from the treatment system back to the lower ponds. On February 8, the water treatment system supplier installed two additional settling tanks and reconfigured the system. Water discharging from the reconfigured treatment system was tested and confirmed to be within BCWQGs prior to discharging water directly to Truckwash Creek. The water treatment system remained operational and functioned as intended for the remainder of the reporting period. Please see Section 4.5 for Water Quality Results.

Photos:



Photo 5 – Installation of active water treatment system at the downstream tunnel infiltration ponds (February 3, 2016).



Photo 6 – ULRHEF downstream tunnel infiltration ponds (February 3, 2016).

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

Construction Activities:

- No construction activities are currently occurring at the powerhouse (Photo 7); dewatering to Lillooet River continues (Photo 8).

Environmental Summary:

- No environmental issues were observed or reported at the ULRHEF powerhouse during this reporting period.

Photos:



**Photo 7 – Current conditions at the ULRHEF powerhouse (February 8, 2016).**



**Photo 8 – ULRHEF powerhouse seepage water dewatered to the Lillooet River (February 8, 2016).**

### 4.5 Water Quality Results

The following table presents the results of WQ sampling results collected at the ULRHEF intake water treatment system. The IEM did not conduct weekly water quality sampling during the winter shutdown, as activities occurring had no effect on water quality.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
<b>Routine Water Quality</b>						
February 1, 2016	10:56	ULR Background – ULRHEF Intake	7.6	5.2	148	0.8
	10:35	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.6	4.1	155	0.8
	13:36	ULR # 1 – Upstream of ULRHEF Powerhouse	7.7	6.4	150	2.0
	14:37	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	7.6	5.7	148	2.1
	15:48	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.7	3.2	148	2.3
	15:05	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	7.6	3.0	142	3.1
February 9, 2016	10:27	ULR Background – ULRHEF Intake	7.4	5.0	183	-
	10:40	ULR #0.5 – Downstream of ULRHEF intake at Keyhole Bridge	7.4	4.8	179	-
	10:01	ULR # 1 – Upstream of ULRHEF Powerhouse	7.5	4.2	176	-
	11:48	ULR #2 – Downstream of ULRHEF Powerhouse between KM 40.5 and KM 41	7.4	5.3	173	-
	8:45	ULR #3 – Lillooet River FSR KM 38 Laydown – D/S of Boulder confluence	7.3	4.5	180	-
	12:56	ULR #4 – Lillooet River FSR KM 24 – D/S of all works and Meager confluence	7.3	5.4	157	-

Water Quality for Specific Works						
Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
<b>ULRHEF Intake sediment basins and Lillooet River following grout injection at upstream tunnel</b>						
January 31, 2016	9:13	Pond 7 (lower basins)	7.24	-	-	-
	15:13	Pond 7 (lower basins)	7.18	-	-	-
February 1, 2016	10:04	Pond 7 (lower basins)	8.89	-	-	-
	10:45	Discharge to Lillooet River	8.05	-	-	-
	11:10	Discharge to Lillooet River	8.24	-	-	-
	14:15	Discharge to Lillooet River	7.91	-	-	-
	14:20	Pond 7 (lower basins)	8.7	-	-	-
February 3, 2016	11:05	Discharge to Lillooet River	7.6	-	-	-
	11:20	Pond 5 (before secondary treatment)	7.8	16.6	-	-
	12:10	Pond 7 (lower basins)	7.5	-	-	-
	15:00	Discharge to Lillooet River	7.5	12.7	-	-
	15:30	Pond 2 (before primary treatment)	7.6	-	-	-
	16:00	Pond 2 (before primary treatment)	7.5	-	-	-
	16:10	Discharge to Lillooet River	7.4	-	-	-
February 4, 2016	10:20	Discharge to Lillooet River	9	-	-	-
	10:27	Primary treatment system discharge	9.6	-	-	-
	10:40	Keyhole Falls Bridge	7.5	5.6	-	-
	10:53	Pond 7 (lower basins)	9.3	-	-	--
	11:10	Discharge to Lillooet River	8.9	-	-	-
	11:20	Primary treatment system discharge	9.5	-	-	-
	11:45	Discharge to Lillooet River	9	-	-	-
	12:32	Discharge to Lillooet River	8.8	-	-	-
	12:17	Keyhole Falls Bridge	7.5	5.8	-	-
February 10, 2016	16:35	Discharge to Lillooet River	7.3	8.56	-	-
	16:40	Background in Lillooet River	7.7	17.2	-	-
February 12, 2016	12:20	Background in Lillooet River	7.3	21.1	-	-
	12:25	Discharge to Lillooet River	7.0	6.81	-	-
	12:35	Pond 7 (lower basins)	6.8	4.04	-	-
<b>ULRHEF Intake sediment basins and Lillooet River following blasting in upstream tunnel</b>						
February 5, 2016	11:40	Keyhole Falls Bridge	7.4	11.1	-	-
	12:07	Pond 7 (lower basins)	7.3	5.74	-	-
	14:00	Pond 7 (lower basins)	6.9	7.74	-	-
	14:35	Keyhole Falls Bridge	7.4	9.86	-	-
	15:42	Background in Lillooet River	7.5	7.17	-	-
	15:56	Pond 7 (lower basins)	7.4	6.0	-	-
	17:05	Discharge to Lillooet River	7.3	5.24	-	-

<b>Water Quality for Specific Works</b>						
<b>Date</b>	<b>Time</b>	<b>Sample Location Description</b>	<b>pH</b>	<b>Turbidity (NTU)</b>	<b>Cond (µS)</b>	<b>Temp (°C)</b>
February 6, 2016	10:15	Discharge to Lillooet River	7.2	4.29	-	-
	10:42	Discharge to Lillooet River	7.3	3.91	-	-
	16:28	Discharge to Lillooet River	7.2	4.1	-	-
	17:17	Discharge to Lillooet River	7.2	3.84	-	-
February 7, 2016	10:41	Discharge to Lillooet River	7.4	4.25	-	-
	13:20	Discharge to Lillooet River	7.3	4.79	-	-
February 8, 2016	10:36	Pond 7 (lower basins)	7.2	13	-	-
	10:47	Discharge to Lillooet River	7.3	11.5	-	-
	10:52	Background in Lillooet River	7.5	5.67	-	-
	11:55	Discharge to Lillooet River	7.2	10.31	-	-
	16:01	Discharge to Lillooet River	7.3	5.88	-	-
February 9, 2016	10:24	Discharge to Lillooet River	7.4	10.64	-	-
	10:27	Background in Lillooet River	7.5	5.01	-	-
	10:53	Pond 2 15m downstream of treatment system	7.2	11.07	-	-
<b>ULRHEF Downstream Portal settling ponds discharge</b>						
January 31, 2016	9:40	Outlet test port	7.80	68.3	-	-
	13:00	Outlet test port	7.3	55.2	-	-
February 1, 2016	16:20	Outlet test port	8.95	16.5	-	-
February 3, 2016	16:15	Outlet test port	7.5	1.1	-	-
	16:45	Outlet test port	7.6	1.2	-	-
February 4, 2016	13:50	Outlet test port	7.6	49.2	-	-
	13:58	Settling ponds outlet pipe	8.8	616 AU	-	-
February 5, 2016	12:29	Settling ponds outlet pipe	8.3	77.2	-	-
February 6, 2016	10:50	Settling ponds outlet pipe	7.5	11.1	-	-
	17:38	Settling ponds outlet pipe	7.5	47.4	-	-
February 7, 2016	11:55	Settling ponds outlet pipe	7.8	57.1	-	-
February 8, 2016	13:07	Settling ponds outlet pipe	7.6	68.5	-	-
	17:15	Outlet test port	8.1	5.99	-	-
February 9, 2016	11:20	Outlet test port	7.3	7.16	-	-
	12:29	Outlet test port	7.4	9.91	-	-
February 10, 2016	15:30	Outlet test port	7.1	6.51	-	-
February 12, 2016	14:10	Outlet test port	6.9	5.97	-	-

#### **4.6 Recommendations**

ITEM recommendations for the ULRHEF are as follows:

- All water from the ULRHEF upstream tunnel heading should be conveyed to the sediment basins for treatment. CE should perform regular monitoring to ensure that the water treatment system is functioning as intended and that discharge to the Lillooet River continues to meet BCWQGs.
- CE should be regularly monitoring the downstream tunnel water treatment system to ensure it is functioning as intended and that discharge into Truckwash Creek continues to meet BCWQGs.
- The ULRHEF powerhouse sump water should be monitored regularly. Alkaline or turbid water should be pumped to the settling ponds for treatment.

#### **4.7 Upcoming Works**

The following new and/or environmentally sensitive construction activities are scheduled to occur at the ULRHEF once the work areas are re-opened in 2016:

- Grout injection will continue at the ULRHEF upstream tunnel portal.
- Drilling, blasting and tunnel stabilization at the ULRHEF downstream tunnel.
- Dewatering to the ULRHEF intake sediment basins will continue.

### **5.0 Boulder Creek Hydroelectric Facility – Monitoring Results**

#### **5.1 Intake & Diversion Tunnel**

##### Construction Activities:

- No activity due to winter shutdown period.

##### Environmental Summary:

- No environmental issues were observed or reported at the BDRHEF intake during this reporting period.

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

##### Construction Activities:

- Drilling, blasting and tunnel stabilization in the downstream tunnel portal (Photo 9).
- BDRHEF powerhouse component installation (Photo 9).
- Dewatering of the tunnel and powerhouse to the oil water separator and settling ponds continued (Photo 10).



Environmental Summary:

- All wastewater related to the BDRHEF tunnelling works continued to be contained and conveyed to the downstream portal settling ponds for treatment (Photo 10).

Photos:



Photo 9 – Current conditions at the BDRHEF tunnel portal and powerhouse (February 9, 2016).



Photo 10 – BDRHEF downstream portal settling ponds (February 9, 2016).

### 5.3 Water Quality Results

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

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
<b>Routine Water Quality</b>						
February 1, 2016	-	BDR BG – Upstream of BDRHEF intake *not accessible*	-	-	-	-
	-	BDR #1 – Downstream of BDRHEF intake *not accessible*	-	-	-	-
	14:10	BDR #2 – Upstream of BDRHEF Powerhouse	7.6	0.4	98	1.8
	13:55	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.7	0.9	99	2.1
February 9, 2016	-	BDR BG – Upstream of BDRHEF intake *not accessible*	-	-	-	-
	-	BDR #1 – Downstream of BDRHEF intake *not accessible*	-	-	-	-

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (µS)	Temp (°C)
	9:11	BDR #2 – Upstream of BDRHEF Powerhouse	7.4	1.6	101	-
	9:22	BDR #3 – Downstream of BDRHEF Powerhouse at Pebble Creek Bridge	7.4	2.1	98	-

### 5.4 Recommendations

IEM recommendations for the BDRHEF are as follows:

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

### 5.5 Upcoming Works

The following new and/or environmentally sensitive construction activities are scheduled to occur at the BDRHEF once the work areas are re-opened in 2016:

- BDRHEF downstream portal tunnelling works will continue.
- Component installation will continue at the BDRHEF powerhouse.

## 6.0 Transmission Line – Monitoring Results

### 6.1 Transmission Line Construction Activities

- No activities occurred on the TX Line during this reporting period.

## 7.0 Wildlife Sightings

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

Species Observed or Detected	Notification Period	Agencies to be Notified
Northern rubber boa	Immediately	IEM, Owner
Grizzly bear	24hrs	IEM, Safety Officer, Conservation Officer, Owner
Wolverine den	24hrs	IEM, MFLNRO, Owner
Spotted owls	24hrs	IEM, MOE, Owner
Mountain goats	48hrs	IEM, MFLNRO, Owner

## 8.0 Mountain Goat Monitoring Program

The following mitigation measures related to mountain goats were implemented during this monitoring period:

- Access to the BDRHEF intake was gated and will now be locked fulltime to restrict motorized use within the UWR until April 30, 2016.
- Noise level monitoring data continued to be collected and used to adaptively manage construction noise and ensure that the 75db noise level threshold is not exceeded as outlined in the Mountain Goat Management Plan.
- 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 four 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); and,
  - Salal Creek monitoring site viewing u-2-002 UL 8 – MG-OBS04 (10U 466133 5613991).

Monitoring effort was split between all sites during daylight hours, unless safety concerns or weather conditions interfered. The order of site visits rotated daily. Construction activities must cease if a goat(s) is/are observed moving towards the ULRHEF intake and/or if a goat(s) is/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.

## 9.0 Environmental Issues Tracking Matrix (ITM)

### 9.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

ITM Tracking Legend:		<i>Work Item Open</i>					
		<i>Work Item Complete</i>					
		<i>Issue Closed</i>					
Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
<i>No outstanding environmental issues (next ITM – BDR#28 &amp; ULR#42)</i>							

### 9.2 Transmission Line

ITM Tracking Legend:		<i>Work Item Open</i>					
		<i>Work Item Complete</i>					
		<i>Issue Closed</i>					
Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted Date for Completion	Date Completed
<i>No outstanding environmental issues (next ITM – Tx#3)</i>							



## Environmental Assessment Office

# Inspection Record

Project Name: <input type="text" value="Upper Lillooet Hydro Project"/>	Inspection Status: <input type="text"/>
Certificate #: <input type="text" value="E#13-01"/>	Inspection No: <input type="text"/>
Certificate Status: <u>Certified</u>	Inspection Date: <input type="text" value="2015-09-15"/>
Region: <u>South Coast</u>	Office: <u>Victoria</u>
Trigger: <u>Planned</u>	<b>Incidents of Non-Compliance Observed: <u>No</u></b>
Non-Compliance Decision Matrix Level: <u>Level 1 - No impact likely</u>	Non-Compliance Decision Matrix Category: <u>No previous NCs, good awareness/attitude</u>
Inspector Name(s): <input type="text" value="Justin Carlson, Compliance Officer, Environmental Assessment Office (EAO)"/>	
Audit Record(s): <input type="text"/>	Total Non-Compliance(s): <input type="text"/>
Proponents Name: <input type="text" value="Upper Lillooet River Power Limited Partnership (PLP), Boulder Creek (PLP), North Creek Hydro (PLP) (Innergex)"/>	
Proponents Contact(s): <input type="text" value="Julia MANCINELLI, Environmental Manager, Innergex"/> In attendance:  <input type="text" value="Nathan BRAUN-Executive Project Director (EAO)"/> <input type="text" value="Julia MANCINELLI-Environmental Manager"/> <input type="text" value="Bob TAYLOR- Transmission Line Clearing Coordinator"/> <input type="text" value="Tom HICKS-Independent Environmental Monitor"/> <input type="text" value="Jean PELLETIER- CRT (Contractor) Environmental Manager"/>	
Mailing Address: <input type="text" value="200 - 666 Burrard St., Park Place, Vancouver, British Columbia V6C 2X8"/>	
Phone No: <input type="text" value="604 633-9990 or 604 345-4009"/>	Fax No: <input type="text"/>
Contact Email: <input type="text" value="Julia Mancinelli &lt;JMancinelli@innergex.com&gt;"/>	
Location Description: <input type="text" value="Northwest of Pemberton in the headwaters of the Lillooet River."/>	



Lat: 50°40'08" N

N

Long: 123°27'44" W

W

Sector: Energy

## Summary

### MONITORING AND REPORTING REQUIREMENTS

Inspection Period:

**From:** 2015-09-15

**To:** 2015-09-15

Certificate or Act:

Environmental Assessment Certificate E#13-01

Activity: On Site

#### Inspection Summary:

This record details the results of an inspection against conditions attached to EAC# E13-01, that occurred on September 15, 2015. The inspection was conducted by Justin Carlson, Compliance Officer, BC Environmental Assessment Office (C&E Carlson).

The previous inspection conducted by EAO C&E on November 26, 2014 identified two items for follow-up:

- An inspection under snow-free conditions, and;
- EIR 011(See IEM report #32) related to an incident that occurred on the Boulder Creek access road where the civil contractor damaged standing timber and impacted area outside of the minimized clearing boundary and the approved Occupant Licence to Cut during construction that is both within and adjacent to Mountain Goat UWR.

Recent lightning caused forest fire activity resulted in some damage to project infrastructure and delayed construction scheduling. This has had some impact on the conditions below.

C&E Carlson was accompanied during the inspection by the following: Nathan Braun, Executive Project Director, EAO; Julia MANCINELLI, Environmental Manager, Innergex, Bob TAYLOR, Transmission Line Clearing Coordinator, Westpark Electric Ltd.; Tom HICKS, Independent Environmental Monitor (IEM), Sartori Environmental Services; and Jean PELLETIER, Environmental Manager for CRT (Civil Contractor).

C&E Carlson inspected construction works on portions of the Lillooet River Forest Service Road, Boulder Intake Access Road, Upper Lillooet Intake Site, Boulder Intake Site, Boulder Powerhouse Site, Upper Lillooet Powerhouse Site, worker accommodation camp, Upper Lillooet Penstock Site, Lillooet River Trailhead and lay down area.

C&E Carlson completed a verbal debrief of inspection observations with those in attendance at approximately 1605 hrs on September 15, 2015.

Some items of note identified on the inspection that were covered off in the post-

#### Response:

inspection debrief were:

Erosion and sediment concerns identified:

- two failing sediment fences on the bridge at the Upper Lillooet Intake.
- sloughing on the large stock pile at the Upper Lillooet Intake
- minor repairs required in the settling ponds at the Upper Lillooet Intake site

Attractant management concerns:

The following minor attractant management issues were isolated incidents and minor in nature.

- A small amount of food waste was found in an open bin by the refuelling station that also contained oily rags and other waste oil products.
- bird deterrents on the settling ponds at the Upper Lillooet Intake settling ponds required maintenance.

Post Inspection Follow-Up:

After review of observations and information obtained during the inspection, the following compliance determinations have been made:

- 1.The compliance status of Condition#1 of Schedule B with respect to Sections 8.2.2 and 8.3.2 of the CEMP, as well as the Erosion and Sediment Control Plan specific to the requirements relating to sediment and erosion control is not determined at this time. EAO C&E will follow up on this in a future inspection.
2. The following conditions were found to be, "In Compliance" at the time of this inspection: 7, 25 and 35 of Schedule B. In addition, the following components attached to Condition 1 of Schedule were also found to be, "In Compliance" at the time of this inspection: CEMP Sections 8.2 and 8.4.2 as well as the Fire Preparedness Plan Section 2.5.

Please note that the compliance determinations in this report reflect the findings from the inspection date noted above and that these determinations can change at any time upon information gathered through future inspections or if new information is obtained by EAO C&E.

<b>Compliance Summary</b>	<b>In</b>	<b>Out</b>	<b>N/A</b>	<b>N/D</b>
Automatically populated upon upload				

# Inspection Details

## Types of Compliance: Construction

### Requirement Description:

Environmental Management and Monitoring

Condition #1 of Schedule B

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The Proponent must prepare a Construction Environmental Management Plan (CEMP). The CEMP must include the following plans:

- Access Management Plan
- Accidents, Malfunctions and Emergency Response
- ARD/ML Monitoring and Control Plan
- Air Quality and Dust Control Plan
- Archaeological Sites Management Plan
- Avalanche Control (Safety) Plan
- Blast Management Plan
- Clearing Plan
- Communication Strategy
- Environmental Education and Awareness Plan
- Erosion Prevention and Sediment Control Plan
- Fire Preparedness Plan
- Fish Salvage Plan
- Hazardous Materials Management Plan
- Human-Wildlife Interaction Management Plan, including:
  - o Grizzly Bear Management Plan
  - o Mountain Goat Management Plan
  - o Western Toad Adaptive Management Plan
  - o Rubber Boa Relocation Plan
  - o Northern Goshawk Recovery Plan
  - o Active Migratory Birds Nest Survey Plan
  - o Invasive Pest Management Plan
  - o Landslide Safety Plan
  - o Soil Salvage, Site Reclamation and Landscape Restoration Plan
  - o Spill Prevention and Emergency Response Plan
  - o Surface Water Quality Protection Plan
  - o Traffic Management Plan
  - o Waste Management Plan, including:
    - o Liquid Waste Management Plan;
    - o Solid Waste Management Reduction and Recycling Plan
    - o Windthrow Management Plan

The CEMP must include details for ensuring that construction activities must comply with the Environmental Assessment Certificate,

regulatory approvals, applicable legislation, and applicable industry Best Management Practices (BMPs).

The draft CEMP must be provided to FLNR and EAO for review and comment. The Proponent must obtain the approval of the final

CEMP from Ministry of Forests, Lands and Natural Resource Operations (FLNR) and Environmental Assessment Office (EAO) at least 30

days before commencement of construction of the Project.

Lil'wat Nation must be provided with copies of draft and final plans.

The Proponent must adhere to the requirements of the CEMP and component plans.

### Findings:

Non-compliance with the CEMP or any of its component plans will result in a determination of non-compliance with this condition. Due to the size of the CEMP components, the findings for each of the sections inspected against will be outlined below with their compliance determinations.

### Compliance: Not Determined

**Types of Compliance: Construction**

**Requirement Description:**

Section 8.2 of the CEMP Felling and Clearing  
Merchantable logs will be stock piled at appropriate locations for loading onto the trucks by others. Non-merchantable timber will be piled for burning/chipping or used in accordance with the Erosion Prevention and Sediment Control Plan and the Soil Salvage, Site Reclamation and Landscape Restoration Plan.

**Findings:**

Recent forest fires have damaged the quality of some of the timber on the transmission line. Evidence of chipping and spreading was observed on portions of the transmission line adjacent to the Upper Lillooet Forest Service Road near the 40 kilometer mark. According to MANCINELLI, the forest licensee for the north side of the Lillooet River removed the majority of the decked timber by the end of 2014.

**Compliance: In**

**Types of Compliance: Construction**

**Requirement Description:**

Section 8.2.2 of the CEMP provides a list of mitigation measures specific to felling and clearing. Here is a list of some of the items inspected against:

- Sediment control measures will be installed, maintained and removed as required to reduce the risk of sediment input to local watercourses (refer to the Erosion Prevention and Sediment Control Plan).
- Clearing and construction activities within 200 m of DWRRE, DWRRO, MCWR and MWRFMZ and 500 m of GWR will be conducted outside of the sensitive windows or according to conditions and mitigation measures outlined in the applicable EPPs.

**Findings:**

According to MANCINELLI, during the Boulder Creek Wildfire (V30241) in 2015, provincial wildfire services felled a large number of danger and hazard trees. The purpose of the tree felling was to create fire breaks and ensure the safety of their crews travelling along the Upper Lillooet FSR and various resource roads. In addition, work site specific danger tree assessments (in consultation with FLNR) and felling was completed prior to construction crews returning to work. Evidence of the forest fires and felled trees can be seen in Appendix A photos 1-5, and 8-11 as well as Appendix B photos 9, 11 and 12.

-Evidence of geotextile matting, sediment fences, hydroseeding, slope contouring, ditch armouring and sediment ponds can be seen in Appendix A photos 1, 3, 7-12, 14-16, 18 and 19 as well as Appendix B photos 1, 4-8, 10, 11, 13-15.

See Appendix A photo 10 depicting the clearing for a new spoil pile site on the Boulder Intake Access Road. A site specific work plan is attached to this inspection which includes a geotechnical report signed off by Ali GHANDEHARIOON, Certified Geotechnical Engineer of Western Geotechnical Consultants Ltd. The work plan specifies that all necessary ESC measures are to be identified prior to construction and are to be completed prior to putting spoil in the area. See Appendix E for a copy of the Work Plan for this site.

Upon review of inspection photos, the Boulder Intake Access Road spoil pile site has been identified as having potential erosion and sediment control issues.

HICKS provided comment on this area in response to the draft of this report. On January 7, 2015, HICKS stated that a meeting was held on September 3, 2015 to review the spoil area, prior to stripping and grubbing activities. The area was reviewed for ESC concerns or potential concerns. It was noted at this time that a culvert would need to be removed and water is to be diverted through the road side ditch to the next culvert on the access road as per the work plan.

HICKS stated that the IEM inspected the spoil area again on September 16, 2015. At this time, stripping and grubbing of the area had been completed.

From an ESC perspective the following was noted by HICKS:

1. Surface runoff from the above access road is diverted through the road side ditch and crosses the FSR in a culvert outside of the spoil area boundaries.
2. The size of the spoil area was not anticipated to be large enough that rain splash erosion or surface runoff would be of concern. It was also noted that spoil area is slated to be filled with blast rock, and therefore the erosion potential of the exposed mineral soil slope will be reduced once the area is used for its intended purpose.
3. It was determined that the berm of stockpiled organic material at the toe of the slope would be sufficient to capture the minimal amount of runoff anticipated in the spoil area, and that the organic material berm itself was stable from an ESC perspective.

See Appendix H for a copy of HICKS' response.

Confirmation that the spoil pile depicted in Appendix A photo 10 has adequate erosion and sediment control as per the requirements listed in Section 8.2.2 of the CEMP is required. Further assessment will be conducted on a future inspection to determine compliance.

This component will remain undetermined until a future inspection of the area noted above.

-IEM report #32 identified some standing timber that was damaged both within and adjacent to Mountain Goat UWR by the civil contractor. Appendix A photo 8 depicts the damaged trees that are marked with a blue dot. This summer's forest fires caused the removal of the timber behind the impacted timber. Signage is in place on the Boulder Intake Access Road identifying the Goat UWR buffer zone. See Appendix C for a map depicting the Boulder Intake access site in relation to the Goat UWR. The map was pulled from the Mountain Goat Management Plan dated August 16, 2013.

**Compliance:** Not Determined

**Types of Compliance:** Construction

**Requirement Description:**

Section 8.3 of the CEMP provides a list of mitigation measures specific to Grubbing, Stripping and Grading including;  
 Section 8.3.2 Mitigation:

-Sediment control measures will be installed downslope of all activities as required by the Ditch Management Plan and Erosion Prevention and Sediment Control Plan to mitigate the input of sediment to watercourses and will preferably be located outside of the riparian area.

-Material to be stored for long periods of time (i.e. more than 5 days) will be protected according to the measures outlined in the Soil Salvage, Site Reclamation and Landscape Restoration Plan. Proper and Erosion Prevention and Sediment Control Plan to ensure drainage of these stockpiles will be constructed with adequate sediment control measures in place and inspected weekly or after heavy rainfall events by the IEM and/or contractor.

**Findings:**

-Evidence of geotextile matting, sediment fences, hydroseeding, slope contouring, ditch armoring and sediment ponds can be seen in Appendix A photos 1, 3, 7-12, 14-16, 18 and 19 as well as Appendix B photos 1, 4-8, 10, 11, 13-15.

Two failing sediment fences were observed on the bridge crossing at the Upper Lillooet Intake site. There did not appear to be any adverse effects from the failing sediment fences. This was brought to the attention of those in attendance during the inspection debrief.

-Stockpiled material at the Upper Lillooet Intake site observed on the previous inspection was covered in snow. Without snow cover, evidence of coarse woody debris and revegetation was observed on the stockpile as seen in Appendix A photo 15. Some sloughing has occurred on this stockpile as depicted in



the photo.

See Appendix B photo 10 for steep embankments on the road accessing the Upper Lillooet Power House. An aerial photo was provided to C&E Carlson by MANCINELLI on December 2, 2015 depicting the vegetative buffer and erosion and sediment control measures being implemented. See Appendix F for a copy of the aerial photo. Confirmation that the steep embankments depicted in Appendix B photo 10 have adequate erosion and sediment control as per the requirements listed in Section 8.3.2 of the CEMP is required. Further assessment will be conducted on a future inspection to determine compliance.

This component will remain undetermined until a future inspection of the area noted above.

**Compliance:** Not Determined

**Types of Compliance:** Construction

**Requirement Description:**

Section 8.4 of the CEMP provides a list of mitigation measures specific to Drilling and Blasting including; Section 8.4.2 Mitigation:

- Controlled blasting techniques (e.g. blast mats, bury explosives in the snow) will be applied to reduce the risk of impacts from flyrock and noise disturbance to wildlife.
- Notification to stakeholders and the public in accordance with the Communication Strategy.
- Rock material with ARD potential will be kept in a separate pile designated to control and collect seepage and run-off for treatment (refer to the ARD/ML Monitoring and Control Plan).

**Findings:**

-Blast mats were found at the boulder intake site where tunnel construction was underway. There was no active blasting at the time of this inspection. See Appendix A photo 7.

-Notifications of blasting for specific project areas can be found on the project's public website. Signage and controlled access is put in place on site when active blasting is occurring. For more details on the public website and notifications, see the findings for Condition #7 below.

-Rock material with ARD potential is currently being stored on the access road to the Upstream Portal near Truckwash Creek. At the time of this inspection the rock is covered on the downslope portion. A permanent storage location was being constructed adjacent to the Upper Lillooet FSR near 41.5km at the time of this inspection.

MANCINELLI provided an analysis from Golder and Associates Ltd. of the material stored confirming that the material is not PAG. See Appendix I for a copy of Golder and Associates analysis.

MANCINELLI also provided a review by Golder and Associates, dated November 23, 2015, of the existing state of excavated rock with respect to the ARD and metal leaching aspects of the project. Golder and Associates state in the review that the management of excavated rock is being carried out according to protocols and procedures presented in the project ARD/ML Monitoring and Control Plan. See the attached document in Appendix J.

**Compliance:** In

**Types of Compliance:** Construction

**Requirement Description:**

Fire Preparedness Plan dated January 2013- Appendix F of the CEMP

Section 2.5 Firefighting Tools/Equipment:

It is the responsibility of the prime contractor to ensure that equipment, personnel training, and operational caches meet the requirements for sufficient firefighting tools, firefighting resources and an adequate fire suppression system as per the Wildfire Regulation and Wildfire Act.

Firefighting tools include shovels, axes, pulaskis, hand tank pumps and fire extinguishers.

Firefighting resources refers to the people, suppression systems and heavy equipment that must be made available to fight a wildfire. An adequate fire suppression system is a system that is suitable for the type of fire that can reasonably be expected. It must include at a minimum:

- water delivery system
- water (or suitable water source)

- fire suppressant/ and or surfactant

**Findings:**

A Fire Box containing a Mark 3 pump, hose, pulaskis, shovels and water packs was found at the Upper Lillooet intake site. See Appendix B Photos 2 and 3.

A lightning strike started a fire on June 30, 2015, as a result project delays and damages to project infrastructure occurred. A map of the fire and closure area can be seen in Appendix D. This map was pulled from the provincial wildfires site here: <http://bcwildfire.ca/hprScripts/WildfireNews/OneFire.asp?ID=538>. The original Area Restriction Order (ARO) was issued on July 23, 2015 and covered both sides of the Lillooet River. See Appendix K.

The ARO was amended twice in August reducing the size of the closure to what is depicted in the link above and Appendix D.

The ARO was rescinded on September 15, 2015.

According to MANCINELLI, an Evacuation Order was issued by the Squamish Lillooet Regional District, at the recommendation of the BC Wildfire Service, on July 4, 2015. Following the Order; all construction personnel were evacuated from the site.

**Compliance:** In**Types of Compliance:** Construction**Requirement Description:**

Erosion Prevention and Sediment Control Plan March 5, 2013- Appendix F of the CEMP  
Below are some Management Practices to be implemented according to the plan.

**2.3 Protect soil stockpiles**

-Stockpiles shall be stored on stable ground.

-Stockpiles to be left for longer durations (weeks to whole seasons) shall be protected from water and wind erosion (e.g. use tarps, berms, silt fencing, geotextile fabric, grass seeding, organic cover (e.g. limbs, tops)).

**2.5 Install Site Drainage Measures**

-Install drainage interception to reduce the amount of water flowing through the site. Drainage interception measures will be installed to the satisfaction of the IEM and may include sediment fencing, straw wattles or other erosion and sediment control product depending on the site characteristics.

-Water released from construction areas will not directly discharge into streams unless it meets approved water quality guidelines as per the Surface Water Quality Protection Plan.

**Findings:**

-Soil stockpiles observed on this inspection appear to have been stored on stable ground. See Appendix A photos 15.

-Evidence of organic material and revegetation was observed on the stockpile seen in Appendix A photo 15. Some sloughing has occurred on this stockpile as depicted in the photo.

-Sediment fencing, straw wattles, geotextile liner and rip rap can be seen in Appendix A photos 1, 3, 7-12, 14-16, 18 and 19 as well as Appendix B photos 1, 4-8, 10, 11, 13-15. Some issues relating to sloughing and failing sediment fences at the Upper Lillooet Intake site were brought to the attention of those present during the inspection and were again summed up in the inspection debrief. While there were minor issues observed they were isolated incidents and minor.

-Water affected by construction activities at the Upper Lillooet Intake site, Boulder Creek Power House, and the Upper Lillooet Upstream Portal near Truckwash Creek is being diverted into a series of settling ponds prior to being discharged back to the appropriate water system or neighbouring vegetation. HICKS stated that the water is tested regularly to ensure that it meets the approved water quality guidelines.

This component has received a status of, "Not Determined" due the findings in for Section 8.2.2 and

8.3.2 above.

**Compliance:** Not Determined

**Types of Compliance:** Construction

**Requirement Description:**

Condition #7 of Schedule B  
PUBLIC COMMUNICATIONS

Once any Holder receives the Land Act and Water Act authorizations required to commence construction, the Holders must jointly establish and maintain for the life of the Project a dedicated publicly available Project website. The website must be used for communicating information on Project status in order to ensure public awareness of ongoing activities and construction schedules, and to ensure general safety in and surrounding the Project area. Information must be kept up to date to ensure the above goals are achieved.

**Findings:**

The project's public website can be found here: <http://www.upperlillooethydro.com/>  
The site continues to be updated weekly and contains all of the information required in this condition.

**Compliance:** In

**Types of Compliance:** Construction

**Requirement Description:**

Condition #25 of Schedule B

COASTAL TAILED FROG

The Proponent must follow the following measures in relation to Coastal Tailed Frog:

- Adhere to the Human-Wildlife Interaction Management Plan and Coastal Tailed Frog monitoring program. Monitoring reports must be submitted to FLNR and EAO for review and comment.
- Construction must not be initiated in creek crossings that were confirmed by the Proponent's qualified professional to have Coastal Tailed Frog (refer to Application Appendix AL, Maps 8 and 9) during the period June 1 – October 31, to the satisfaction of FLNR. If unavoidable, as identified in the CEMP, construction will occur while implementing measures outlined in the Human-Wildlife Interaction Management Plan, including appropriate salvage.
- Clearing and earthworks within 100 m of suitable Coastal Tailed Frog streams must be overseen by the IEM. Vehicles and construction machinery must not ford known Coastal Tailed Frog streams at any time.
- Water diverted around construction site must be returned to the same stream immediately downstream of the work site when Coastal Tailed Frog tadpoles are observed.

**Findings:**

A coastal tailed frog stream North of the Upper Lillooet Powerhouse can be seen in the attached map of Appendix G. This map was pulled from the Human-Wildlife Interaction Management Plan dated August 19, 2013 EPP. This stream can be seen in Appendix A Photo 12 and Appendix B Photo 8. Trees have been felled across the stream and remnants of burnt trees surround the stream near to where the penstock will be crossing it.

According to MANCINELLI, Innergex currently does not have plans to remove or handle any danger trees cleared by provincial wildfire services with relation to the Coastal Tailed Frog stream and Stream 9. Should the trees felled on these two streams pose a threat to infrastructure downstream (e.g. penstock or FSR culvert, respectively) the felled trees will either be de-limbed to allow unimpeded creek flow and/or removed. The will be assessed and closed out, if required, as the project transitions from construction to operations.

According to MANCINELLI, there have been no evidence of tailed-frogs in the stream since the forest fire and provincial forestry crews felled the trees in the stream. Provincial forestry crews felled these trees as they were deemed to be "danger trees". MANCINELLI stated that a tailed frog salvage program for

the stream will still be conducted during the penstock crossing.

**Compliance:** In

**Types of Compliance:** Construction

**Requirement Description:**

Condition #35 of Schedule B

**PEBBLE CREEK HOT SPRINGS**

Prior to operations of the Upper Lillooet River HEF, the ULRPLP must install an alarm or other signaling system acceptable to FLNR at the Pebble Creek Hot Springs and at the powerhouse locations to warn of potentially dangerous flow releases. The ULRPLP must post signs at Pebble Creek Hot Springs and at the powerhouses informing the public of how to respond to the signals.

Before completion of the Lillooet River FSR realignment at Truckwash Creek the Holders must create a new trail to access the Upper Lillooet River near the Pebble Creek Hot Springs acceptable to FLNR.

**Findings:**

The new access trail was under construction with some progress depicted in the November 26, 2014 inspection. According to MANCINELLI, spring clean-up of the trail occurred in May 2015 and on September 2, 2015 RSTBC signed-off stating that Innergex had met all the terms of the Key Principle Agreement and Section 57 Authorization and that the trail is now under the jurisdiction of the Recreation Sites and Trails BC (RSTBC).

Forest fire activity has damaged the site and through some internal discussions between the Contractor, Innergex and Alistair McCrone, Recreational Officer for the Province of British Columbia, a temporary trail head route was agreed upon until permanent post-wildfire repairs are completed. See Appendix B photo 9 for a picture of the kiosk section close to the trail head on the Upper Lillooet FSR.

**Compliance:** In

**ACTIONS REQUIRED BY PROPONENT(S) & ADDITIONAL COMMENTS:**

EAO C&E will follow up on the item listed below in a future inspection:

1. Confirming that the steep embankments depicted in Appendix B photo 10 on the road accessing the Upper Lillooet Power House have adequate erosion and sediment control as per the requirements listed in Section 8.3.2 of the CEMP.
2. Confirming that the spoil pile located adjacent to the Boulder Intake Access Road depicted in Appendix A photo 10 has adequate erosion and sediment control as per the requirements listed in Section 8.2.2 of the CEMP.

**INSPECTION CONDUCTED BY:**

*Signature*

*Date Signed :*

Justin Carlson, Compliance Officer, Environmental Assessment Office

FINAL

**ENCLOSURE(S) TO PROPONENT(S) & DESCRIPTION:**

- Appendix A-Photos 1
- Appendix B-Photos 2
- Appendix C-Boulder Creek Mountain Goat UWR
- Appendix D-Boulder Creek (V30241) Area Closure
- Appendix E-WP-BDR-SP-07
- Appendix F-Aerial photo of Upper Lillooet Powerhouse
- Appendix G-Upper Lillooet CTF Locations
- Appendix H-IEM response to EAO C&E Inspection report
- Appendix I- PAG Material Analysis
- Appendix J-Golder and Associates review of ARD
- Appendix K-Area Restriction Order V30241

*REGULATORY CONSIDERATIONS:*

None at this time.

Environmental  
Assessment Office

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