

## **Clowhom Project Water Use Plan**

### **Monitoring Programs**

**Annual Report: 2014**

**Implementation Period: May 2013 to April 2014**

- **COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations**
- **COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity**
- **COMMON-3 Validation of the Effective Littoral Zone Performance Measure**
- **COMMON-4 Archaeological Sites Monitoring**

**For Water Licences 120562, 120565, and Conditional Water Licence 119822**

**May 31, 2014**

## BC Hydro Clowhom Project Water Use Plan Monitoring Programs Annual Report: 2014

### 1 Introduction

This document represents a summary of the status and the results of the Clowhom Project Water Use Plan (WUP) monitoring programs to April 20, 2014, as per the Clowhom Order under the *Water Act*, dated April 20, 2005. There are four monitoring programs.

### 2 Status

The following table outlines the dates that TOR for the Clowhom Project WUP monitoring programs were submitted to and approved by the CWR.

Leave to commence was not received for the COMMON-4 Archaeological Sites Monitoring TOR. As per the October 28, 2005 letter, this work will proceed under the *Heritage Conservation Act*.

**Table 2-1: Dates of Clowhom Project WUP TOR Submissions and Approvals by the Comptroller of Water Rights**

Monitoring Program TORs	Order Clause (optional)	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations	Schedule A.1.a	Sep 23, 2005	Oct 28, 2005		
COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity	Schedule A.1.b	Sep 23, 2005	Oct 28, 2005		
COMMON-3 Validation of the Effective Littoral Zone Performance Measure	Schedule A.1.c	Sep 23, 2005	Oct 28, 2005		
COMMON-4 Archaeological Sites Monitoring	Schedule A.2	Sep 23, 2005	Oct 28, 2005		

### 3 Schedule

The following table (Table 3-1) outlines the current schedule for the monitoring programs being delivered for the Clowhom Project WUP.

**Table 3-1: Table of WUP Schedule**

Monitoring Program	Study	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
		WLR YR1	WLR YR2	WLR YR3	WLR YR4	WLR YR5	WLR YR6	WLR YR7	WLR YR8	WLR YR9	WLR YR10	WLR YR11	WLR YR12	WLR YR13	WLR YR14	WLR YR15	WLR YR16	WLR YR17	WLR YR18	WLR YR17	WLR YR17	WLR YR20
COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations	Wildlife Census	✓	✓	✓	✓	✓	✓	✓	✓	■	■	■	■	■	■	■	■	■	■	■	■	
	Air Photography	✓				✓	✓				■					■					■	
COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productive Capacity	Fish Survey	✓		✓	✓	✓	✓				■					■					■	
	Juvenile Habitat Use Survey		X	✓	X	✓	✓															
COMMON-3 Validation of the Effective Littoral Zone Performance Measure		✓	✓	✓	✓	✓	✓				■					■					■	
COMMON-4 Archaeological Sites Monitoring			X	✓	✓																	

Legend:

- = Project timing subject to change according to maintenance schedule
- = Project to be undertaken/initiated in identified year
- ✓ = Project is completed for the year
- X = Encountered operational or hydrological delays

## **4 Monitoring Programs Terms of Reference**

The Monitoring Programs being implemented under the Clowhom Project WUP are described in Terms of Reference. These Terms of Reference and the reports for work completed to date can be found here:

[http://www.bchydro.com/toolbar/about/sustainability/conservation/water\\_use\\_planning/lower\\_mainland/clowhom.html](http://www.bchydro.com/toolbar/about/sustainability/conservation/water_use_planning/lower_mainland/clowhom.html)

## **5 Summary of Monitoring Programs**

### **5.1 COMMON-1 Monitor of Aquatic Wildlife in Wetlands Affected by Dam Operations**

#### **5.1.1 Status**

This monitoring program was initiated in 2006 and will be carried out over 20 years. Attached is the report for Year 2012 dated July 2012. The draft 2013 report is expected in June 2014.

### **5.2 COMMON-2 Role of Littoral Zone in Governing Clowhom Reservoir Productivity Capacity**

#### **5.2.1 Status**

This monitoring program was initiated in 2006 and will be carried out over 20 years. The scope of the study had to be reduced in 2011 eliminating the creel survey due to the closure of the Clowhom fishing lodge that year. There is little or no recreational fishery left on Clowhom Reservoir as a result. We are currently reviewing this Terms of Reference for its effectiveness in measuring fish productivity and determining an effective methodology to measure fish productivity at a remote reservoir site. We plan to resubmit the Terms of Reference by March 31, 2015.

Attached is the report for Year 2011 dated May 2012. The 2013 report is expected in May 2015.

### **5.3 COMMON-3 Validation of the Effective Littoral Zone Performance Measure**

#### **5.3.1 Status**

This monitoring program was initiated in 2006 and data collection was completed in 2010. Data analysis will be carried out at 5 year intervals over the 20 years of the project. Attached is the data report for 2011 dated June 2012. An analysis report which will summarize and analyze all data collected in the first 5 years is expected May 2015.

### **5.4 COMMON-4 Archaeological Sites Monitoring**

#### **5.4.1 Status**

This monitoring program was initiated in 2008 and was carried out over 2 years. This monitor is completed.

## **6 Monitoring Programs Costs**

The following table summarizes the Clowhom Project WUP monitoring programs costs approved by the Comptroller and the Actual Costs to April 30, 2014.

**Table 6-1: Clowhom Project WUP Monitoring Program Costs**

Monitoring Programs	Costs approved by CWR	Life to Date Actuals (LTD)	Estimated to Complete (Forecast)	Total Forecast (LTD and Forecast)	Variance Total to Approved	Explanation	Corrective Action	
<b>Clowhom WUP Annual Report</b>	\$43,186	\$10,250	\$15,597	\$25,847	\$17,339			
<b>COMM01A Mon Aquatic Wildlife</b>	\$364,673	\$80,805	\$189,589	\$270,394	\$94,279	Efficiencies found during project implementation		
COMM01A Mon Aquatic Wildlife - ONR DM	\$174,773	\$16,278	\$74,621	\$90,899	\$83,874			
COMM01A Mon Aquatic Wildlife - ONR Imp	\$189,900	\$64,528	\$114,967	\$179,495	\$10,405			
<b>COMM02A Role Littoral Zone</b>	\$188,424	\$50,872	\$80,495	\$131,367	\$57,057	Scope reduced since Creel Survey cannot be undertaken	Submit Terms of Reference addendum	
COMM02A Role Littoral Zone - ONR DM	\$85,324	\$18,882	\$30,179	\$49,060	\$36,264			
COMM02A Role Littoral Zone - ONR Imp	\$103,100	\$31,990	\$50,317	\$82,307	\$20,794			
<b>COMM03A Valid Littoral Zone</b>	\$155,909	\$102,187	\$6,864	\$109,051	\$46,858	Efficiencies found during project implementation		
COMM03A Valid Littoral Zone - ONR DM	\$57,909	\$15,443	\$4,577	\$20,020	\$37,889			
COMM03A Valid Littoral Zone - ONR Imp	\$98,000	\$86,744	\$2,287	\$89,031	\$8,969			
<b>OR - Ordered Remissible</b>								
<b>ONR - Ordered Non-Remissible</b>								

\* Red values in parentheses denote overage.