

Upper Lillooet Hydro Project



Weekly Environmental Monitoring Report #8

Reporting Period: November 3rd – November 9th, 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)
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 (FSR realignment) No. L49717
DFO Letter of Advice File No. 09-HPAC-PA2-00303

Occupant Licence to Cut (TX Line S.1-S5, Heli Pads) No. L49697 (Amendment 1)
General Wildlife Measure Exemption Approval Letter (Tx Line) File No. 78700-35/06 UWR and 39585-20 WHA
Section 57 Authorization (hiking trail construction) File No. 16660-20
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:

BCAO	British Columbia 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. 3	DA, KR,	Sun and cloud	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Drilling and blasting at the west heading. • Bulk excavation along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.
Monday	Nov. 4	DA, KR,TH, SS, VD	Sun	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Drilling and blasting at the west heading. • Bulk excavation and tree removal along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.
Tuesday	Nov. 5	AS, DA, TH	Sun and cloud	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Drilling and blasting at the west heading. • Bulk excavation along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>ULRHEF & BDRHEF Seismic Survey Program</p> <ul style="list-style-type: none"> • IEM issued verbal stop work order prior to beginning the seismic survey program (ITM#ULR01). <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.
Wednesday	Nov. 6	AA, AS, DA, ML	Sun and cloud	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Drilling and blasting at the west heading. • Bulk excavation along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>ULRHEF & BDRHEF Seismic Survey Program</p> <ul style="list-style-type: none"> • No survey activities. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.
Thursday	Nov. 7	-	Snow	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • No activities. <p>ULRHEF & BDRHEF Seismic Survey Program</p> <ul style="list-style-type: none"> • No survey activities. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.

Day	Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Friday	Nov. 8	AS, VD, TH	Overcast	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Drilling and blasting at the west heading. • Bulk excavation along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>ULRHEF & BDRHEF Seismic Survey Program</p> <ul style="list-style-type: none"> • Verbal stop work order lifted. • Seismic survey program began at ULRHEF intake. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.
Saturday	Nov 9	AS, ML	Mix of rain and snow	<p>Lillooet River FSR Realignment at Truckwash Creek</p> <ul style="list-style-type: none"> • Blasting at the west heading excavation. • Bulk excavation along east heading. • Goat Monitoring at MG-OBS01, MG-OBS02 and MG-OBS03. <p>ULRHEF & BDRHEF Seismic Survey Program</p> <ul style="list-style-type: none"> • Seismic survey program began at BDRHEF powerhouse. <p>TX Line – Segment 1-5</p> <ul style="list-style-type: none"> • No activities.

***IEM Team Personnel:** AA – Anthony Andrews; AS – Anne Sutherland; DA – Danita Abraham; KR – Kirstie Rendall; ML – Mackenzie Lee; 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.
Nov. 4	Site tour and Inspection	BCAO, MFLNRO, SES, Innergex, Hedberg, CRT-EBC	<ul style="list-style-type: none"> • Current timing restrictions and mitigation measures in place. • Tour of active work areas. • Clearing plans 	N/A
	Pre-Activity meeting	SES, CRT-EBC	<ul style="list-style-type: none"> • Overhanging tree removal procedure at Truckwash Creek east (left) bank. 	N/A
Nov. 5	Verbal Stop Work Order <i>(issued by IEM to CRT-EBC)</i>	SES, CRT-EBC	<ul style="list-style-type: none"> • Verbal Stop Work Order issued by IEM prior to commencement of seismic survey activities, to enforce work planning processes. <i>(Refer to Section 4.1.2 for further information)</i> 	ULR01
Nov. 5 – 8	Formal written (email) Stop Work Order <i>(issued by Innergex to CRT-EBC) & subsequent conference calls</i>	SES, CRT-EBC, Innergex	<ul style="list-style-type: none"> • Following the issuance of verbal stop work order by the IEM, Innergex issued a written Stop Work Order to CRT-EBC identifying rationale behind the order, potential environmental and permit/approval implications, and action items required to be completed by CRT-EBC prior to rescission. Action items were completed and conditional rescission of the written stop work 	ULR01

Date	Communication Type	Participants	Issues Discussed	ITM ID No.
			order was issued on the evening of Nov. 7 pending environmental orientation prior to commencement of works. <i>(Refer to Section 4.1.2 for further information)</i>	
Nov. 8	CRT-EBC environmental orientation	SES, CRT-EBC, Frontier Surveying	<ul style="list-style-type: none"> Environmental orientation provided to seismic survey crew by CRT-EBC. Work plan review. Rescission of verbal Stop Work Order. 	ULR01 <i>(closed)</i>
Nov. 4 – Nov. 9	Email updates	WEL, SES	<ul style="list-style-type: none"> Daily schedule updates. 	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 & BDRHEF	Lillooet River FSR realignment at Truckwash Creek	<i>Grizzly Bear Class 1 suitable fall forage habitat – ULL-GB05 (Class 1 Summer & Fall)</i>	<i>IEM was onsite to oversee clearing and blasting activities within 500m of verified Class 1 Grizzly Bear forage habitat to ensure clearing boundaries were minimized and appropriate noise mitigation measures were implemented.</i>
	ULRHEF intake	<i>Identified Archeology Site</i>	<i>An archeological monitor was onsite to oversee seismic survey activities within 50m of the identified archeology site located near ULRHEF intake.</i>
	BDRHEF powerhouse	<i>Coastal Tailed Frog Stream</i>	<i>The IEM was onsite during seismic survey work activities within 100m of an identified Coastal Tailed Frog stream (Boulder Creek).</i>

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
<p>ULRHEF & BDRHEF</p>	<p>Lillooet River FSR realignment at Truckwash Creek</p>	<p><i>Mountain Goat Winter Range Habitat (UL 11, UL 19 and Migration Corridor)</i></p>	<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><i>Noise monitoring equipment was installed to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from blasting activities. Initial data will be analyzed during the following reporting period and, if required, adaptive drilling/blasting noise mitigation strategies will be implemented.</i></p> <p><i>Completion of daily snow depth monitoring within the Truckwash Creek Migration Corridor according to the Project's Mountain Goat Management Plan. A two week shutdown of work activities will occur once a significant snowfall is recorded (average snow depth of 10cm in forested habitat or 30cm in open terrain).</i></p> <p><i>Mountain Goat monitoring activities continued, at three established observation stations (MG-OBS01, MG-OBS02 & MG-OBS03). Stations are established to monitor three Mountain Goat critical winter habitats (UL 11, UL 19, and Migration Corridor), and each station was visited (if weather conditions permitted) for a minimum of two hours daily on a rotating schedule.</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

- Continued drilling, blasting, grubbing, bulk excavation and road base construction on west side of Truckwash Creek for the FSR realignment. The top switchback alignment was brought to grade and winterization works, including ditching and culvert armoring, were completed during this reporting period.

- Construction at the east heading included clearing and grubbing, bulk excavation and road base construction. Winterization works included; armouring of the 1600mm culvert inlet ([Photo 1](#)), as well as ditching and cross ditching in completed sections of road grade ([Photo 2](#)). Bulk excavation at the first switchback was the focus of this week's activities at the east heading.
- Removal of a large tree overhanging Truckwash Creek was conducted at the east bridge abutment location of Truckwash Creek FSR realignment (within 500m of ULL-GB05) on November 4th, 2013.

Environmental Summary:

- IEM was onsite periodically throughout this reporting period to oversee general construction activities (including grubbing) and full-time during clearing in Grizzly Bear Class 1 suitable summer and fall forage habitat (ULL-GB05). Clearing limits were minimized.
- Acoustic noise monitoring equipment was installed on October 30th, 2013, above and below the west heading of the Truckwash Creek realignment work area. The upper and lower station locations were chosen in coordination with Ecofish and Ecologic Mountain Goat specialists. Acoustic monitoring of blasting activities began November 1st to document adherence to blasting noise level restrictions within 500m of the Mountain Goat UWR (specifically UL-11) and within the migration corridor. Blast mats were used as the primary noise reduction mitigation for all blasts beginning November 1st, 2013. The data recorded after November 1st, 2013 is currently being analysed by BKL (noise monitoring consultants) and results of the data analysis is currently being compiled and will be summarized in the WEMR once complete.
- On November 4th, an onsite pre-activity meeting was held with the CRT-EBC supervisor, excavator operator, tree faller, and the IEM to discuss the procedure for removing the large tree overhanging Truckwash Creek at the east bridge abutment location. Water quality concerns and equipment operation within the riparian area were discussed. As planned, the excavator operator used the excavator to push the tree onto the bank after the faller has completed a wedge cut at the base of the tree. The tree was successfully kept on the bank and no material entered Truckwash Creek. No water quality or environmental concerns were noted.
- The installation of winterization measures recommended in the previous report (WEMR #7) has begun to ensure the site is stabilized prior to the winter shutdown. The following recommended winterization measures have been completed:
 - culvert inlet armouring finalization at the 1600mm culvert located along east alignment (armouring to be completed in the dry);
 - removal of woody debris within the channel upstream of the 1600mm culvert;
 - formalization and armouring of ditch lines along complete sections of road; and,
 - cross ditching across steep road grades along complete sections of road.

The remainder of winterization activities will be installed as works are finalized or completed for the season. These winterization measures include:

- repair and armouring of ditch lines along sections of road being actively constructed; and,
- cross ditching across steep road grades along sections of road being actively constructed.

Assessed fill slopes and spoil areas are stable from an ESC perspective, as water is currently being direct away from the edges of all fill slopes and spoil slopes with ditches and appropriately graded surfaces. These slopes should be seeded with an approved seed mixture in the spring to promote re-vegetation according to the site reclamation prescriptions in the Project's EPP. Final road grading and surfacing will be completed in the spring.

Photos:



Photo 1. Culvert inlet armouring being installed in the dry above the waterline at the 1600mm culvert, following hand removal of woody debris from around the culvert inlet. The IEM was onsite to monitor this work and no WQ concerns were noted (Nov 8, 2013).



Photo 2. Ditching and cross ditching installed along completed section of road alignment on the east heading of Truckwash Creek. Work was completed as part of winterization of the site. (Nov 8, 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 ULRHEF & BDRHEF Seismic Survey Program

Construction Activities

- Seismic survey work was completed on November 8th at the ULRHEF intake area ([Photo 3](#)). The IEM and archeology monitor were onsite to monitor works and oversee activities with 50m of the identified archeology site, respectively.

- Seismic survey work was completed at the BDRHEF powerhouse on November 9th ([Photo 4](#)). The IEM was onsite to monitor work activities within 100m of Coastal Tailed Frog (CTF) habitat (Boulder Creek). Prior to work occurring in the area the IEM conducted a precautionary amphibian sweep along alignment to ensure no CTFs were present. No CTFs were observed or relocated during the precautionary sweep.

Environmental Summary:

- The IEM was informed of a seismic survey program to be completed at the ULRHEF intake and powerhouse areas, as well as the BDRHEF powerhouse area during a pre-activity meeting on November 5th. During attendance of this meeting, the IEM noted the following deficiencies:
 - Lack of an IEM approved work plan, and
 - Lack of an IEM approved environmental orientation.

As a result of these deficiencies the IEM issued a verbal stop work order on the seismic surveys prior to the start of works (see *ITM ULR01 – Closed*).

Following the issuance of a verbal Stop Work Order by the IEM on the Morning of November 5th, Innergex issued a formal written Stop Work Order on November 5th to CRT-EBC identifying the rationale for ceasing works as the lack of appropriate contractor work planning processes and insufficient IEM/Innergex notification. Innergex identified the following action items that required completion prior to the rescission of the order:

- A site orientation has been approved, as per the requirements of the CEMP. Approval will require attendance to the orientation by Innergex and the IEM;
- Field crews have completed the approved site orientation described above;
- Work Plans that clearly outline the proposed activities (what, where, how, and when), and demonstrate that the proposed activities are in compliance with the Environmental Assessment Certificate, permits and approvals, the CEMP (including the EPPs – site specific ESC Plan, Soil Salvage Plan, etc.) and the Project constraints (e.g. archaeological, environmental etc.) and been reviewed and approved;
- Kick-off meetings for the work, to be attended by Innergex and the IEM, have been scheduled; and,
- The IEM's verbal stop work order issued November 5, 2013 has been lifted.

CRT-EBC submitted a Seismic Work Plan and environmental orientation for IEM and Innergex review and comment on November 7th. The revised Work Plan and environmental orientation package were approved by the IEM and Innergex on November 7th, and conditional rescission of the order was issued pending the completion of environmental orientation and kick-off meeting scheduled for the following morning. The verbal Stop Work Order was lifted on November 8th following IEM attendance of the environmental orientation provided to work crews by CRT-

EBC and a formal seismic works kick-off meeting. Seismic surveys began once the verbal Stop Work Order was lifted.

This issue has now been resolved; however, it highlights the need for regular scheduling updates, clear communication protocols, and enforces the need to develop and adhere to appropriate work planning processes. As the IEM was on-site on November 5th prior to the start of any construction activities related to the seismic testing, environmental impacts were non-existent.

Photos:



Photo 3. Seismic survey work being conducted in the presence of the archeology monitor at the ULRHEF intake area (Nov 8, 2013).



Photo 4. Seismic survey alignment at the BDRHEF powerhouse area. The IEM conducted a precautionary Coastal Tailed Frog salvage prior to the start of work within 100m of Boulder Creek (Nov 9, 2013).

Water Quality Results

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

4.2 Recommendations

The following recommendations are provided for this reporting period:

- Based on recent monitoring results, the IEM recommends continued implementation of current blast mitigation measures (maximum 10-hole sets and use of minimum required charges) with the addition of blast mats for all remaining blasting activities within 500m of ULL-GB05 and within 500m of the Mountain Goat UWR (specifically UL-11) or within the migration corridor.
- In regards to the issuance and subsequent rescission of a Stop Work Order related to seismic testing activities, the IEM recommends further discussions with the contractor and Innergex to promote proactive communications and ensure work planning processes are satisfactory to all parties involved.

4.3 Upcoming Works

The realignment of the Lillooet River FSR and Truckwash Creek Bridge Crossing work is currently scheduled to continue for the next 1 - 2 weeks. Work will continue on both the east and west headings of the alignment during the next reporting period. Blasting at the west heading is now completed for this season. Continued bulk excavation of the switchbacks at the east heading is expected to continue next week.

The seismic survey program is currently scheduled to begin at the ULRHEF intake on November 10th and scheduled to be completed November 12th.

5.0 Transmission Line

5.1 Monitoring Results

5.1.1 Segments 1-5

Clearing Activities

- No clearing activities occurred during this reporting period.

Environmental Summary:

- No ESC or WQ issues were observed.

Photos:

No Photos were taken during this reporting period.

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

Transmission line clearing work is currently on hold. No temporary or permanent access road construction or transmission line infrastructure construction will occur as part of the currently scheduled clearing activities. The burning of slash piles will commence once appropriate venting is forecast.

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

6.1 Mountain Goat Monitoring Program

As of November 1st, the IEM initiated a Mountain Goat Monitoring program. The IEM or designate was on site to monitor Mountain Goat activity within 500 m of clearing/construction activities at the ULR HEF downstream tunnel portal. Mountain Goats will be observed from three 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).

Monitoring effort will be split between all three sites between sunrise and sunset, unless safety concerns precluding from doing so. The order of site visits will rotate daily. Construction activities will cease if a goat(s) are observed moving towards the migration corridor at MG-OBS01 and/or if a goat(s) are observed within a 500m line of site of a construction activity, and/or moving towards the migration corridor from MG-OBS03 or other location.

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

7.0 Environmental Issues Tracking Matrix (ITM)

7.1 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
ULR#1	Closed	ULRHEF intake and powerhouse; BDRHEF powerhouse	<p>The IEM was informed of a seismic survey program during a pre-activity meeting on November 5th.</p> <p>The IEM noted the following deficiencies:</p> <ol style="list-style-type: none"> Lack of an IEM approved Work Plan. Lack of an IEM approved environmental orientation. <p>As a result of these deficiencies the IEM issued a verbal stop work order prior to the start of works to enforce work planning processes and the requirement for an IEM approved environmental orientation. Please refer to report Section 4.1.2 for further information.</p>	<p>CRT-EBC submitted a Work Plan and environmental orientation for IEM and Owner review and comment.</p> <p>The revised work plan and environmental orientation were approved by the IEM on November 7th, 2013.</p> <p>The verbal Stop Work Order was lifted on November 8th following IEM attendance of the environmental orientation provided to work crews by CRT-EBC, and a seismic testing kick-off plan.</p>	November 5 th , 2013	November 8 th , 2013	November 8 th , 2013

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
No outstanding environmental issues.							

MOUNTAIN GOAT DAILY OBSERVATION FORM

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s):

Date (YYYY-MM-DD):

Weather (cloud cover, precipitation and temperature):



106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to steve@sartorienv.com following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates <i>(approximate center of observation area)</i>	Daily Start Time <i>(24hr clock)</i>	Daily End Time <i>(24hr clock)</i>
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	10h30	12h30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	7h59	10h01
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	12h51	14h50

Daily form #	1	of	2
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If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site <i>(indicate if location other than OBS site)</i>	Time <i>(use 24hr clock)</i>	UTM Coordinates or Waypoint <i>(10U)</i>	Species Observed <i>(indicate Mountain Goat or other species)</i>	Observations <i>(be specific - visual sign, track, other sign)</i>	# of Animals	Age <i>(if known - refer to attached info sheet)</i>	Sex <i>(if known - refer to attached info sheet)</i>	Description of Activities <i>(feeding, moving, etc.)</i>	Comments <i>(habitat, snow conditions, etc.)</i>	Photo #s
FSR @ 30.5 Km	7h00		Mule Deer	Visual	2	Sub-adults		Moving East	Moved from road to forested area; No snow	None
FSR @ 30.5 Km (UWR u2-002 RA7)	7h02	E476696 N5604527	Mountain Goats	Visual	4-5	1 Adult		Resting	Cliff side on east side of FSR	None
MG-OBS02									No goat observations	49 - 51
MG-OBS01									No goat observations; Audible construction noise throughout monitoring	None

MOUNTAIN GOAT DAILY OBSERVATION FORM

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Kirstie Rendall, Danita Abraham

Date (YYYY-MM-DD): 2013-11-04

Weather (cloud cover, precipitation and temperature): Partly cloudy / dry / -5 C



106-185 forester street, north vancouver, bc v7h 2m9
office tel 987.5588 fax 987.7740

Please submit **Mountain Goat Daily Observation Form** in person to a representative of Sartori Environmental Services (**Tom Hicks** or **Stephen Sims**) or by email to steve@sartorienv.com following each day of monitoring.

Mountain Goat Observation Site	UWR/Migration Corridor - Location	UTM Coordinates (approximate center of observation area)	Daily Start Time (24hr clock)	Daily End Time (24hr clock)
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	10h30	12h30
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	7h59	10h01
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	12h51	14h50

Daily form #	2	of	2
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If more space is needed in the below table, please fill out additional daily forms and indicate total number of forms above.

Observation Site <i>(indicate if location other than OBS site)</i>	Time <i>(use 24hr clock)</i>	UTM Coordinates or Waypoint <i>(10U)</i>	Species Observed <i>(indicate Mountain Goat or other species)</i>	Observations <i>(be specific - visual sign, track, other sign)</i>	# of Animals	Age <i>(if known - refer to attached info sheet)</i>	Sex <i>(if known - refer to attached info sheet)</i>	Description of Activities <i>(feeding, moving, etc.)</i>	Comments <i>(habitat, snow conditions, etc.)</i>	Photo #s
On trail to MG-OBS01	12h40		Mule Deer	Tracks near FSR	1				Forested	None
MG-OBS03	13h59	E469059 N5615688	Mountain Goats	Visual on western edge of range, near top of mtn.	2	1 sub, 1 ad.	1 male, 1 u/k	Feeding; Not moving much	Sparsely forested area w/ snow; In tree well; Snow few days old; Along treeline	54 - 56
MG-OBS03	14h30	E469059 N5615688	Mountain Goats	Visual on western edge of range, near top of mtn.	2	1 year, 1 ad.	1 u/k, 1 fem.	Moving up mountain	Sparsely forested area with snow; Snow few days old; Goats along treeline	None
FSR @ 31.5 Km (UWR u2-002 RA7)	15h25	E476068 E5605238 UWR u2-002 RA7	Mountain Goats	Visual on east side of FSR	4	1 adult		Resting and feeding	Cliff side; No snow	none

