

# **Wahleach Project Water Use Plan**

## **Monitoring Program and Physical Works**

**Annual Report: 2013**

**Implementation Period: February 2012 to January 2013**

- **WAHMON-1 Lower Jones Creek Fish Productivity Indices**
- **WAHMON-2 Channel Stability Assessment**
- **WAHMON-3 Herrling Island Sidechannel Chum Spawning Success Monitoring**
- **WAHWORKS-1 Boulder Creek Diversion Bypass**
- **WAHWORKS-2 Wahleach Reservoir Fertilization Program**
- **WAHWORKS-3 Lower Wahleach (Jones) Creek Channel Enhancement Project**

**For Water Licences 119711, 119709 and 119710**

**February 28, 2013**

## **BC Hydro Wahleach Project Water Use Plan Monitoring Programs and Physical Works Annual Report: 2013**

### **1 Introduction**

This document represents a summary of the status and the results of the Wahleach Project Water Use Plan (WUP) monitoring programs and physical works to January 31, 2013, as per the Wahleach Order under the *Water Act*, dated January 25, 2005. There are three monitoring programs and three physical works.

### **2 Status**

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

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

Monitoring Program & Physical Works TOR	Order Clause	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
WAHMON-1 Lower Jones Creek Fish Productivity Indices	Schedule B.1.a	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHMON-2 Channel Stability Assessment	Schedule B.1.a	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHMON-3 Herring Island Sidechannel Chum Spawning Success Monitoring	Schedule B.1.b	Aug 24, 2005	Sep 27, 2005	Feb 24, 2011	Oct 01, 2012
WAHWORKS-1 Boulder Creek Diversion Bypass	Schedule A.2.a.ii	Aug 24, 2005	Oct 28, 2005	Feb 24, 2011	Oct 01, 2012
		Jul 16, 2007	Jul 26, 2007		
WAHWORKS-2 Wahleach Reservoir Fertilization Program	Schedule C	Aug 24, 2005	Oct 28, 2005	Sep 03, 2010	Sep 27, 2010
WAHWORKS-3 Lower Wahleach (Jones) Creek Channel Enhancement Project	Schedule D	Jun 15, 2006	Aug 02, 2006		

### **3 Schedule**

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

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

Study/Physical Work	Component	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
		WLR YR1	WLR YR2	WLR YR3	WLR YR4	WLR YR5	WLR YR6 Interim Review <sup>4</sup>	WLR YR7	WLR YR8	WLR YR9	WLR YR10 Final Review
WAHMON-1 Lower Jones Creek Fish Productivity Indices	Fry Outmigration Assessment	✓	✓	✓	✓	✓	X	✓	X	■	X
	Smolt Outmigration Assessment	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	X	X	X	X	X
	Adult Salmon Escapement	✓	✓	✓	✓	✓	X	✓	X	■	X
	Adult Steelhead Escapement	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	X	X	X	X	X
WAHMON-2 Channel Stability Assessment	✓		✓		✓		✓			■	
WAHMON-3 Herrling Island Sidechannel Chum Spawning Success	Behaviour Assessments	✓	✓	✓	✓	✓	X	X	X	X	X
	Stranding Assessments	✓	✓	✓	✓	✓	X	X	X	X	X
WAHWORKS-1 Boulder Creek Diversion Upgrade	Temporary Upgrade	✓	✓	✓ <sup>2</sup>	□	□	X	X	X	X	X
	Final Upgrade						X				
WAHWORKS-2 Wahleach Reservoir Fertilization	Fertilization and Basic Monitoring	✓	✓	✓	✓	✓	✓	✓	■	■	■
	Hydroacoustic Monitoring		✓	✓	✓	✓	✓	✓	■	■	■
WAHWORKS-3 Lower Wahleach Creek Channel Enhancement Project		DEL <sup>3</sup>	✓	✓	✓	□	□	□	□	□	□

1. Per the terms of reference for these study components, no steelhead or smolt studies will be conducted until confirmation of either populations in Lower Jones Creek is provided through fry and salmon study components.

2. The works completed in September 2005 were undermined during a storm event November 2006; replacement complete in September 2007.

3. The enhancement project delay to 2006 was approved by the Water Comptroller 28 October 2005. The enhancement works terms of reference was given leave to commence 2 August 2006.

4. Interim 5 year review occurs in year 6 given requirement to consider results of a full 5 years of monitoring with sufficient reporting period.

- Legend: □ = Project timing subject to change according to maintenance schedule  
 ■ = Project to be undertaken/initiated in identified year  
 u/w = Project is underway  
 ✓ = Project is complete for the year  
 X = Project implementation discontinued based on outcome of interim review

## **4 Monitoring Programs and Physical Works Terms of Reference**

The Monitoring Programs and Physical Works being implemented under the Wahleach 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/about/sustainability/conservation/water\\_use\\_planning/lower\\_mainland/wahleach.html](http://www.bchydro.com/about/sustainability/conservation/water_use_planning/lower_mainland/wahleach.html)

## **5 Summary of Monitoring Programs**

### **5.1 WAHMON-1 Lower Jones Creek Fish Productivity Indices**

#### **5.1.1 Status**

This monitoring program was initiated in 2005 and will be carried out for one final year in 2013. Attached is the report for Year 7 dated October 2012.

### **5.2 WAHMON-2 Channel Stability Assessment**

#### **5.2.1 Status**

This monitoring program was initiated in 2005 and will be carried out over for one final year in 2013. Attached is the report for Year 7 dated December 11, 2012.

### **5.3 WAHMON-3 Herrling Island Sidechannel Chum Spawning Success Monitoring**

#### **5.3.1 Status**

This monitoring program was initiated in 2005 and was completed in 2010 based on outcome of interim review. Annual Herrling Sidechannel hydrometric data reports will be completed for program Years 5 – 10. No report is attached.

## **6 Summary of Physical Works**

### **6.1 WAHWORKS-1 Boulder Creek Diversion Bypass**

#### **6.1.1 Status**

This physical works was initiated in August 2005 and was completed in 2010 based on outcome of interim review. No report is attached.

### **6.2 WAHWORKS-2 Wahleach Reservoir Fertilization Program**

#### **6.2.1 Status**

This physical works was initiated in 2005 and will be carried out until 2014 the year of the final review. No report is attached. The draft 2011/2012 report is due in March of 2013.

### **6.3 WAHWORKS-3 Lower Wahleach Creek Enhancement Channel**

#### **6.3.1 Status**

This physical works was initiated in 2006 and continued to 2009. Future maintenance will be confirmed on an annual basis. No report attached.

### **7 Monitoring Programs and Physical Works Costs**

The following table summarizes the Wahleach Project WUP monitoring programs and physical works costs approved by the Comptroller and the Actual Costs to January 31, 2013.

**Table 7-1: Wahleach Project WUP Monitoring Programs and Physical Works Costs**

Monitoring Programs	Activity	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
Wahleach Annual Report	ONR	\$13,140	\$10,975	\$2,165	\$13,140	\$0		No Corrective Action
<b>WAHMON#1 LOWER JONES CREEK FISH PRODUCTIVITY INDEX</b>	ONR	\$1,335,486	\$399,450	\$113,470	\$512,920	\$822,566	Efficiencies found during project implementation and reduction in monitoring effort	No Corrective Action
WAHMON#1 Direct Management 001	ONR	\$147,986	\$41,522	\$6,270	\$47,792	\$100,194		
WAHMON#1 Implementation 002	ONR	\$1,187,500	\$357,928	\$107,200	\$465,128	\$722,372		
<b>WAHMON#2 CHANNEL STABILITY ASSESSMENT</b>	ONR	\$227,278	\$118,878	\$43,267	\$162,145	\$65,134	Efficiencies found during project implementation	No Corrective Action
WAHMON#2 Direct Management 001	ONR	\$74,678	\$22,017	\$6,267	\$28,284	\$46,394		
WAHMON#2 Implementation 002	ONR	\$152,600	\$96,861	\$37,000	\$133,861	\$18,739		
<b>WAHMON#3 HERRLING ISLAND SIDECHANNEL CHUM SPAWNING SUCCESS MONITORING</b>	ONR	\$479,514	\$259,840	\$46,148	\$305,989	\$173,525	Reduction in monitoring effort	No Corrective Action
WAHMON#3 Direct Management 001	ONR	\$141,814	\$34,490	\$5,848	\$40,339	\$101,475		
WAHMON#3 Implementation 002	ONR	\$337,700	\$225,350	\$40,300	\$265,650	\$72,050		
<b>WAHWORKS#1 BOULDER CREEK FLOW BYPASS FACILITY REHABILITATION CAPITAL WORKS</b>	CAP	\$946,000	\$68,692		\$68,692	\$877,308	Overestimated based on August 2010 TOR addendum confirming deferral bypass capital	No Corrective Action
WAHWORKS#1 Direct Management 001	CAP	\$165,000			\$0	\$165,000		
WAHWORKS#1 Implementation 002	CAP	\$781,000	\$68,692		\$68,692	\$712,308		
<b>WAHWORKS#1 BOULDER CREEK FLOW BYPASS FACILITY REHABILITATION COST OF ENERGY</b>	ONR	\$384,034	\$220,339		\$220,339	\$163,695	Overestimated based on August 2010 TOR addendum confirming deferral bypass capital	No Corrective Action
WAHWORKS#1 Direct Management 001	ONR	\$100,918	\$40,612		\$40,612	\$60,306		
WAHWORKS#1 Implementation 002	ONR	\$283,116	\$179,728		\$179,728	\$103,388		
<b>WAHWORKS#2 WAHLEACH RESERVOIR FERTILIZATION PROGRAM</b>	ONR	\$1,145,052	\$860,108	\$271,375	\$1,131,483	\$13,569	Underspending of fertilizer costs	No Corrective Action
WAHWORKS#2 Direct Management 001	ONR	\$54,058	\$32,543	\$9,099	\$41,642	\$12,416		
WAHWORKS#2 Implementation 002	ONR	\$1,090,994	\$827,565	\$262,276	\$1,089,841	\$1,153		
<b>WAHWORKS#3 LOWER WAHLEACH CREEK CHANNEL ENHANCEMENT PROJECT</b>	ONR	\$241,609	\$104,761	\$40,183	\$144,944	\$96,665	Underspending of annual \$15K in enhancement maintenance funds	No Corrective Action
WAHWORKS#3 Direct Management 001	ONR	\$67,659	\$24,733	\$10,183	\$34,916	\$32,743		
WAHWORKS#3 Implementation 002	ONR	\$173,950	\$80,028	\$30,000	\$110,028	\$63,922		