

# **Columbia River Water Use Plan**

## **Lower Columbia River Fish Management Plan**

### **Monitoring Programs**

**Annual Report: 2014**

**Implementation Period: August 2013 to July 2014**

- **CLBMON-42 Lower Columbia River Fish Stranding Assessment and Ramping Protocol**
- **CLBMON-43 Lower Columbia River Sculpin and Dace Life History Assessment**
- **CLBMON-44 Lower Columbia River Physical Habitat and Ecological Productivity Monitoring**
- **CLBMON-45 Lower Columbia River Fish Population Indexing Surveys**
- **CLBMON-46 Lower Columbia River Rainbow Trout Spawning Habitat Assessment**
- **CLBMON-47 Lower Columbia River Whitefish Spawning Ground Topographic Survey**
- **CLBMON-48 Lower Columbia River Whitefish Egg Monitoring & Life History Study**
- **CLBMON-49 Lower Columbia River Effects of Whitefish Flows on Great Blue Heron & Winter Use of Waldie by Great Blue Heron**

**Conditional Water Licences for Kinbasket storage (27068 and 39432), Mica diversion (39431), Revelstoke diversion and storage (47215), and Arrow storage (27066)**

**August 31, 2014**

## **BC Hydro Columbia River Project Water Use Plan Lower Columbia River Fish Management Plan Monitoring Programs Annual Report: 2014**

### **1 Introduction**

This document represents a summary of the status and the results of the Lower Columbia River Fish Management Plan of the Columbia River Water Use Plan (WUP) monitoring programs to July 31, 2014, as per the Columbia River Order under the *Water Act*, dated January 26, 2007. There are eight monitoring programs.

### **2 Status**

The following table outlines the dates that TOR for the Lower Columbia River Fish Management Plan of the Columbia River WUP monitoring programs were submitted to and approved by the CWR.

**Table: 2-1: Dates of Lower Columbia River Fish Management Plan of the Columbia River 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
CLBMON-42 Lower Columbia River Fish Stranding Assessment and Protocol	Schedule E.2.a	Sep 10, 2007	Oct 29, 2007	Sep 26, 2012	Oct 09, 2012
CLBMON-43 Lower Columbia River Sculpin and Dace Life History Assessment	Schedule E.2.b	Oct 26, 2007	Dec 03, 2007		
CLBMON-44 Lower Columbia River Physical Habitat and Ecological Productivity Monitoring	Schedule E.2.c	Oct 26, 2007	Dec 03, 2007		
CLBMON-45 Lower Columbia River Fish Population Indexing Surveys	Schedule E.2.d	Sep 10, 2007	Oct 29, 2007		
CLBMON-46 Lower Columbia River Columbia Rainbow Trout Spawning Habitat Assessment	Schedule E.2.e	Oct 26, 2007	Dec 03, 2007	Jan 09, 2009	Mar 26, 2009
CLBMON-47 Lower Columbia River Whitefish Spawning Ground Topographic Survey	Schedule E.2.f	Oct 26, 2007	Dec 03, 2007		
CLBMON-48 Lower Columbia River Whitefish Egg Monitoring & Life History Study	Schedule E.2.g	Oct 26, 2007	Dec 03, 2007		
CLBMON-49 Lower Columbia River Effects of Whitefish Flows on Great Blue Heron and Winter Use of Waldie by Great Blue Heron	Schedule E.2.h	Oct 26, 2007	Dec 03, 2007	Jun 05, 2013	Jun 19, 2013

### 3 Schedule

The following table (Table 3-1) outlines the current schedule for the monitoring programs being delivered for the Lower Columbia River Fish Management Plan of the Columbia River WUP.

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

Monitoring Programs	2007 WLR YR1	2008 WLR YR2	2009 WLR YR3	2010 WLR YR4	2011 WLR YR5	2012 WLR YR6	2013 WLR YR7	2014 WLR YR8	2015 WLR YR9	2016 WLR YR10	2017 WLR YR11	2018 WLR YR12	2019 WLR YR13 Final Review
CLBMON-42 Lower Columbia River Fish Stranding Assessment and Protocol	✓	✓	✓	✓	✓	✓	✓	u/w	■	■	■	■	■
CLBMON-43 Lower Columbia River Sculpin and Dace Life History Assessment			✓	✓	✓	✓	✓						
CLBMON-44 Lower Columbia River Physical Habitat and Ecological Productivity Monitoring		✓	✓	✓	✓	✓	✓	u/w	■	■	■	■	■
CLBMON-45 Lower Columbia River Fish Population Indexing Surveys	✓	✓	✓	✓	✓	✓	✓	■	■	■	■	■	■
CLBMON-46 Lower Columbia River Columbia Rainbow Trout Spawning Habitat Assessment		✓	✓	✓	✓	✓	✓	u/w	■	■	■		
CLBMON-47 Lower Columbia River Whitefish Spawning Ground Topographic Survey					✓	✓	✓						
CLBMON-48 Lower Columbia River Whitefish Egg Monitoring & Life History Study		✓	✓	✓	✓	✓							
CLBMON-49 Lower Columbia River Effects of Whitefish Flows on Great Blue Heron and Winter Use of Waldie by Great Blue Heron							✓	■	■				
Legend:	<ul style="list-style-type: none"> <li>■ = Program to be undertaken/initiated in identified year</li> <li>u/w = Project is underway</li> <li>✓ = Program completed for the year</li> <li>x = Program started, but encountered operational or hydrological delays</li> </ul>												

### 4 Monitoring Programs Terms of Reference

The Monitoring Programs being implemented under the Lower Columbia River Fish Management Plan of the Columbia River WUP are described in Terms of Reference. These Terms of Reference can be found here:

[http://www.bchydro.com/about/sustainability/conservation/water\\_use\\_planning/southern\\_interior/columbia\\_river/lower-columbia-fish.html](http://www.bchydro.com/about/sustainability/conservation/water_use_planning/southern_interior/columbia_river/lower-columbia-fish.html)

### 5 Summary of Monitoring Programs

#### 5.1 CLBMON-42 Lower Columbia River Fish Stranding Assessment and Protocol

##### 5.1.1 Status

This monitoring program was initiated in May 2007 and will be carried out over 13 years. Attached are the reports for Year 6 dated August 28, 2013 and Year 7 dated May 30, 2014.

#### 5.2 CLBMON-43 Lower Columbia River Sculpin and Dace Life History Assessment

##### 5.2.1 Status

This monitoring program was initiated in 2009 and will be carried out over five years. The Year 5 report (i.e., the final report for the entire project), will be finalized by September 2014 and will be submitted in the 2015 report.

### **5.3 CLBMON-44 Lower Columbia River Physical Habitat and Ecological Productivity Monitoring**

#### **5.3.1 Status**

This monitoring program was initiated in 2008 and will be carried out over 12 years. Attached are the reports for Year 5 dated October 2013, and Year 6 dated July 2014.

### **5.4 CLBMON-45 Lower Columbia River Fish Population Indexing Surveys**

#### **5.4.1 Status**

This monitoring program was initiated in September 2007 and will be carried out over 13 years. Attached is the report for Year 6 dated December 4, 2013.

### **5.5 CLBMON-46 Lower Columbia River Columbia Rainbow Trout Spawning Habitat Assessment**

#### **5.5.1 Status**

This monitoring program was initiated in 2008 and will be carried out over 10 years. Attached is the report for Year 6 dated January 12, 2014.

### **5.6 CLBMON-47 Lower Columbia River Whitefish Spawning Ground Topographic Survey**

#### **5.6.1 Status**

This monitoring program was initiated in 2011 and was carried out over three years. Attached is the report for Year 3 dated January 29, 2014. This project is complete.

### **5.7 CLBMON-48 Lower Columbia River Whitefish Egg Monitoring & Life History Study**

#### **5.7.1 Status**

This monitoring program was initiated in 2008 and was carried out over five years. Attached is the report for Year 5 dated July 17, 2014. This project is complete.

### **5.8 CLBMON-49 Lower Columbia River Effects of Whitefish Flows on Great Blue Heron and Winter Use of Waldie by Great Blue Heron**

#### **5.8.1 Status**

This monitoring program was initiated in November 2013 and will be carried out over three years. No report is attached. The finalization of the first year's report (i.e., 2013) is delayed until September 2014 due to an extended review period.

## **6 Monitoring Programs Costs**

The following table summarizes the Lower Columbia River Fish Management Plan of the Columbia River WUP monitoring programs costs approved by the Comptroller and the Actual Costs to July 31, 2014.

**Table 6-1: Lower Columbia River Fish Management Plan of the Columbia River WUP Monitoring Programs 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>CLB MP8 Lower CR Fish Annual Report</b>	\$8,978	\$7,371	\$4,095	\$11,466	(\$2,488)	Annual reports to date have taken longer than anticipated to prepare	Resubmission of annual report costs will occur by November 30, 2014.
<b>C08M42A LC: Fish Strand</b>	\$1,565,971	\$570,014	\$892,345	\$1,462,360	\$103,611	Efficiencies found during project implementation.	No corrective action.
C08M42A LC: Fish Strand - OR DM	\$247,910	\$86,785	\$69,521	\$156,306	\$91,604		
C08M42A LC: Fish Strand - OR Imp	\$1,318,061	\$483,229	\$822,825	\$1,306,054	\$12,007		
<b>C08M43A LC:Sculpin&amp;Dace</b>	\$990,546	\$942,980	\$6,753	\$949,733	\$40,813	Efficiencies found during project implementation.	No corrective action.
C08M43A LC:Sculpin&Dace - OR DM	\$64,043	\$60,955	\$4,661	\$65,615	(\$1,572)		
C08M43A LC:Sculpin&Dace - OR Imp	\$926,503	\$882,025	\$2,092	\$884,118	\$42,385		
<b>C08M44A LC:Phys Hab&amp;Eco</b>	\$2,162,010	\$1,365,048	\$796,963	\$2,162,010	(\$0)		
C08M44A LC:Phys Hab&Eco - OR DM	\$171,319	\$144,952	\$43,509	\$188,460	(\$17,141)		
C08M44A LC:Phys Hab&Eco - OR Imp	\$1,990,691	\$1,220,096	\$753,454	\$1,973,550	\$17,141		
<b>C08M45A LC: Fish Pop</b>	\$2,744,109	\$1,213,557	\$1,530,552	\$2,744,109	\$0		
C08M45A LC: Fish Pop - OR DM	\$180,037	\$59,375	\$120,662	\$180,037	\$0		
C08M45A LC: Fish Pop - OR Imp	\$2,564,072	\$1,154,182	\$1,409,890	\$2,564,072	(\$0)		
<b>C08M46A LC: Rainbow Tro</b>	\$734,980	\$465,968	\$269,011	\$734,980	\$0		
C08M46A LC: Rainbow Tro - OR DM	\$115,994	\$79,502	\$38,225	\$117,727	(\$1,733)		
C08M46A LC: Rainbow Tro - OR Imp	\$618,986	\$386,466	\$230,786	\$617,252	\$1,734		
<b>C08M47A LC: Whitefish Spwn</b>	\$292,267	\$263,456	\$0	\$263,456	\$28,811	Efficiencies found during project implementation.	No corrective action.
C08M47A LC: Whitefish Spwn - OR DM	\$38,246	\$18,124	\$0	\$18,124	\$20,122		
C08M47A LC: Whitefish Spwn - OR Imp	\$254,021	\$245,332		\$245,332	\$8,689		
<b>C08M48A LC: Whitefish Egg</b>	\$912,415	\$876,702	\$0	\$876,702	\$35,713	Efficiencies found during project implementation.	No corrective action.
C08M48A LC: Whitefish Egg - OR DM	\$62,520	\$47,961	\$0	\$47,961	\$14,559		
C08M48A LC: Whitefish Egg - OR Imp	\$849,895	\$828,741		\$828,741	\$21,154		
<b>C08M49A LC:EFF WFish GBH</b>	\$299,359	\$114,747	\$184,612	\$299,359	\$0		
C08M49A LC:EFF WFish GBH - OR DM	\$56,271	\$40,006	\$16,256	\$56,262	\$9		
C08M49A LC:EFF WFish GBH - OR Imp	\$243,088	\$74,741	\$168,356	\$243,097	(\$9)		
<b>OR - Ordered Remissible</b>							
<b>ONR - Ordered Non-Remissible</b>							

\* Red values in parentheses denote overage.