

Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #11

Reporting Period: November 24th – November 30th, 2013

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)

Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-00303

Licence of Occupation (Upper Lillooet River HEF #232384) File No. 2409871

Licence of Occupation (Boulder Creek HEF #232386) File No. 2409998

Licence of Occupation (Transmission Line #2423386) File No. 2410654


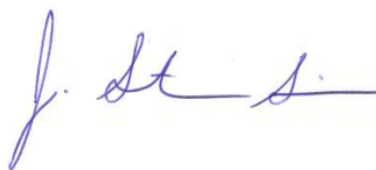
Occupant Licence to Cut (Amendments 1 & 2) No. L49717

Occupant Licence to Cut (TX Line S.1-S5, Heli Pads) No. L49697 (Amendment 1)

Occupant Licence to Cut (Construction Camp) No. L49698

Occupant Licence to Cut (BDR HEF - Intake, Powerhouse, Roads and Infrastructure) No. L49816

*General Wildlife Measure Exemption Approval Letter (Tx Line) File No. 78700-35/06 UWR and 39585-20 WHA
Road Use Permit No. 6123-13-02*

Distribution List		Prepared By
Name	Organization	
Trevor Andrews	Fisheries and Oceans Canada	 J. Alex Sartori, R. P. Bio. Independent Environmental Monitor &  J. Stephen Sims, R. P. Bio. Delegated Environmental Monitor
James Davies	MFLNRO – Water Allocation	
Nathan Braun	BC Environmental Assessment Office	
George Steeves	True North Energy – Independent Engineer	
Jennifer McCash	True North Energy – Independent Engineer	
Krys Muniak	Innergex Renewable Energy Inc.	
Oliver Robson	Innergex Renewable Energy Inc.	
Julia Mancinelli	Innergex Renewable Energy Inc.	
Robert Taylor	Innergex Renewable Energy Inc.	
Liz Scroggins	Innergex Renewable Energy Inc.	
Claude Denault	CRT-EBC Construction Inc.	
Éric Ayotte	CRT-EBC Construction Inc.	
Tim Wales	CRT-EBC Construction Inc.	
Jean Pelletier	CRT-EBC Construction Inc.	
Jordan Gagne	CRT-EBC Construction Inc.	
D'Arcy Soutar	Westpark Electric Ltd.	
Pontus Lindgren	Westpark Electric Ltd.	
David Dorrans	Lil'wat Nation	

ACRONYMS:

BCEAO	British Columbia Environmental Assessment Office
BCWQG	British Columbia Water Quality Guidelines
BDRHEF	Boulder Creek Hydroelectric Facility
BG	Background
BKL	BKL Consultants Ltd.
CRT-EBC	CRT-EBC Construction Inc.
DFO	Fisheries and Oceans Canada
DS	Downstream
Ecofish	Ecofish Research Ltd.
Ecologic	Ecologic Consulting
ESC	Erosion and Sediment Control
FSR	Forest Service Road
GWR	Mountain Goat Winter Range
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 Forests, Lands and Natural Resource Operations
MOE	Ministry of Environment
RVMA	Riparian Vegetation Management Area
SES	Sartori Environmental Services
TX Line	Transmission Line
ULRHEF	Upper Lillooet River Hydroelectric Facility
UWR	Ungulate Winter Range
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 On-site Environmental Information
Sunday	Nov. 24	-	Sun and cloud -	Lillooet River FSR Realignment at Truckwash Creek <ul style="list-style-type: none"> Bulk excavation at the east heading.
Monday	Nov. 25	-	Sun and cloud	Lillooet River FSR Realignment at Truckwash Creek <ul style="list-style-type: none"> Bulk excavation at the east heading.
Tuesday	Nov. 26	TH	Sun and cloud	Lillooet River FSR Realignment at Truckwash Creek <ul style="list-style-type: none"> Bulk excavation at the east heading. Ditch and cross ditch installation Demobilization TX Line – Segment 1-5 <ul style="list-style-type: none"> Boulder Creek right bank RVMA tree topping
Wednesday	Nov. 27	TH	Sun and cloud	ULRHEF & BDRHEF Construction Camp <ul style="list-style-type: none"> Piling fallen trees in preparation for site grading TX Line – Segment 1-5 <ul style="list-style-type: none"> Boulder Creek right bank and left bank RVMA tree topping
Thursday	Nov. 28	TH	Sun and cloud	BDRHEF Clearing and Site Investigation <ul style="list-style-type: none"> Clearing trees within BDRHEF Powerhouse footprint ULRHEF & BDRHEF Construction Camp <ul style="list-style-type: none"> Piling fallen trees in preparation for site grading
Friday	Nov. 29	TH	Overcast	BDRHEF Clearing and Site Investigation <ul style="list-style-type: none"> Clearing trees within BDRHEF Powerhouse footprint ULRHEF & BDRHEF Construction Camp <ul style="list-style-type: none"> Piling fallen trees in preparation for site grading
Saturday	Nov 30	-	-	-

IEM Team Personnel: TH – Tom Hicks

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.
Nov. 26	<i>Pre-work meeting</i>	Mumleqs, SES	<ul style="list-style-type: none"> Reviewed tree topping prescription for the Boulder Creek RVMA 	N/A
Nov. 28	<i>Pre-work Meeting and work plan review</i>	CRT-ebc, Hedberg, Mumleqs, SES	<ul style="list-style-type: none"> Reviewed work plan, environmental constraints, and clearing prescription for the clearing of the BDRHEF powerhouse footprint 	N/A

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
ULRHEF	Lillooet River FSR realignment at Truckwash Creek	Mountain Goat Winter Range Habitat (UL 11, UL 19 and Migration Corridor)	<p><i>IEM was onsite to oversee daily construction equipment shutdowns beginning one hour before and two hours after sunrise as well as two hours before and one hour after sunset.</i></p> <p>A two week shutdown of work activities within the Truckwash Creek Migration Corridor according to the Project's Mountain Goat Management Plan is in effect from November 17th until December 1st.</p> <p><i>Mountain Goat monitoring activities were not performed during this reporting period as no construction activities were performed within 500m of Mountain Goat critical winter habitats (UL 11, UL 19), or within 200m of the Migration Corridor.</i></p>
BDRHEF	BDRHEF Powerhouse	Coastal Tailed Frog (CTF) Habitat	<p><i>IEM was onsite and conducted precautionary CTF surveys prior to clearing/tree topping within 100m of Boulder creek. Surveys were concentrated in swallow wetted depressions and areas with significant amounts decaying coarse woody debris.</i></p>
Tx-Line	Boulder Creek RVMA		
BDRHEF	BDRHEF Powerhouse	Legally designated OGMA's	<p><i>IEM was onsite to oversee clearing activities within legally designated OGMA's to ensure clearing boundaries were minimized.</i></p>

4.0 Upper Lillooet River Hydroelectric Facility

4.1 Monitoring Results

4.1.1 Lillooet River FSR Realignment at Truckwash Creek

Construction Activities

- No construction activities occurred in the vicinity of the Truckwash Creek Migration Corridor during this reporting period.
- Construction at the east heading included clearing and grubbing, bulk excavation and road base construction. Work activities were suspended for the season on November 26th, 2013. Prior to demobilization ditching and cross-ditching was installed along steep sections of the alignment to provide temporary drainage and winterization of the site ([Photos 1 & 2](#)).

Environmental Summary:

- A two week shutdown of work activities within the Truckwash Creek Migration Corridor according to the Project's Mountain Goat Management Plan is in effect from November 17th until December 1st.
- BKL (noise monitoring consultants) have conducted a preliminary analysis of the data collected from acoustic noise monitoring equipment installed from October 30th to November 18th, 2013. The preliminary results show two instances when blasting activity caused an exceedance of the 75dB threshold limit. The two instances were of short duration with maximums of 78dB and 77dB, and were recorded at the lower Truckwash acoustic monitoring station. The upper station did not record any exceedance of the 75dB limit over the same time period. The IEM was conducting Mountain Goat monitoring during both blasting instances and no disturbance to Mountain Goats was observed. A detailed report is currently being prepared by BKL (noise monitoring consultants) and results will be summarized in the WEMR once complete. No changes to the adaptive Mountain Goat management plan are recommended at this time.
- Winterization measures were installed at the east heading of the Truckwash Creek FSR realignment prior to demobilization from site on November 26th, 2013. Works at the east heading have now been suspended for the season and will resume in the spring. The winterization measures installed included:
 - Temporary ditch lines were installed along unfinished sections of road that will be completed next season. Final drainage will be installed once the road construction is complete; and,
 - cross ditching was installed to direct water off of the road alignment and prevent runoff water from eroding steep sections of the road surface.
- No water quality concerns were noted during monitoring inspections this week.

Photos:



Photo 1. Two cross ditches installed across the road grade at the east heading of the Lillooet River FSR realignment (outside of the Truckwash Creek Mountain Goat Migration Corridor). (Nov.26, 2013).



Photo 2. Additional cross ditching installed across the road grade at the east heading of the Lillooet River FSR realignment (outside of the Truckwash Creek Mountain Goat Migration Corridor). (Nov.26, 2013)

Water Quality Results

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

4.1.2 Construction Camp

Clearing Activities

- Excavators were used to pile slash and fallen trees at the future construction camp location this week, beginning on November 27, 2013 ([Photo 3](#)). Two test pits were dug and filled in with the excavated material following the investigative works ([Photo 4](#)). All clearing and investigative works were conducted within the clearing boundary and all trees were piled within the camp area.

Environmental Summary:

- No environmental concerns were noted.

Photos:



Photo 3. Piling trees with an excavator at the construction camp. (Nov 27, 2013).



Photo 4. New test pit at the construction camp. (Nov 28, 2013).

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded during this reporting period. Hand falling activities had no visual effect on WQ.					

4.2 Recommendations

No recommendations are provided for this reporting period.

4.3 Upcoming Works

The realignment of the Lillooet River FSR and Truckwash Creek Bridge Crossing works has been suspended by the contractor. Work in the area is currently scheduled to resume in the spring.

Works scheduled to begin prior to winter shutdown, once permits and approvals are in place include:

- Grubbing and grading of the construction camp,
- Investigative borehole drilling and test pitting program, and
- Clearing of the ULRHEF powerhouse and intake footprints.

5.0 Boulder Creek Hydroelectric Facility

5.1 Monitoring Results

5.1.1 Clearing and Site Investigation

Clearing Activities

- Clearing trees from within the footprint of the Boulder Creek Powerhouse facilities was performed by certified fallers this week ([Photo 5](#)).

Environmental Summary:

- A precautionary CTF survey was completed prior to clearing within 100m of CTF habitat adjacent to Boulder Creek. The survey concentrated effort within shallow depressions and within and around piles of coarse woody debris.
- Fallers used bio-degradable bar/chain oil when clearing within 30m of Boulder Creek. ([Photo 6](#))
- No CTF were observed and no environmental concerns were noted during clearing activities.
- The IEM was onsite to monitoring and ensure clearing within the designated OGMA (adjacent to Boulder Creek) was minimized.

Photos:



Photo 5. Results of clearing within the Boulder Creek Powerhouse footprint. Looking towards the future tail race location (Nov.28, 2013).



Photo 6. Re-fueling with bio-degradable bar oil. (Nov 28, 2013).

Water Quality Results

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

5.2 Recommendations

No recommendations are provided for this reporting period.

5.3 Upcoming Works

Investigative trenching and test pitting is scheduled to begin at the Boulder Creek powerhouse next week.

6.0 Transmission Line

6.1 Monitoring Results

6.1.1 Segments 1-5

Clearing Activities

- Tree topping with the Boulder Creek RVMA was completed during this reporting period ([Photos 7 & 8](#)).

Environmental Summary:

- A precautionary CTF survey was completed prior to works commencing within the RVMA. The survey concentrated effort within shallow depressions and within and around piles of coarse woody debris.
- Fallers used bio-degradable bar/chain oil when working within 30m of Boulder Creek
- No CTF were observed and no environmental concerns were noted during topping activities.

Photos:



Photo 7. Results of tree topping on the right bank of the Boulder creek RVMA (Nov.27, 2013).



Photo 8. Results of tree topping on the left bank of the Boulder creek RVMA (Nov.27, 2013).

Water Quality Results

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Temperature (°C)
No WQ measurements were recorded during this reporting period.					

6.2 Recommendations

No recommendations are provided for transmission line activities during this reporting period.

6.3 Upcoming Works

The clearing of access trails and creation of helicopter landing pads between Poles 142-152 (Segment 6) is scheduled to begin next week once all approvals are received. RVMA tree topping in Segment 2 is also scheduled to occur next week.

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

7.1 Mountain Goat Monitoring Program

No construction activities occurred within 500m of UWR habitats (UL-11, UL-19) or in the vicinity of the Migration Corridor during this reporting period; therefore no Mountain Goat monitoring was completed.

The two week fall shutdown has been enacted according to the mitigation measures outlined in the Mountain Goat Management Plan. The shutdown is effected until December 1st, 2013.

8.0 Environmental Issues Tracking Matrix (ITM)

8.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

ITM Tracking Legend:

Work Item Open
Work Item Complete
Issue Closed

Issue Tracking		Environmental Issue		Mitigation Measures			
ID No.	Status	Location	Issue Description	Action Taken/Recommended	Date of Identification	Targeted/Completion Date	Date Completed
<i>No outstanding environmental issues.</i>							

8.2 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>							