

# Upper Lillooet Hydro Project

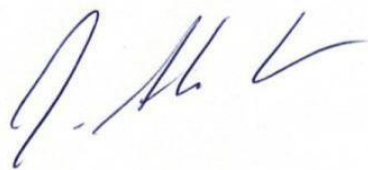

## Weekly Environmental Monitoring Report #3

Reporting Period: September 29th – October 5<sup>th</sup>, 2013

*Lillooet River Forest Service Road (FSR) realignment and Transmission Line Clearing (Seg. 1 & 2)*

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)

*Environmental Assessment Certificate No.E13-01 (Amendment 1)  
Occupant Licence to Cut (FSR realignment) No. L49717  
Occupant Licence to Cut (Tx Line S.1, S.2, S.5 Heli Pads) No. L49697  
Road Use Permit No. 6123-13-02*

Distribution List		Prepared By
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		<b>Date Prepared:</b> October 9, 2013 <b>Date Submitted:</b> October 11, 2013

**ACRONYMS:**

BCWQG	British Columbia Water Quality Guidelines
BDRHEF	Boulder Creek Hydroelectric Facility
CRT-EBC	CRT-EBC Construction Inc.
Ecofish	Ecofish Research Ltd.
ESC	Erosion and Sediment Control
FSR	Forest Service Road
Hedberg	Hedberg and Associates Ltd.
IEM	Independent Environmental Monitor
Innergex	Innergex Renewable Energy Inc.
ITM	Issue Tracking Matrix
LTC	Leave to Construct
MFLNRO	Ministry of Forestry, Lands and Natural Resources
MOE	Ministry of Environment
RVMA	Riparian Vegetation Management Area
SES	Sartori Environmental Services
TX Line	Transmission Line
ULRHEF	Upper Lillooet River Hydroelectric Facility
WQ	Water Quality
WEL	Westpark Electric Ltd.
WEMR	Weekly Environmental Monitoring Report

## 1.0 Summary of Site Inspections for Reporting Period

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

Day	Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key Environmental Information
Sunday	Sep 29	-	-	-
Monday	Sep 30	TH	Rain	<b>Lillooet River FSR Realignment at Truckwash Creek</b> <ul style="list-style-type: none"> <li>Continued FSR realignment works.</li> </ul> <b>Tx Line – Segment 1</b> <ul style="list-style-type: none"> <li>Hand falling within Class 1 &amp; 2 grizzly bear forage habitat (poles 1 – 3).</li> </ul>
Tuesday	Oct 1	TH	Sun and cloud	<b>Lillooet River FSR Realignment at Truckwash Creek</b> <ul style="list-style-type: none"> <li>Culvert inlet and outlet armouring.</li> <li>Continued FSR realignment works.</li> </ul> <b>Tx Line – Segment 1</b> <ul style="list-style-type: none"> <li>Hand falling in custom clearing block between poles 7 – 8.</li> </ul>
Wednesday	Oct 2	-	-	-
Thursday	Oct 3	TH,SS	Sun and cloud	<b>Lillooet River FSR Realignment at Truckwash Creek</b> <ul style="list-style-type: none"> <li>Continued FSR realignment works.</li> </ul> <b>Tx Line – Segment 2</b> <ul style="list-style-type: none"> <li>Feller buncher clearing within 100m of Coastal Tailed Frog stream (poles 18 – 20; Boulder Creek).</li> </ul>
Friday	Oct 4	TH	Periods of rain	<b>Lillooet River FSR Realignment at Truckwash Creek</b> <ul style="list-style-type: none"> <li>Off-site equipment maintenance was required; no active works.</li> </ul> <b>Tx Line – Segment 2</b> <ul style="list-style-type: none"> <li>Feller Buncher clearing (poles 20 – 27)</li> <li>Clean-up equipment (skidder, log loader) arrived to site.</li> </ul>
Saturday	Oct 5	-	-	-

**IEM Team Personnel:**

TH – Tom Hicks

SS – Stephen Sims

## 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.
Oct 3	TX Line RVMA clearing	Mumleqs, Hedberg, Innergex, SES,	<ul style="list-style-type: none"> <li>Reviewed clearing prescription for RVMA's and discussed/reviewed</li> </ul>	N/A

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
	prescription meeting	Ecofish	the approach to temporary watercourse crossings and discussed how watercourse crossings will be conducted upon approval of the LTC.	

### 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 Concern	Construction/Timing Restrictions & Mitigations
ULRHEF	Lillooet River FSR realignment at Truckwash Creek	<i>Grizzly Bear Class 1 suitable fall forage habitat (ULL-GB05)</i>	<i>IEM was onsite during clearing to oversee clearing activities and ensure clearing boundaries are minimized.</i>
TX Line	Segment 1 Pole location 0 – 4.5	<i>Grizzly Bear Class 1 suitable fall forage habitat (ULL-GB06 &amp; ULH-GB01)</i>	<i>IEM was onsite during clearing to oversee clearing activities and ensure clearing boundaries are minimized.</i>
	Segment 2 Pole location 18 - 20	<i>Coastal Tailed Frog stream (Boulder Creek)</i>	<i>IEM was onsite during clearing activities within the 100m stream buffer to ensure falling boundaries and the removal of functional course woody debris was minimized.</i>

## 4.0 Upper Lillooet River Hydroelectric Facility

### 4.1 Monitoring Results

#### 4.1.1 Lillooet River FSR Realignment at Truckwash Creek

##### Construction Activities

- Continued clearing, bulk excavation and road base construction on west side of Truckwash Creek from FSR realignment Stn 2+200m – 1+950m.
- Installation of rock armouring at the inlet and outlet of the culvert at Stn 2+056m (Photo 1) began on October 4<sup>th</sup> during dry conditions. Armouring was installed to protect the fill from eroding into the ephemeral watercourse.
- Ditch maintenance along Lillooet River FSR on the west side of Truckwash Creek.

Environmental Summary:

- IEM was onsite periodically throughout this reporting period to oversee general construction activities and full-time during clearing in Grizzly Bear Class 1 suitable fall forage habitat (ULL-GB05).
- Elevated turbidity was observed in Truckwash Creek (Photo 2) on September 30<sup>th</sup>; However, SES measured WQ to be within BCWQG and no construction-related exceedence above background levels was recorded (see *WQ section below*). Inputs from the FSR ditch on the west side of Truckwash Creek crossing had elevated turbidity likely due to both Project and non-Project related factors including routine (public and other industrial users) and realignment-related traffic on the Lillooet River FSR, periods of heavy precipitation, and recent ditch maintenance activities as part of construction activities to direct surface sheet flows off of the road surface. Further drainage upgrades to the Lillooet River FSR were completed this week to channel water off of the road surface and into adjacent vegetated areas where possible.
- No further environmental issues were observed.

Photos:



**Photo 1. Armoring of the culvert outlet at Stn. 2056.0 – Oct 1, 2013**



**Photo 2. Conditions at Truckwash Creek on Sept 30<sup>th</sup>. Minor input of sediment laden water did not result in WQ exceedence.**

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
Sept. 30	15:05	Truckwash Creek – upstream of works	6.19	8.59	7.1
	15:15	Truckwash Creek – downstream of works	6.17	13.1	7.1

### Recommendations

The following recommendations are provided for this reporting period:

- Continue to monitor the inlet and outlet of the culvert at FSR realignment Stn 2+056m to ensure no material erodes into the ephemeral channel during rain events.

### **4.2 Upcoming Works**

The realignment of the Lillooet River FSR and Truckwash Creek Bridge Crossing work is scheduled to continue for the next 5 - 6 weeks. Work will continue on the west heading of the alignment during the next reporting period. Work on the east heading will begin during the next reporting period.

## **5.0 Transmission Line**

### **5.1 Monitoring Results**

#### **5.1.1 Segment 1 Clearing (poles 0 – 13)**

#### Clearing Activities

- Trees were hand-felled within Class 1 Grizzly Bear forage habitat (poles 0-4.5).
- Feller buncher clearing within 100m of Coastal Tailed Frog habitat at Boulder Creek (Photo 3).
- Feller buncher completed clearing activities in Segment 1 and began clearing in Segment 2 during this reporting period. Clearing with the Feller Buncher has now progressed to pole 33.

#### Environmental Summary:

- IEM was onsite during clearing activities to oversee clearing activities and ensure clearing boundaries within Grizzly Bear suitable Class 1 fall forage habitat (ULL-GB06 & ULH-GB01) were minimized. No environmental concerns were noted.
- IEM was onsite during clearing activities within 100m of identified Coastal Tailed Frog stream (Boulder Creek) to ensure falling boundaries and the removal of functional course woody debris was minimized.
- No ESC or WQ issues were observed throughout the active works areas.

Photos:



**Photo 3. Feller buncher clearing within 100m of the Coastal Tailed Frog stream adjacent to Boulder Creek (Oct. 3, 2013).**



**Photo 4. Conditions within the Tx – line clearing section between poles 8 – 10. The stream 9 RVMA can be seen at the end of this alignment. (Oct. 1, 2013).**

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded during this reporting period. No clearing with RVMAs was completed during this reporting period. Clearing activities had no visual effect on WQ.					

**5.2 Recommendations**

No recommendations during this reporting period.

**5.3 Upcoming Works**

Transmission line clearing work will be in Segment 2 next week. No temporary or permanent access road construction or transmission line infrastructure construction will occur as part of the currently scheduled clearing activities. Clearing within RVMAs will occur next week once approvals are in place and a pre-activity meeting is conducted with all parties.

**6.0 Wildlife Sightings Report, Period**

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

*Please refer to the attached Wildlife Observation Form for a summary of **September 2013** sightings.*



## 7.0 Environmental Issues Tracking Matrix (ITM)

### 7.1 Hydroelectric Facilities (ULRHEF & BRDHEF)

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 Completion Date	Date Completed
<i>No outstanding environmental issues.</i>							

### 7.2 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 Completion Date	Date Completed
<i>No outstanding environmental issues.</i>							

**Upper Lillooet Hydro Project - Wildlife Observation Form (September 2013)**

Required Data						Optional Data			
Date	Time	Observer (Company)	Species or Description	Location	Comments	Sex	Number	Activity*	Photos
25-Sep-13	3:00:00 PM	Pontus Lindgren (WEI)	Deer (doe and fawn)	29 km Lillooet FSR	traveling		2	TF	no
24-Sep-13	5:50:00 AM	Gord Menzel (Mumleg)	Doe + 2 fawns	Pebble Creek	traveling		3	TF	no
25-Sep-13	6:30:00 PM	Brandon Bish (Mumleg)	Black Bear	5 km, Lillooet FSR	traveling		1	TF	no
26-Sep-13	7:00:00 AM	Bill Oegraff (Mumleg)	deer	22 km, Lillooet FSR	traveling	f	2	TF	no

- \* Activity :**
- BU: building nest
- FD: Feeding
- EX: excreting
- FL: fleeing
- GR: grooming
- IN: incubating
- DI: disturbed
- LI: unspecified
- RR: rearing
- ST: security/thermal
- TE: territorial (singing)
- TF: traveling, flying