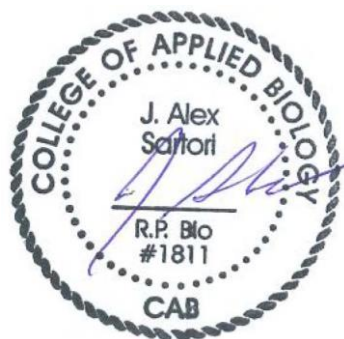



Upper Lillooet Hydro Project

Weekly Environmental Monitoring Report #52

Reporting Period: February 1 – February 28, 2015

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

Distribution List		Prepared By
Name	Organization	
Murray Manson	Fisheries and Oceans Canada	 <p>J. Alex Sartori, RPBio <i>Independent Environmental Monitor (IEM)</i></p>  <p>J. Stephen Sims, RPBio <i>Delegated IEM</i></p> <p>Date Prepared: March 20, 2015 Date Submitted: March 20, 2015</p>
James Davies	MFLNRO – Water Allocation	
Danielle Cunningham	MFLNRO – Land and Resources	
Frank DeGagne	MFLNRO – Land and Resources	
Nathan Braun	BC Environmental Assessment Office	
George Steeves	True North Energy – Independent Engineer	
Jennifer McCash	JEM Energy Ltd. – Independent Engineer	
Thomas Hicks	Sartori Environmental Services	
Peter Ramsden	Innergex Renewable Energy Inc.	
Oliver Robson	Innergex Renewable Energy Inc.	
Greg Davis	Innergex Renewable Energy Inc.	
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Grant Lindemulder	Innergex Renewable Energy Inc.	
Liz Scroggins	Innergex Renewable Energy Inc.	
Bas Brusche	Innergex Renewable Energy Inc.	
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Dara McDermott	Innergex Renewable Energy Inc.	
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Jonathan Drapeau	CRT-ebc Construction Inc.	
Éric Ayotte	CRT-ebc Construction Inc.	
Jean Pelletier	CRT-ebc Construction Inc.	
Jordan Gagne	CRT-ebc Construction Inc.	
Ian McKeachie	CRT-ebc Construction Inc.	
D'Arcy Soutar	Westpark Electric Ltd.	
Pontus Lindgren	Westpark Electric Ltd.	
Harriet VanWart	Lil'wat Nation	

Owner Construction Permits and Approvals

Environmental Assessment Certificate No. E13-01 (Amendment 1, 2, 3, 4 & 5)
 Fisheries Act Subsection 35(2)(b) Authorization No. 09-HPAC-PA2-000303 (Amendment 1, 2)
 Letter of Advice for the Transmission Line No. 09-HPAC0-PA2-000303
 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
 Conditional Water Licence (ULRHEF C130613) File No. 2002561
 Conditional Water Licence (BDRHEF C129969) File No. 2002453
 Conditional Water Licence (BDRHEF C131153) File No. 2003601
 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, 3, 4, 5) No. L49717
 Occupant Licence to Cut (BDRHEF – KM 38 laydown) No. L49698
 Occupant Licence to Cut (BDRHEF Amendments 1, 2, 3) No. L49816
 Occupant Licence to Cut (TX Line Amendment 1, 2, 3, 4, 5, 6, 7) No. L49697
 General Wildlife Measure Exemption Approval Letter (TX Line & BDRHEF) File No. 78700-35/06 UWR and 39585-20 WHA
 Heritage Conservation Act – Alteration Permit (ULRHEF) File No. 11200-03/2014-0033
 Road Use Permit No. 6123-13-02 (Lillooet River FSR); 5673-13-01 (Rutherford Creek FSR); 7977-13-01 (Lillooet South FSR); 8015-13-01 (Ryan River); 8188-13-01 (Pemberton Creek FSR); and 9717-13-01 (Miller Bench FSR)
 Junction Permit (ULRHEF & BDRHEF) File No. 11250-32/6123 (Amendment 1)
 Aeronautical Obstruction Approval (Tx Line - Lillooet River Crossing) File No. 2013-004
 Aeronautical Obstruction Approval (Tx Line - Ryan River) File No. 2013-005
 Aeronautical Obstruction Approval (Tx Line - North Miller) File No. 2013-006
 Aeronautical Obstruction Approval (Tx Line - South Miller) File No. 2013-007
 Aeronautical Obstruction Approval (Tx Line - Pemberton Creek) File No. 2013-008
 Aeronautical Obstruction Approval (Tx Line - Lillooet River near Pemberton) File No. 2013-009
 Aeronautical Obstruction Approval (Tx Line - Lillooet River near Meager Creek) File No. 2013-010
 Navigable Water Protection Act (ULRHEF) File No. 8200-2009-500434-001
 Navigable Water Protection Act (BDRHEF) File No. 8200-2012-501-032-001
 Navigable Water Protection Act (Tx Line – North Creek) File No. 8200-2013-500103-001
 Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500101-001
 Navigable Water Protection Act (Tx Line – Lillooet River) File No. 8200-2013-500102-01
 Navigable Water Protection Act (Tx Line – Ryan River) File No. 8200-2013-500104-001
 Navigable Water Protection Act (Tx Line – South Miller River) File No. 8200-2013-500100-001
 Navigable Water Protection Act (Tx Line – Boulder Creek) File No. 8200-2013-500099-001
 Navigable Water Protection Act – Extension Approval (ULRHEF, BDRHEF, Tx Line)
 Navigable Water Protection Act (Bridge – Ryan River) File No. 8200-2013-500381
 Navigable Water Protection Act (Bridge – Upper Lillooet Side Channel; Extension Approval) File No. 8200-2013-500383
 Section 57 Authorization (ULRHEF) File No. 16660-20/REC202717
 SLRD Temporary Use Permit No. 34 – Boulder Creek HEF
 SLRD Temporary Use Permit No. 35 – Upper Lillooet River HEF
 Works Permit for Construction within FSR Right-of-Way No. 6123-14-01
 Section 52(1)(b) FRPA Authorization for Ryan River Wet Crossing File No. FOR-19400-01/2014
 MOTI Permit to Construct, Use and Maintain Works Upon the Right-Of-Way of a Provincial Public Highway No. 2014-06099

Contractor Construction Permits and Approvals

Magazine Licence File No. UL76018

*Section 8 Approval – Short Term Use of Water File (Lillooet River and Tributaries) No. A2006123 (Amendment 1)
Waste Discharge under the Code of Practice for the Concrete and Concrete Products Industry under the Environmental
Management Act (Authorization No. 107204) Tracking No. 326969*

Wildlife Act Permits – Pacific Tailed Frog Salvage Permit # SU14-95304 & SU13-90538, Fish Salvage Permit #SU14-95329

Section 52 of the Fisheries (General) Regulations – Fish Salvage Licence # XR 139 2014

BC Safety Authority – Temporary Construction Electrical Service Permit EL-140698-2014

Municipal Wastewater Regulation - Authorization # 107032

Water Supply System Construction Permits – VCH-14-613 for Main Camp

Water Supply System Permit to Operate Issued July 30th, 2014 for Main Camp

Section 6(3) and Schedule 3 Wildfire Regulations Fire Exemption for Ryan River Bridge File No. 14350-07

SLRD Building Inspection Report dated August 13, 2014 - Construction Camp Building Permit No. 10830

Lillooet River FSR Temporary Road Closures Approval File No. 11250-32/6123 (Amendment 1, 2)

Lillooet South FSR Temporary Road Closures Approval File No. 11250-32/7977

Miller Bench FSR Temporary Road Closure Approval dated February 24, 2015

ACRONYMS:

AMBNS	Active Migratory Bird Nesting Survey	ITM	Environmental Issue Tracking Matrix
ASMP	Archaeological Sites Management Plan	JEM	JEM Energy Ltd. (Delegate Independent Engineer)
ARD /ML	Acid Rock Drainage and Metal Leaching	LTC	Leave to Construct
BCEAO	British Columbia Environmental Assessment Office	MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
BCWQG	British Columbia Water Quality Guidelines	MOE	Ministry of Environment
BDRHEF	Boulder Creek Hydroelectric Facility	MOTI	Ministry of Transportation and Infrastructure
BG	Background	NCD	Non Classified Drainage
BKL	BKL Consultants Ltd.	OLTC	Occupational License to Cut
CE	CRT-ebc Construction Inc.	PAG	Potentially Acid Generating
DFO	Fisheries and Oceans Canada	RoW	Right of Way
DS	Downstream	RVMA	Riparian Vegetation Management Area
Ecofish	Ecofish Research Ltd.	SES	Sartori Environmental Services
Ecologic	Ecologic Consulting	Stringer Line	Temporary Backfeed Transmission Line
EIR	Environmental Incident Report	TX Line	Transmission Line
ESC	Erosion and Sediment Control	ULRHEF	Upper Lillooet Hydroelectric Facility
FAM	Field Advice Memorandum	UWR	Ungulate Winter Range
FSR	Forest Service Road	VC	Valued Component
GWR	Mountain Goat Winter Range	WEL	Westpark Electric Ltd.
Hedberg	Hedberg and Associates Ltd.	WEMR	Weekly Environmental Monitoring Report
IE	Independent Engineer (True North Energy)	WHA	Wildlife Habitat Area
IEM	Independent Environmental Monitor	WQ	Water Quality
INX	Innergex Renewable Energy Inc.		
ISW	Instream Works		

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:

Dates	IEM Team Personnel	Weather Conditions	Key Monitoring Locations & Activities
February 1 – February 7	BA	See <i>Weather Notes</i> below table	<p>ULRHEF & BDRHEF Winter Operations</p> <ul style="list-style-type: none"> • Routine equipment maintenance and repairs completed at the 38km laydown shop location • Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths) <p>TX Line</p> <ul style="list-style-type: none"> • Stringer Line <ul style="list-style-type: none"> ➢ Conductor stringing was completed on February 1 • Segment 16 <ul style="list-style-type: none"> ➢ Clearing of the RoW continued this week, but was suspended on February 5 due to snow followed by heavy rains. ➢ The IEM was onsite to monitor clearing within the stream 386A RVMA on February 2.
February 8 – February 14	TH	See <i>Weather Notes</i> below table	<p>ULRHEF & BDRHEF Winter Operations</p> <ul style="list-style-type: none"> • Routine equipment maintenance and repairs completed at the 38km laydown shop location • Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths) • The IEM conducted a site inspection on February 12 <p>TX Line</p> <ul style="list-style-type: none"> • Segment 16 <ul style="list-style-type: none"> ➢ Clearing of the RoW resumed on February 11 and continued throughout the week.
February 15 – February 28	BA	See <i>Weather Notes</i> below table	<p>ULRHEF & BDRHEF Winter Operations</p> <ul style="list-style-type: none"> • Routine equipment maintenance and repairs completed at the 38km laydown shop location • Snow management at camp facilities and within the 38km Laydown (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths) • The IEM conducted a site inspection and performed an inspection of the Lillooet River FSR conditions on February 26 <p>TX Line</p> <ul style="list-style-type: none"> • Segment 16 <ul style="list-style-type: none"> ➢ Clearing of the RoW was completed up to pole structure 394 (outside of the UWR) on February 17 • Segment 12 <ul style="list-style-type: none"> ➢ Staging and preparing materials for the three Miller Bench FSR temporary watercourse crossing upgrades began on February 26.

IEM Team Personnel: TH – Tom Hicks; BA – Blake Aleksich

Weather Notes: Snow and heavy rains occurred on February 5 & 6, causing delaying to the Segment 16 RoW clearing works. Generally, rain and unseasonably warm temperatures were recorded in February resulting in significant snow melt and a seasonally unusual (low) snowpack. As a result site specific daily avalanche and weather forecasting provided for WEL and CE sites ceased on February 17. Weekly avalanche forecasting will be provided for the remainder of the winter season unless avalanche hazard increases above threshold levels warranting a return to daily forecasting. The landslide blocking the road at 6km of the Lillooet River FSR that occurred at the end of January was removed and the road was repaired/access restored by Squamish Mills, the primary road use permit holder for the Lillooet River FSR, on February 6.

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.
February 6, 2015	<i>email</i>	INX, SES, WEL, CE	INX submitted an email notifying the Project team that Squamish Mills has completed repairs to the road following the landslide at 6km of the Lillooet River FSR.	-
February 12, 2015	<i>Email</i>	INX, MFLNRO, SES, JEM, WEL	INX distributed the MFLNRO granted OLTC amendment #7, authorizing clearing within Segments 9b, 13, and 15.	-
February 19, 2015	<i>Email</i>	INX, MFLNRO, SES, JEM	INX submitted a revised ARD M/L Control Plan to MFLNRO, the IEM, and the IE, which supersedes the previous ARD M/L Monitoring and Control Plans developed for the Project.	-
	<i>Email</i>	MFLNRO, SES, INX	MFLNRO contacted SES to request an update on conditions of the Lillooet River FSR. Multiple areas along the FSR were impacted by winter and early spring heavy rain events. All drainages will be controlled and drainage structures (ditches and culverts) repaired as part of spring maintenance according to the Road Use Permit conditions. Most of the maintenance work is required between 17km and 38km, but poses limited environmental risk at this time. CE will not haul through sections of the FSR where water is flowing across the road surface during their spring mobilization.	-
February 24, 2015	<i>Email</i>	INX, WEL, SES, IE	INX distributed the MFLNRO approval granting closures of the Miller Bench FSR to complete the temporary bridge repairs.	-
February 26, 2015	<i>Email</i>	INX, CE, WEL, SES, MOTI	INX distributed an MOTI notice of a 75% load restriction that applies to the Pemberton Portage Rd. (road through Pemberton) and the Pemberton Meadows Road, beginning on March 2, 2015.	-
	<i>Email</i>	SES, INX	SES conducted a detailed inspection of the Lillooet River FSR from 0-38km.	-
	<i>Pre-work meeting</i>	SES, INX, WEL, Hedberg	The Miller Bench FSR temporary clear span creek crossing upgrades and repairs work plan was reviewed. All crossings lengths were confirmed and the HWM was flagged in the field to ensure all works were performed above the HWM.	-
February 27, 2015	<i>Email</i>	CE, SES, INX	Snowline Safety & Consulting on behalf of CE notified the Project team that avalanche conditions between 0-38km of the Lillooet River FSR no longer require daily avalanche forecasting based on the snow pack conditions.	-

3.0 Current Work Restrictions and Timing Windows

The table presented below outlines work restrictions applicable during the reporting period for each active¹ Project component location:

Component	Location	Wildlife/Archeology Concern	Construction/Timing Restrictions & Mitigations
TX Line	Segment 16	Within 150m of wetlands or 100m of Coastal Tailed-Frog Streams	IEM presence is required when clearing within 150m of wetlands or 100m of Coastal Tailed-Frog Streams, to ensure clearing area is minimized.
		Riparian Vegetation Management Areas (RVMA)	IEM monitoring is required during clearing within RVMAs.
		Deer winter range habitat and 200m buffer	No construction within 200 m of deer winter range during the sensitive winter period (Nov 1 - May 15).

4.0 Upper Lillooet River Hydroelectric Facility & Boulder Creek Hydroelectric Facility – Monitoring Results

4.1 Construction Camp & 38 km Laydown

Winter Operations:

- The transitions between the Lillooet River FSR and the winter works area (at 37.5 km and 38.5 km) were marked and passable by snowmobile during the February 12, 2015 inspection. The Lillooet River FSR was drivable by 4x4 to 38km (Photo 1) during the February 26, 2015 inspection and a snow mobile transition was clearly marked at ~38.5km (Photo 2) beyond the winter works area.
- The electric fence was fully operational and clear of snow during both the February 12 (Photo 3), and February 26, 2015 inspections (Photo 4).
- All CE winter operations are restricted to the Construction Camp and 38 km laydown (Photo 5) areas. Works included snow removal (e.g., maintaining electric fence and gates, clearing roof tops, driving surfaces and access paths), and routine maintenance of construction equipment within the mechanic shop at the 38 km laydown.

Environmental Summary:

- The IEM performed an inspection of the active ULRHEF and BDRHEF sites on February 12 and February 26, 2015. The gates of each of the four levels of the construction camp were closed during both inspections. No wildlife sightings within the construction camp area were reported in February 2015.

¹ CE did not perform construction activities in the month of February; therefore timing restrictions related to the power generating components of the Project have been omitted from this table.

- CE performed daily inspections of the electric fence and fuel storage areas and recorded results in a daily inspection log (Photo 6). Weekly reports were prepared by CE to report activities and conditions onsite. These reports were provided to the IEM, for review. No concerns were noted in the reports.
- The condition of drainage structures (ditches and culverts) in snow free areas from 0-34km of the Lillooet River FSR was assessed on February 26, 2015. The assessment found that multiple areas between 17.8km and 33.1km will require repairs prior to CE mobilizing to site to prevent fording of flowing water that has the potential to affect surface water quality in adjacent watercourses.

Photos:



Photo 1 – Transition into winter work area at 37.5km (February 26, 2015).



Photo 2 – Transition into winter work area at 38.5km (February 26, 2015).



Photo 3 – The electric fence was operational and cleared of snow at all locations during the February 12, 2015 inspection.



Photo 4 – The electric fence was operational and snow free during the February 26, 2015 inspection.



Photo 5 – Conditions at fuel storage area within Pad 2 of the 38km laydown (February 26, 2015).



Photo 6 – Daily inspection log of the electric fence was up to date with voltages recorded during each inspection (February 26, 2015).

4.2 Water Quality Results

The IEM has suspended the weekly WQ monitoring program for the remainder of the winter shutdown period. Weekly water quality monitoring will resume at the start of the 2015 construction season according to the conditions outlined in the Surface Water Quality Protection Plan.

4.3 Recommendations

IEM recommendations for the ULRHEF and BDRHEF are as follows:

- The IEM recommends that repairs to the drainage structures along the FSR from 0-38km be coordinated according to the road-use agreement as mobilization to site will likely begin in March. The fording of drainages that connect to fish bearing waters has the potential to impact surface water quality in fish bearing streams, and is therefore not permitted according to conditions of the CEMP.
- The IEM recommends that work sites are closely monitored during the spring melt period to verify the effectiveness of installed winterization and ESC measures, and ensure that regular maintenance is performed as needed.

4.4 Upcoming Works

Construction activities will resume in the spring of 2015. A small crew will work to monitor and maintain the construction camp and 38km laydown area during the winter months. The IEM will perform at minimum bi-monthly audits during the winter shutdown period to document compliance with the Winter Operations Plan.

5.0 Transmission Line – Monitoring Results

5.1 Transmission Line Construction Activities

Right-of-Way Clearing:

- Segment 16 RoW clearing occurred from February 2 – 5 and from February 11 – 17, 2015. Clearing within the stream 386A RVMA occurred and was monitored by the IEM on February 2 (Photo 7). Clearing occurred outside of the UWR between 394 and the point of interconnection, which is currently on hold due to access across the CN tracks and timing window constraints associated with deer winter range habitat and 200m buffer.

Transmission Line Pole Installation, Line Stringing and Clipping:

- Stringer Line conductor stringing was completed on February 1, 2015.

Access Road Upgrades and Construction:

- A pre-works meeting for the Miller Bench FSR temporary clear span creek crossing upgrades and repairs to permit access to the Segment 12 alignment was completed on February 26, 2015 (Photo 8). Materials were staged and prepared on February 26 and 27, 2015 (Photo 9). Temporary bridge upgrades will be installed in the first week of March 2015.

Environmental Summary:

- Mumleqs halted clearing activities in Segment 16 on February 5, 2015 due to weather conditions and resumed on February 11, 2015 once weather conditions became favorable.

Photos:



Photo 7 – Hand falling within stream 386A RVMA in Segment 16 (February 2, 2015).



Photo 8 – Pre-work meeting discussing temporary clear span crossing upgrades at 1 of 3 crossing locations on the Miller Bench FSR (February 26, 2015).



Photo 9 – Staging and preparing stringer and sill logs for the temporary log bridge structure to be installed on the Miller Bench FSR (February 26, 2015).

5.2 *Water Quality Results*

No water management activities or works affecting water quality were conducted in February 2015. As such the IEM did not conduct water quality sampling during this monitoring period. Clearing activities associated with the stream 386A RVMA were monitored by the IEM and water quality remained visually unaffected throughout the works. Water quality sampling will continued to be collected during TX Line water management activities according to the conditions outlined in the Surface Water Quality Protection Plan. Exceedances of *in-situ* water quality (turbidity) deemed to be caused by project-related activities will be highlighted and discussed accordingly.

Date	Time	Sample Location Description	pH	Turbidity (NTU)	Cond (uS)	Temp (°C)
No water quality sampling occurred in February 2015. Water quality remained visually unaffected during work activities.						

5.3 *Recommendations*

- Prior to resuming works in the spring of 2015, the IEM recommends access roads be inspected to assess any slope failures or drainage/erosion concerns that have resulted from recent heavy rains and rain on snow events.

5.4 *Upcoming Works*

The following new and/or environmentally sensitive construction activities are scheduled to occur along the TX Line in the upcoming reporting period(s):

- INX and WEL are pursuing an amendment to the EAC to permit construction of the Lillooet River Transmission Line Crossing in the early March.
- Clearing of the Segment 8 RoW and road construction (including drainage structure installation) will begin once snow levels allow access back into the area.

- Temporary clear span creek crossings associated with upgrades and repairs to the lower Miller Bench FSR are scheduled to begin in the first week of March 2015.

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. 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

The following wildlife observations were reported to the IEM in the month of February 2015.

Date	Time	Observer (Company)	Species or Description	Location
2/26/2015	10:00	Shea Irving (WEL)	Moose	11km Lillooet River FSR

7.0 Mountain Goat Monitoring Program

Mountain Goat monitoring will resume in the spring of 2015, once construction activities resume.

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 Date for Completion	Date Completed
<i>next ITM – ULR#23</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 Date for Completion	Date Completed
<i>next ITM – Tx#3</i>							