Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #12

Reporting Period: December 1st – December 7th, 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 (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

	Distribution List	Prepared By
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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 1	-	Clear skies	 ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading
Monday	Dec 2	KR, VD, TH	Clear skies	 ULRHEF & BDRHEF Site Investigation Test pit/trenching at BDRHEF Powerhouse Clearing snow to access the ULRHEF intake ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading TX Line – Segment 1-5 Stream 27A RVMA tree topping
Tuesday	Dec 3	CB, DA, KR, ML, VD	Clear skies	 ULRHEF & BDRHEF Site Investigation Test pit/trenching at BDRHEF Powerhouse Site preparation and drilling on the north (left bank) of the ULRHEF intake ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading TX Line - Segment 6 No construction activities associated with the temporary minor works (trail construction and helicopter pads) occurred
Wednesday	Dec 4	CB, DA, KR, ML, VD	Clear skies	 ULRHEF & BDRHEF Site Investigation Test pitting complete at the BDRHEF Powerhouse Falling trees at the ULRHEF powerhouse site Drilling continued on the north (left bank) of the ULRHEF intake ULRHEF intake ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading TX Line – Segment 6 No construction activities associated with the temporary minor works (trail construction and helicopter pads) occurred
Thursday	Dec 5	CB, DA, KR, ML, VD	Clear skies	 ULRHEF & BDRHEF Site Investigation Falling trees and processing timber at the ULRHEF powerhouse site Drilling continued on the north (left bank) of the ULRHEF intake Test pitting at two sites adjacent to the Pebble Creek Mainline road ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading TX Line - Segment 6 Construction activities associated with the temporary minor works (trail construction and helicopter pads) commenced and were subsequently suspended for the season due to weather/site conditions



Day	Date	IEM Team Personnel	Weather Conditions	Monitoring Locations & Key On-site Environmental Information
Friday	Dec 6	AA, AS, TH	Clear skies	 ULRHEF & BDRHEF Site Investigation Falling trees and test pitting at the ULRHEF powerhouse site Drilling completed on the north (left bank) and began at the south (right bank) of the ULRHEF intake ULRHEF & BDRHEF Construction Camp Piling fallen trees in preparation for site grading TX Line – Segment 1-5 Stream 27A RVMA tree topping
Saturday	Dec 7	AA, AS, TH	Clear skies	 ULRHEF & BDRHEF Site Investigation Backfilling test pits at the ULRHEF powerhouse site Drilling continued at the south (right bank) of the ULRHEF intake ULRHEF intake ULRHEF & BDRHEF Construction Camp Grubbing and grading began following pre-work meeting TX Line – Segment 1-5 No activities

IEM Team Personnel: AA – Anthony Andrews; AS – Anne Sutherland; CB – Colin Bailey; 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.
Dec. 2	Pre-work meeting	Mumleqs, SES	Reviewed tree topping prescription for the Stream 27A RVMA.	N/A
Dec. 3	Pre-work Meeting and work plan review	CRT-EBC, Mumleqs, SES	 Reviewed work plan, environmental constraints, and clearing prescription for the clearing of the ULRHEF drill pad footprints (left and right bank). 	N/A
	Pre-work Meeting and work plan review	CRT-EBC, Mumleqs, SES, Hedberg	 Reviewed work plan, environmental constraints, and clearing prescription for the clearing of the ULRHEF powerhouse footprint. 	N/A
Dec. 4	Segment 6 Pre-work meeting	Mumleqs, WEL, SES, Hedberg, Blackcomb Aviation	 Reviewed work plan, environmental constraints, flight plans, monitoring requirements, and clearing. prescription for the clearing of a foot trail and helicopter pads in Segment 6 (Poles 142-152). 	N/A
Dec. 5	Test pitting Pre-work Meeting	CRT-EBC, SES	 Reviewed work plan and environmental constraints for test pitting along the Pebble Creek Mainline road. 	N/A
Dec. 7	Construction Camp Pre-work meeting	CRT-EBC, SES	 Reviewed work plan and schedule for construction camp grubbing and grading. 	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	Mountain Goat Winter Range Habitat (UL 11, UL 19 and Migration Corridor)	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. Noise monitoring equipment was installed on December 2 nd 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.	
BDRHEF	BDRHEF Powerhouse		IEM was onsite and conducted precautionary CTF surveys prior to clearing/test pitting within 100m of	
ULRHEF	ULRHEF powerhouse and intake	Coastal Tailed Frog (CTF) Habitat	Boulder creek and the Lillooet River. Surveys were concentrated in swallow depressions and areas with significant amounts of decaying coarse woody debris.	
TX Line	Segment 6	Moose Winter Range Forest Management Zone (MWRFMZ) (u-2-005 J55/54-204-RO)	IEM was onsite and conducted wildlife surveys for two days prior (December 3 & 4, 2013) and during minor clearing works (December 5, 2013) within 500m of the MWRFMZ. IEM performed snowfall accumulation monitoring within the MWRFMZ during minor clearing activities associated with the temporary minor works (trail construction and helicopter pads). IEM was onsite and conducted wildlife	
		Salmon Feeding Stream (Grizzly Bear, Bald Eagle)	surveys for two days prior (December 3 & 4, 2013) and during minor clearing works (December 5, 2013) within 500m of the lower reaches of Rohb Creek (salmon feeding stream).	



4.0 Upper Lillooet River Hydroelectric Facility

4.1 Monitoring Results

4.1.1 Intake and Powerhouse Site Investigations

Construction Activities

- Snow plowing and sanding of the FSR, drill site preparation, and borehole drilling on the north and south bank of the Lillooet River was completed at the future intake location (<u>Photo 1</u>) during this monitoring period.
- All trees within the powerhouse footprint were hand-felled, test pits were dug and backfilled, and a drill pad was prepared, at the future powerhouse location during this monitoring period.

Environmental Summary:

- Snow plowing within the Truckwash Creek Mountain Goat Migration Corridor was completed (following confirmation by the IEM that the two-week Mountain Goat shutdown period had concluded on December 1, 2013), with a front-end loader this week. No snow berms greater than the surrounding snow depth were created along the edge of the FSR.
- Prior to falling trees or breaking ground within 100m of the Lillooet River, The IEM completed precautionary CTF surveys, concentrating on shallow depressions and areas with significant amounts of coarse woody debris. No CTFs were observed.
- Fallers used bio-degradable bar/chain oil when clearing trees within 30m of the Lillooet River.
- The drilling equipment and excavators operating within 30m of the Lillooet River were not equipped with bio-degradable hydraulic oil. The following additional mitigation measures were suggested by CRT-EBC and approved by the IEM prior to operating equipment within 30m of the Lillooet River:
 - Equipment was inspected and found to be free of leaks prior to mobilization to the drill sites at the ULRHEF intake and powerhouse;
 - Two fully stocked spill kits (205L spill barrels) were onsite and ready for immediate deployment in the event of a spill; and,
 - A full-time observer was onsite to monitor the operating equipment and respond in the event of a spill.
- Water required for drilling activities at the intake was extracted from the production water well at the construction camp. The water was towed to site 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 borehole. No water quality concerns were noted.



- An archeological monitor was present for all investigative works which included excavation activities for test pits within 50m of the identified archeology site in the vicinity of the future powerhouse location.
- Prior to plowing snow or working within 500m of UWR habitats (UL11, UL19, and Migration Corridor), and after confirmation of conclusion of the two-week Mountain Goat shutdown, noise monitoring equipment was installed (December 2) to monitor background noise levels and exceedances of the 75dbA noise level maximum resulting from construction/investigative drilling activities. 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. Excavator and drilling equipment operation on the north (left) bank on the ULRHEF intake (Dec 3, 2013).



Photo 2. Test pitting at the ULRHEF powerhouse within 50m of the identified archeological site, in the presence of the archeology monitor (Dec 6, 2013).

Water Quality Results

Date	Time	Sample Location Description	рН	Turbidity (NTU)	Temperature (°C)
No WQ mea effect on W0		ts were recorded during this report	ting per	iod. Construction ac	tivities had no visual

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 (<u>Photo 3</u>).
- Grubbing and grading of the construction camp location began following a kick-off meeting on December 7th, 2013 (<u>Photo 4</u>).

Environmental Summary:

• No environmental concerns were noted.



Photos:



Photo 3. Piles of trees within the future construction camp location (Dec 7, 2013).



Photo 4. Grubbing began at the future construction camp location (Dec 7, 2013).

Water Quality Results

Date	Time	Sample Location Description	рН	Turbidity (NTU)	Temperature (°C)
No WQ r effect on		nents were recorded during this reporting	period. I	Hand falling ac	ctivities had no visual

4.2 Recommendations

No recommendations are provided for this reporting period.

4.3 Upcoming Works

The investigative borehole drilling and test pitting program is scheduled to be completed next week. Grubbing and grading at the future construction camp location is scheduled to continue 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.

5.0 Boulder Creek Hydroelectric Facility

5.1 Monitoring Results

5.1.1 Clearing and Site Investigation

Clearing Activities

 Test pits and a trench were excavated within the footprint of the Boulder Creek Powerhouse facilities this week (<u>Photo 5</u>). Investigations were performed to characterize the existing material and confirm the presence of bedrock. All materials were replaced upon completion of the excavation and natural ground contours were restored to the greatest extent possible.



Environmental Summary:

- A precautionary CTF survey was completed prior excavating test pits/trenches 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. No CTF were observed and no environmental concerns were noted during test pitting or trenching activities.
- The excavator conducting the test pitting and trenching operated outside of 30m from Boulder Creek and was equipped with bio-degradable hydraulic oil.

Photos:



Photo 5. Test trench at the BDRHEF powerhouse location (Dec 3, 2013).

Water Quality Results

Date	Time	Sample Location Description	рН	Turbidity (NTU)	Temperature (°C)
No WQ mea visual effect		s were recorded during this reporti	ng peric	od. Test pitting/trench	ning activities had no

5.2 Recommendations

No recommendations are provided for this reporting period.

5.3 Upcoming Works

Investigative trenching and test pitting is complete at the Boulder Creek powerhouse location. No further activities are scheduled for 2013.



6.0 Transmission Line

6.1 Monitoring Results

6.1.1 Segments 1-6

Clearing Activities

- Tree topping within the Stream 27A RVMA began during this reporting period (<u>Photo</u> <u>6</u>).
- One day of minor construction works to construct a foot trail and helicopter landing pad at Pole structure 142 was completed on December 5th, 2013. Temporary minor works (trail construction and helicopter pads) in Segment 6 commenced, and was subsequently suspended due to unfavorable site/weather conditions and will resume in 2014. No trail was cleared.

Environmental Summary:

- A review of the clearing prescription was performed prior to tree topping within the Stream 27A RVMA. Fallers used bio-degradable bar/chain oil when working within 30m of Stream 27A. No environmental concerns were noted during topping activities.
- The IEM completed a wildlife monitoring program from December 3rd 5th, 2013 (Photo 7). The monitoring program was developed to adaptively mitigate wildlife disturbance within 500m of the Moose Winter Range Forest Management Zone (MWRFMZ) and within 500m of the lower Reaches of Rohb Creek. No evidence of Moose, Grizzly Bear, or Bald Eagle habitat utilization was observed within 500m of clearing activities and no snowfall accumulations were measured on December 5th, 2013. Section 9.0 provides additional details pertaining to the monitoring program and survey results.

<u>Photos:</u>



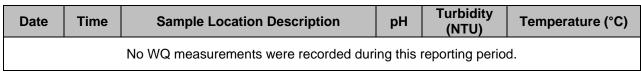
Photo 6. Conditions of the Stream 27A RVMA (Dec 6, 2013).



Photo 7. Transect location flagged within the MWRFMZ (Dec 4, 2013).



Water Quality Results



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) has been postponed until 2014. RVMA tree topping in Segment 2 is 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

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

8.0 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.

9.0 Moose Winter Range Forest Management Zone (MWRFMZ) & Lower Rohb Creek Salmon Feeding Stream

The IEM completed a monitoring program adapted for construction activities associated with the temporary minor works (trail construction and helicopter pads), scheduled to occur in December 2013 within Segment 6 of the Transmission Line right-of-way. The monitoring program was developed to ensure compliance with the following conditions outlined in Amendment 2 of the EAC, dated December 2, 2013.

- 1. A qualified professional (QP) or independent environmental monitor (IEM) must oversee all construction activity.
- 2. Construction (or minor works) must be suspended immediately if Moose are visually observed within the portion of the MWRFMZ adjacent to the construction (or minor works) or within 500 m of clearing activities.
- 3. Construction (or minor works) must be suspended immediately if snowfall accumulation within the MWRFMZ exceeds 30cm depth over an 8 hour period, based on daily snow depth monitoring along the South Lillooet forest Service Road.
- 4. If Grizzly Bears or Bald Eagles are observed within the lower reaches of Rohb Creek, construction (or minor works) within 500m of Rohb Creek must be suspended.

To ensure compliance with the above conditions, winter tracking surveys and snowfall accumulation measurements were completed two days prior to active works (December 3 & 4, 2013), and during active works on December 5, 2013. The monitoring program included the following components;

- 1. Winter tracking surveys were completed at five (5) transects within the MWRFMZ along the Lillooet South FSR to ensure Moose were not occupying/utilizing the habitat (u-2-005 J55/54-204-RO). Transects were selected to represent a range of habitat types, including:
 - Mixed habitats with a mature conifer component (M4);
 - Mixed deciduous stand with a shrub understory (M1, M2 and M5); and,
 - Habitat dominated by shrubs (M3).
- 2. Winter tracking surveys were completed at three (3) transects along the south bank of lower Rohb Creek to ensure Grizzly Bears and Bald Eagles were not hunting/foraging for salmon in lower Rohb Creek, within 500m of clearing activities.



3. Snowfall accumulations were measured and recorded daily at five (5) transects within the MWRFMZ along the South Lillooet FSR

In summary, no Moose or fresh Moose tracks were observed during surveys within the MWRFMZ, no Grizzly Bears or Bald Eagles were observed foraging/hunting along the lower reaches of Rohb Creek, and no new snowfall accumulation occurred within 500m of the clearing activities. All clearing activities within Segment 6 were suspended for the season on December 5th, 2013, due to unfavorable site/weather conditions. Work in Segment 6 will resume in 2014.



No.

Completion Date

Completed

Identification

10.0 Environmental Issues Tracking Matrix (ITM)

10.1 Hydroelectric Facilities (ULRHEF & BDRHEF)

Work Item Open ITM Tracking Legend: Work Item Complete Issue Closed Issue Closed							
Issue '	Tracking		Environmental Issue	N	litigation Measu	ures	
ID No.	Status	Location	Issue Description Action Taken/Rec		ed Date Identific	Completion	Date Completed
			Νο οι	itstanding environmental issues.		÷	·
		10.2 Transr	mission Line				
ITM Tracking Legend: Work Item Open Issue Closed							
lssue	Tracking	Er	vironmental Issue	Miti	gation Measure	s	
ID No	Status	Location	Issue Description	Action Taken/Recommended	Date of	Targeted	Date

No outstanding environmental issues.

Upper Lillooet Hydro Project - Wildlife Observation Form

	Required Data								
Date	Time	Observer	Species or Description	Location	Comments				
1-Nov-13	1:10:00 PN	KGR, VD, AA	Deer	On side of Pumice Rd. at MG-C	Fresh tracks, traveling				
2-Nov-13	11:24:00 A	Kirstie Rendall/Vanes	Mule Deer	On side of Pumice Rd. at MG-C	Fresh tracks, traveling SE				
2-Nov-13	3:40:00 PN	Kirstie Rendall/Vanes	Mule Deer	Lillooet FSR @ 32-33 Km	Visual, moving south				
3-Nov-13	3:49:00 PN	Kirstie Rendall/Danita	Mountain Goats	Rock bluffs, Lillooet FSR @ 5.5	Visual, feeding				
4-Nov-13	7:00:00 AN	Kirstie Rendall/Danita	Mule Deer	Lillooet FSR @ 30.5 Km	Visual on road, moving east				
4-Nov-13	7:02:00 AN	Kirstie Rendall/Danita	Mountain Goats	Rock bluffs, Lillooet FSR @ 30.	Visual, resting on rock bluffs				
4-Nov-13	12:40:00 F	Kirstie Rendall/Danita	Mule Deer	On trail to MG-OBS01	Tracks in forested area near FSR				
4-Nov-13	1:59:00 PN	Kirstie Rendall/Danita	Mountain Goats	MG-OBS03, W. edge summer r	Visual, feeding along treeline				
4-Nov-13	2:30:00 PN	Kirstie Rendall/Danita	Mountain Goats	MG-OBS03, W. edge summer r	Visual, moving up in elevation				
4-Nov-13	3:25:00 PN	Kirstie Rendall/Danita	Mountain Goats	Rock bluffs, Lillooet FSR @ 31.	Visual, resting and feeding				
4-Nov-13	3:00:00 PN	Shea Irving (WEL)	Bald Eagle	across river by km 41 of Lilloo	Perched				
5-Nov-13	10:00:00 A	Anne Sutherland	Mule Deer	Pumice Road	Tracks in the snow				
5-Nov-13	3:00:00 PN	Anne Sutherland	Moose	Lilloett FSR	Standing at the side of road - 28				
5-Nov-13	3:30:00 PN	Danita Abrabram/Anr	Mountain Goats	Rock Bluffs	Lilloett FSR 31 km on Rock Bluffs				
5-Nov-13	3:59:00 PN	Danita Abrabram/Anr	Mountain Goats	Rock Bluffs	Lilloett FSR 33 km on Rock Bluffs				
6-Nov-13	8:00:00 AN	Anne Sutherland	Merlin	Lilloett FSR	Perched on road edge - 40 km				
7-Nov-13	2:00:00 PN	Eric Ayoote	Bald Eagle	42.5km Lilloett FSR	Flying				
8-Nov-13	11:30:00 A	Tom Hicks & Vanessa	Coyote	41.5km Lilloett FSR	travelling on road				
8-Nov-13	7:40:00 AN	Anne Sutherland	Bald Eagle	24km Lilloett FSR	Feeding on fish				
8-Nov-13	7:50:00 AN	Anne Sutherland	Bald Eagle	32.5 Lillooet FSR	perched				
11-Nov-13	6:55:00 AN	Kirstie Rendall	Moose	Lillooet FSR @ 20.5 Km	Feeding by side of road, headed				
11-Nov-13	10:56:00 A	Kirstie Rendall	Mountain Goats	MG-OBS02, On cliff side winter					
11-Nov-13	1:38:00 PN	Kirstie Rendall	Mountain Goats	MG-OBS03, Top ridgeline sum	Feeding and moving up in elevat				
11-Nov-13	2:03:00 PN	Kirstie Rendall	Mountain Goats	MG-OBS03, South side summe	Feeding and resting at low eleva				
11-Nov-13	2:58:00 PN	Kirstie Rendall	Mountain Goats	MG-OBS03, South side summe	Feeding at low elevation				
11-Nov-13	4:30:00 PN	Kirstie Rendall	Coyote	Lillooet FSR @ 8.5 Km	Visual, moving NW across road				
12-Nov-13	11:40:00 A	Kirstie R. / Danita A.	Mule Deer	Pumice Road	Tracks on road side in snow, hea				
			Mountain Goats	MG-OBS03, South side summe	Visual, Low elevation at treeline				
12-Nov-13	1:36:00 PN	Kirstie R. / Danita A.	Mountain Goats	MG-OBS02, On cliff side winter	Visual, Feeding				
13-Nov-13	9:44:00 AN	Kirstie R. / Danita A.	Coyote?	Lillooet FSR @ E. Truckwash cr	Tracks, moving SW				
			Mountain Goats	MG-OBS02, On cliff side winter	Visual, Standing & vigilant, move				
13-Nov-13	11:13:00 A	Kirstie R. / Danita A.	Mountain Goats	MG-OBS02, On cliff side winter	Tracks moving across cliff face				
13-Nov-13	12:30:00 F	Kirstie R. / Danita A.	Mountain Goats	Btn 4th & 5th forested snow st	Tracks, moving down slope				

11-Nov-13	11:00:00 A	Catherine Phaneuf	Bald Eagle	ULRHEF Intake	Flying
23-Nov-13	3:00:00 PN	Tommy Chouinard	Moose	Lillooet FSR @ 38 km	Travelling on road
24-Nov-13	9:30:00 AI	Danny Dugas	Lynx	Lillooet FSR @37 km	Crossed the road
25-Nov-13	3:45:00 PN	Tim Wales	Moose	Lillooet FSR @ 10.5 km	Crossed the road
26-Nov-13	3:30:00 PN	Tom Hicks	Moose	Lillooet FSR @ 20 km	travelling on road
26-Nov-13	3:40:00 PN	Tom Hicks	Moose	Lillooet FSR @ 17 km	Crossed the road

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Kirstie Rendall, Vanessa Dan

sartori environmental services

Date (YYYY-MM-DD):

2013-12-02

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

Weather (cloud cover, precipitation and temperature): Partly cloudy / Dry / -1 C

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)	Daily form #	1	of ed in th	1 e
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	9h28	11h30	below table, please fill out			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	15h00	16h00	additional daily forms and in total number of forms above			
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-	total number of forms abov			

Observation Site (indicate if location other than OBS site)	Time	1 (1()(1)	Species Observed (indicate Mountain Goat or other species)	i other stant	# of	refer to	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS01									No observations	241 - 242
MG-OBS02	15h02	466850.63 m E 5613920.02 m N	Mountain Goat	Visual with binoculars	4	2 adult 2 u/k	1 F 1 M 2 u/k	Resting and mating	Forested area on cliff face; Resting in tree wells; No fresh snow; Snow crusted over (icy)	None

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Kirstie Rendall, Vanessa Dan

sartori environmental services

Date (YYYY-MM-DD):

2013-12-03

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

Weather (cloud cover, precipitation and temperature): Sunny / Dry / -6 C

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)	e Daily form 1 # 1		of ed in th	1 e
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	-	-	below table, please fill out			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	8h40	16h00	additional dai total number			
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-	totai number		s above	

Observation Site (indicate if location other than OBS site)	Time	UTM Coordinates or Waypoint (10U)	Species Observed (indicate Mountain Goat or other species)	orner sian)	# of	Age (if known - refer to attached info sheet)	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS02	9h19	-	-	-	-	-	-	-	Construction noise audible (not drilling) No goats observed yet	-
MG-OBS02	9h25	466963.86 m E 5613834.50 m N	Mountain Goat	Visual with binoculars	3	2 adult 1 u/k	u/k	Resting, then moved slowly east, out of sight at ~ 11h00	Forested area on cliff face No new snow Snow crusted over Goats resting in tree wells	243 - 248

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Kirstie Rendall, Vanessa Dan

sartori environmental services

Date (YYYY-MM-DD):

2013-12-04

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

Weather (cloud cover, precipitation and temperature): Sunny / Dry / -9 C

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)	Daily form # 1 of If more space is needed in the below table, please fill out			1 e
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	-	-				
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	10h15	15h45	additional daily forms and inc			
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-	total number	0110111	is above	•

Observation Site (indicate if location other than OBS site)	Time	1 (1()())	Species Observed (indicate Mountain Goat or other species)	i otnerstant	# of	rofor to	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS02	10h15	-	-	-	-	-	-	-	Construction noise from intake audible	249 - 252
MG-OBS02	14h00	466851.43 m E 5613922.54 m N	Mountain Goat	Visual with binoculars	1	Adult	Male	Got up from resting to look around for a few minutes, then laid back down again out of sight. Not a result of construction noise.	In tree well in forested area on cliff face No new snow Snow crusted over	None

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): Kirstie Rendall, Vanessa Dan

sartori environmental services

Date (YYYY-MM-DD):

2013-12-05

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

Weather (cloud cover, precipitation and temperature): Sunny / Dry / -13 C

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)	Daily form #	1	of	1
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	-	-	 If more space is needed in the below table, please fill out additional daily forms and ind total number of forms above. 			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	8h55	16h15				
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-			above	•

Observation Site (indicate if location other than OBS site)	Time	UTM Coordinates or Waypoint (10U)	lindicato	i omersioni	# of	Age (if known - refer to attached info sheet)	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS02	15h32	466711.00 m E 5613937.52 m N	Mountain Goat	Visual with binoculars	2	1 adult 1 yearling	Adult female, yearling u/k	Licking black mineral salt	Nanny had broken/short right horn. Goats at base of cliff on west side and walking west along base of cliff. No snow in this area.	253 - 255

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): anne Sutherland, Anthony Andrew

Date (YYYY-MM-DD):

2013-12-06

sartori environmental services

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

Weather (*cloud cover*, precipitation *and temperature*): no precip., sunny, 11 C to 8 C.

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)	Daily form #	1	of	1
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	-	-	If more space is needed in the below table, please fill out			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	09h05	15h50	additional dai total number	-		
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-	total number	0110111	is above	

Observation Site (indicate if location other than OBS site)	Time	UTM Coordinates or Waypoint (10U)	lindicato	i omersioni	# of	Age (if known - refer to attached info sheet)	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS02	12h05	466851.43 E 5613922.54 N	Mountain Goat	visual with binoculars	2	1 Adult, 1 yrlg	Female, u/k	Coming out of the forest, female waiting for yearling, then they went down into depression behind some trees.	No Audible drilling sounds or other construction noises.	

UPPER LILLOOET HYDRO PROJECT

Goat Monitor's Name(s): anne sutherland, anthony andrews

sartori environmental services

Date (YYYY-MM-DD):

2013-12-07

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

Weather (*cloud cover*, precipitation *and temperature*): sunny, -20 C

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)	Daily form #	1	of	1
MG - OBS01	Migration Corridor - East side of Truckwash Creek	10U 467898 5612845	-	-	If more space is needed in the below table, please fill out			
MG - OBS02	UWR u-2-002 UL 11 - Keyhole Falls	10U 466760 5613967	08h55	14h15	additional daily total number of			
MG - OBS03	UWR u-2-002 UL 19 - Garibaldi Pumice	10U 469155 5614960	-	-		IOIIIIS	above	•

Observation Site (indicate if location other than OBS site)	Time (use 24hr clock)	(100)	Species Observed (indicate Mountain Goat or other species)	other sign)	# of	Age (if known - refer to attached info sheet)	Sex (if known - refer to attached info sheet)	Description of Activities (feeding, moving, etc.)	Comments (habitat, snow conditions, etc.)	Photo #s
MG-OBS02	08h45	466694.86 E 5613957.38 N	Mountain Goat	visual	1	Adult	u/k	Lying down	Observed from the road and could be seen along the edge of the forest above the scree slope.	
MG-OBS02	09h30	466694.86E 5613957.38N	Mountain Goat	visual	2	Adult, kid	Female nanny with Kid	nanny standing and kid behind, hard to see what kid was doing. Nanny keeping a close eye on us and the kid.	Very cold and difficult to see with lots of mist from the waterfall. Saw a goat along the edge for a short time and then disappeared.	
MG-OBS02	12h00 to 14h15	same as above	Mountain Goat	visual	2	Adult, kid	Female with kid	Same nanny as above and the day before (she has a broken horn) At this time of day they are feeding on the lichen hanging on the tree branches.	By the afternoon it was still sunny and temperature has risen to -15 C. Female is spending time feeding and kid is moving around a lot pausing here and their to eat.	