

Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #13

Reporting Period: December 8th – December 14th, 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 2)
Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-00303
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

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) 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 (BDRHEF - 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

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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	Dec 8	AA, AS, TH	Clear skies	<p>ULRHEF & BDRHEF Site Investigation</p> <ul style="list-style-type: none"> • Drilling completed at the south (right bank) of the ULRHEF intake and equipment mobilized to the ULRHEF Powerhouse • Drilling completed at ULRHEF Powerhouse <p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued
Monday	Dec 9	AA, AS, TH	Clear skies	<p>ULRHEF & BDRHEF Site Investigation</p> <ul style="list-style-type: none"> • Mobilization to the ULRHEF intake to drill a final borehole on the access road north of the intake location <p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm began <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • Stream 27A RVMA tree topping completed
Tuesday	Dec 10	AS, DA, TH	Clear skies	<p>ULRHEF & BDRHEF Site Investigation</p> <ul style="list-style-type: none"> • Drilling on the access road north of the ULRHEF intake location <p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm continued
Wednesday	Dec 11	AS, TH, VD	Clear skies	<p>ULRHEF & BDRHEF Site Investigation</p> <ul style="list-style-type: none"> • Drilling completed on the intake access road north of the ULRHEF intake • All equipment demobilized to the laydown at 37 km of the Lillooet River FSR <p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm continued
Thursday	Dec 12	TH	Snow	<p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm continued <p>TX Line – Segment 2</p> <ul style="list-style-type: none"> • Stream 30A RVMA tree topping completed
Friday	Dec 13	-	-	<p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm continued
Saturday	Dec 14	-	-	<p>ULRHEF & BDRHEF Construction Camp</p> <ul style="list-style-type: none"> • Grubbing and grading continued • Construction of a noise barrier berm continued

IEM Team Personnel: AA – Anthony Andrews; AS – Anne Sutherland; DA – Danita Abraham; TH – Tom Hicks; VD – Vanessa Dan

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.
Dec. 12	<i>Pre-work meeting</i>	Mumleqs, SES	<ul style="list-style-type: none"> Reviewed tree topping prescription for the Stream 30A RVMA. 	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 & ULREF Intake	<i>Mountain Goat Winter Range Habitat (UL 11, UL 19 and Migration Corridor)</i>	<p><i>Mountain Goat monitoring activities were performed during this reporting period as construction activities at the ULRHEF intake were performed within 500m of Mountain Goat critical winter habitats (UL 11, UL 19), or within 200m of the Migration Corridor.</i></p> <p><i>Noise monitoring equipment was installed on December 2nd to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from construction/investigative drilling activities. No adaptive noise mitigation strategies have been implemented or are recommended at this time.</i></p>

4.0 Upper Lillooet River Hydroelectric Facility

4.1 Monitoring Results

4.1.1 Intake and Powerhouse Site Investigations

Construction Activities

- Borehole drilling within the powerhouse footprint was completed during this monitoring period ([Photo 1](#)).
- Two boreholes were drilled and logged near the ULRHEF intake during this reporting period. The first was completed on the south bank of the Lillooet River at the future intake location. The second was completed on the access road immediate north of the future intake location ([Photo 2](#)).

Environmental Summary:

- No tree falling or ground disturbance within 100m of the Lillooet River was completed during this monitoring period.
- Water required for drilling activities at the powerhouse and intake was extracted from the production water well at the construction camp. The water was towed to the drill sites in small tank trailers by pick-up trucks. The volumes of water used during drilling activities did not create detectable amounts of sediment laden runoff and quickly froze or infiltrated to ground in close proximity to the boreholes. No water quality concerns were noted.
- Drilling activities at the ULRHEF powerhouse were completed at a distance greater than 50m from the identified archeology site in the vicinity of the future powerhouse location; therefore, an archeological monitor was not required or present onsite during drilling activities. No disturbance to the archeology site was observed.
- The noise monitoring equipment installed on December 2, 2013 was removed on December 11, following completion of all snow plowing and work activities within 500m of UWR habitats (UL11, UL19, and Migration Corridor). The equipment was used to monitor background noise levels and potential exceedances of the 75dbA noise level maximum resulting from construction/investigative drilling activities in the vicinity of the ULRHEF intake. Noise monitoring data will be summarized in the forthcoming report from BKL noise monitoring consultants. No adaptive noise mitigation strategies have been implemented at this time.

Photos:



Photo 1. Drilling equipment in operation and site conditions at the ULRHEF powerhouse (Dec 8, 2013).



Photo 2. Borehole drilling on the access road north of the ULRHEF intake. (Dec 9, 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 continued to pile slash and fallen trees at the future construction camp location this week. All works were conducted within the clearing boundary.
- Grubbing and grading of the construction camp continued during this monitoring period ([Photo 3](#)).
- Organic soils stripped during the grubbing works were temporarily piled in rows, and once the organic material was sorted from large rocks, it was used to construct a visual/auditory berm. The berm was compacted in lifts of material with a dozer and by running over the surface with rock trucks. This berm will separate the future camp location from the works yard location ([Photo 4](#)).

Environmental Summary:

- No environmental concerns were noted.

Photos:



Photo 3. Overview of grubbing activities completed at the future construction camp location (Dec 10, 2013).



Photo 4. Construction of the visual/auditory berm at the future construction camp location. (Dec 11, 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

Grubbing, grading, and construction of a visual/auditory berm will continue at the future construction camp location next week. Once snowfall begins to impact work activities, CRT-EBC plans to demobilize all construction equipment from site and suspend works for the winter. At the latest, CRT-EBC plans to demobilize from site by December 19th, 2013.

5.0 Transmission Line

5.1 Monitoring Results

5.1.1 Segments 1 – 6

Clearing Activities

- Tree topping within the Stream 27A RVMA and the Stream 30A RVMA was completed during this reporting period ([Photo 6 & 7](#)).

Environmental Summary:

- A review of the clearing prescription was performed prior to tree topping within the Stream 30A RVMA. Fallers used bio-degradable bar/chain oil when working within 30m of Stream 30A. No environmental concerns were noted during topping activities.

Photos:



Photo 6. Conditions of Stream 27A following removal of all slash and debris from within the channel, which was frozen over on Dec 9, 2013.



Photo 7. Conditions on the Stream 30A RVMA following completion of tree topping activities (Dec 12, 2013).

Water Quality Results

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

5.2 Recommendations

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

5.3 Upcoming Works

No clearing or TX line works are scheduled to occur during the next monitoring period. Works have been suspended until further notice.

6.0 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

7.0 Mountain Goat Monitoring Program

As of December 2nd, the IEM reinitiated a Mountain Goat Monitoring program as works resumed near the ULRHEF intake. The IEM or designate was on site to monitor Mountain Goat activity within 500 m of clearing/drilling activities at the future ULRHEF intake location. Mountain Goats will be monitored from:

- Keyhole Falls viewing the south side u-2-002 UL11 – MG-OBS02 (10U 466593 5613988)

Monitoring effort will occur between sunrise and sunset. Construction activities will cease if a goat(s) are observed moving towards the ULRHEF intake and/or if a goat(s) are observed within a 500m line of site of a construction activity. No goats were observed within 500m line of sight of drilling activities and no work stoppages were required.

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

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>							

