

March 2014

**NECHAKO FISHERIES CONSERVATION PROGRAM**

**BRIEFING DOCUMENT FOR NFCP STEERING COMMITTEE**

**EXECUTIVE SUMMARY OF ACTIVITIES IN 2013/2014 AND PROPOSED WORK FOR  
2014/2015**

**Technical Committee Operations**

The Technical Committee undertook minimal activities in Year 26 of the NFCP and held one conference call and no face-to-face meetings. During the year, the Technical Committee undertook the projects approved for the 2013/2014 fiscal year with the exception of the flow discrepancy and habitat structure removal projects. Most of the outstanding publications which were scheduled for completion in Year 26 have been finalized.

**2013/2014 Program Summary**

In the 2013/2014 operating period 3 of 5 planned projects were conducted by the Nechako Fisheries Conservation Program. Planned projects included:

	Person-Days	Person-Day Costs	Disbursements	Total Expenses
3 Remedial Measures Projects	141	\$70,500	\$29,320	\$99,820
2 Monitoring Projects	24	\$12,000	\$49,000	\$61,000
<b>Grand Total</b>	<b>165</b>	<b>\$82,500</b>	<b>\$78,320</b>	<b>\$160,820</b>

The total program budget for the 2013/2014 program year was \$160,820 excluding Technical and Steering Committee operations.

Deferred projects included the flow discrepancy project and the Chinook residence time measurement, a component of the larger enumeration program.

## **Proposed 2014/2015 Program Summary**

The proposed 2014/2015 (Year 27) Nechako Fisheries Conservation Program includes:

	Person-Days	Person-Day Costs	Disbursements	Total Expenses
3 Remedial Measures Projects	141	\$70,500	\$29,320	\$99,820
2 Monitoring Projects	24	\$12,500	\$58,200	\$70,700
<b>Grand Total</b>	<b>165</b>	<b>\$82,500</b>	<b>\$87,520</b>	<b>\$170,520</b>

Activities are similar to the core activities undertaken in Year 25 and 26. The Chinook residence time evaluation, scheduled in the current 5-year plan for implementation in Year 26, was deferred to Year 27 by unanimous consent of the NFCP as reflected in Decision Record 2012/13-1. This deferral was extended until Year 28. The previous assessment took place in 2009 making Year 28 close to a 5-yr measurement frequency interval in keeping with the overall intent of the program.

A detailed breakdown of person-days and expenses of proposed 2014/2015 individual projects is attached in Table 1. Table 2 provides a comparison of the proposed Year 27 program budget with the approved budgets for the previous 4 years. Figure 1 shows the information graphically.

**Table 1.** NFCP: Proposed 2014/2015 Program.

REMEDIAL MEASURES		DAYS	DISBURSEMENTS*	RESPONSIBLE
RM14-2	Summer Temperature Management	\$54,750	\$15,910	RTA
RM14-8	Flow Control	\$11,250	\$3,410	RTA
RM14-8A	Flow Discrepancy Project	\$4,500	\$10,000	RTA
SUBTOTAL		\$70,500	\$29,300	\$99,820
MONITORING				
M14-1	Enumeration and Residency Time	\$7,500	\$38,200	DFO/RTA
M14-2	Carcass Recovery	\$5,000	\$20,000	DFO/RTA
SUB TOTAL		\$12,500	\$58,200	\$70,700
APPLIED RESEARCH				
<b>No applied research projects recommended for 2012/2013</b>				
SUB TOTAL		0	0	
<b>TOTAL</b>		<b>\$83,000</b>	<b>\$87,520</b>	<b>\$170,500</b>
COMMITTEE OPERATIONS**		***	\$50,000	

\*Includes contracts

\*\*Includes Independent Member, Annual Meeting and Report, Technical Report Production, and Committee Meetings

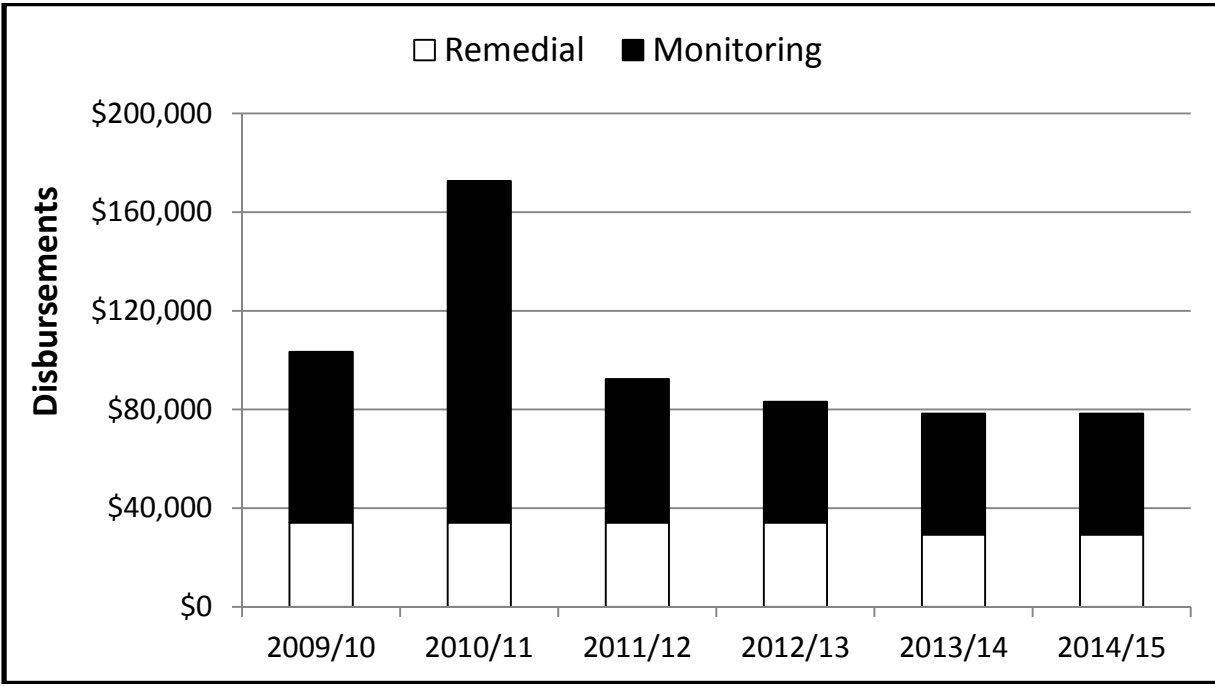
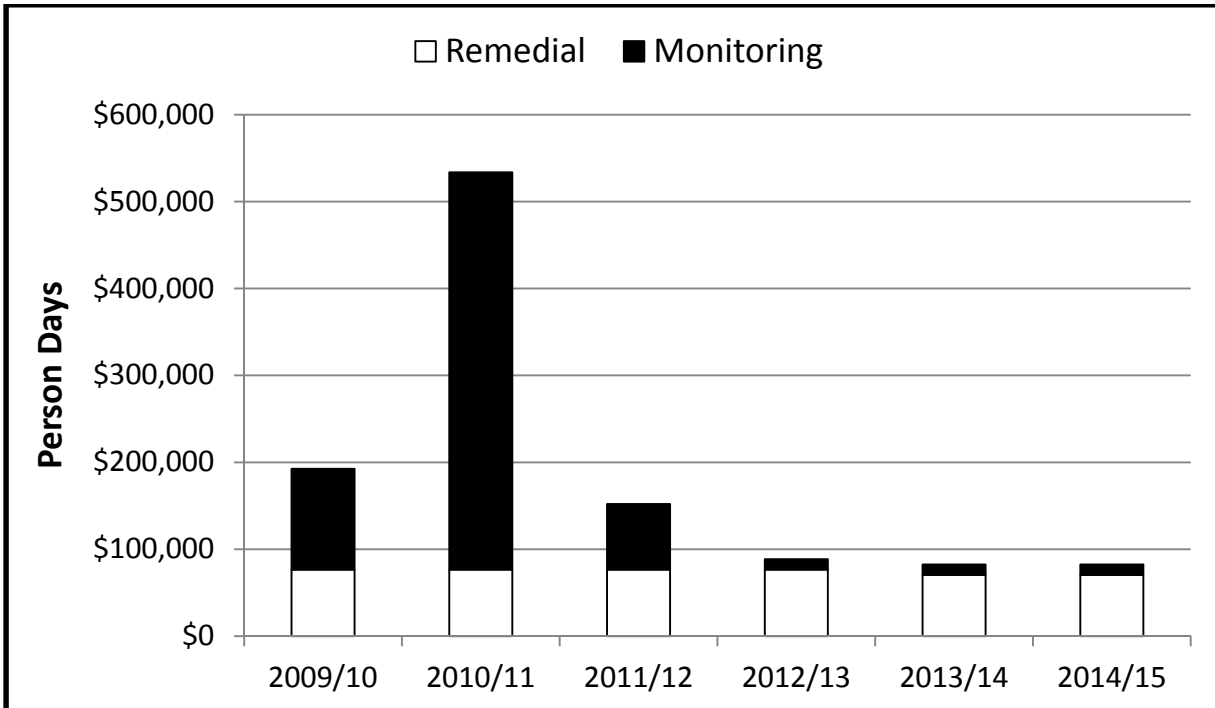
\*\*\*As required by each party  
Technical Report Production, and Committee Meetings

**Table 2. Nechako Fisheries Conservation Program Previous Years' Budgets and Proposed Project Budgets for Year 27 (2014/2015)**

		2010/2011		2011/2012		2012/2013		2013/2014		Proposed 2014/2015	
		DAYS	EXPENSES	DAYS	EXPENSES	DAYS	EXP	DAYS	EXPENSES	DAYS	EXPENSES
REMEDIAL MEASURES										(inc. contract)	
1	Murray Cheslatta Flow Measurement										
2	Summer Temperature Management	\$54,750	\$15,910	\$54,700	\$15,910	\$54,750	\$15,910	\$54,750	\$15,910	\$54,750	\$15,910
3	Instream Habitat Complexing	\$6,000	\$4,821	\$6,000	\$4,821	\$6,000	\$4,820				
3a	Instream Habitat Complex Assessment 1988 - 2000										
4	Stream Fertilization										
5	Assessment of Fertilization/Complexing										
6	Inventory of Habitat Cover										
7	Inventory of Sediment Sources										
8	Flow Control	\$11,250	\$3,410	\$11,250	\$3,410	\$11,250	\$3,410	\$11,250	\$3,410	\$11,250	\$3,410
8A	Flow Discrepancy Project	\$4,500	\$10,000	\$4,500	\$10,000	\$4,500	\$10,000	\$4,500	\$10,000	\$4,500	\$10,000
9	Winter Remedial Measures										
10	River Bed Survey/Hec-2 Model										
11	Riparian Bank Stabilization										
	<b>Sub-Total Remedial Measures</b>	<b>\$76,500</b>	<b>\$34,141</b>	<b>\$76,500</b>	<b>\$34,141</b>	<b>\$76,500</b>	<b>\$34,140</b>	<b>\$70,500</b>	<b>\$29,320</b>	<b>\$70,500</b>	<b>\$29,300</b>
MONITORING											
1	Enumeration <sup>1</sup>	\$8,000	\$25,400	\$8,000	\$30,000	\$8,000	\$30,000	\$8,000	\$30,000	\$7,500	\$38,200
2	Carcass Recovery	\$16,000	\$7,000	\$4,000	\$19,000	\$4,000	\$19,000	\$4,000	\$19,000	\$5,000	\$20,000
3	Juvenile Outmigration	\$270,750	\$67,552								
4	Winter Physical Conditions										
5	Physical Data Collection	\$28,500	\$5,400								
6	Fry Emergence	\$111,000	\$23,945								
7	Substrate Quality and Composition										
8	Dissolved Oxygen Monitoring										
9	Evaluation Framework/Trend Analysis/Tech Review										
10	Outstanding NFCP Reports and Web Site Management	\$23,000	\$9,200	\$23,000	\$9,200						
11	Emergent Fry Habitat Monitoring										
12	Database Management										
	<b>Sub-Total Monitoring</b>	<b>\$457,350</b>	<b>\$138,497</b>	<b>\$35,000</b>	<b>\$58,200</b>	<b>\$12,000</b>	<b>\$49,000</b>	<b>\$12,000</b>	<b>\$49,000</b>	<b>\$12,500</b>	<b>\$58,200</b>
APPLIED RESEARCH											
1	Chinook Overwintering										
2	Life History Model										
3	Predator/Prey										
4	Temperature Effects										
5	Chinook Ecology										
6	Temperature Modelling										
	<b>Sub-Total Applied Research</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRAND TOTAL</b>		<b>\$533,850</b>	<b>\$172,638</b>	<b>\$111,500</b>	<b>\$92,340</b>	<b>\$88,500</b>	<b>\$83,140</b>	<b>\$82,500</b>	<b>\$78,320</b>	<b>\$83,000</b>	<b>\$87,500</b>

<sup>1</sup> For 2014-2015, enumeration costs are \$31.2 k for helicopter, 7k for travel and 7.5k for labour. Carcass recovery costs are \$20k for contract and \$5k for labour.

**Figure 1.** NFCP professional time and program expenditures for Year 27(2014/15) and the previous 5 years.



## Cost Sharing Status

Rio Tinto Alcan (RTA) pays for the cost of remedial measures projects (e.g. Summer Temperature Management, Flow Control), DFO pays the cost of applied research projects (e.g. previously - Chinook Ecology) and both agencies share the cost of monitoring projects (e.g. Spawner Enumeration). In recent years, no applied research projects have been undertaken.

Historically chinook were enumerated by a helicopter that was staffed by RTA and DFO observers and cost-shared by the 2 agencies. Recent restrictions in helicopter operations by RTA prevent this arrangement and DFO is presently funding both observers during spawner counts.

There are 2 monitoring projects contemplated for 2014/15: chinook enumeration and carcass recovery. The annual costs associated with these monitoring projects are shown below.

<b><u>COST BREAKDOWN: MONITORING PROJECTS</u></b>				
		Days	Disbursements	Contract
Enumeration	DFO	\$7,500	\$38,200	
	RTA			
Carcass Recovery	DFO	\$4,000	\$1,000	\$20,000
	RTA			

Expected DFO expenses in Year 27 total \$70,700 while expected RTA expenses are nil.

In Year 23 (2010-2011) a decision was taken (SC Decision Record 2010/11-2) to "close-off" the accounting for monitoring projects up to and including Year 22 which were considered balanced in accordance with the cost-sharing provisions of the 1987 Settlement Agreement. In consideration of the fry/juvenile work (\$372,000) that was financed by RTA in 2010, it was agreed that DFO would fund the majority of the enumeration and carcass recovery projects delivered in 2011 through 2015. The actual and projected expenditures by RTA and DFO for NFCP monitoring activities from 2010 up to and including 2014/15 (Year 27) are shown in Table 3.

**Table 3.** Financing schedule for NFCP monitoring projects between 2010-2015.

		Rio Tinto Alcan	Fisheries & Oceans	Total	Imbalance
Year 23	actual	\$374,600	\$90,700	\$465,300	<b>\$283,900</b>
Year 24	actual	\$2,500	\$90,700	\$93,200	<b>\$195,700</b>
Year 25	actual	-	\$61,000	\$61,000	<b>\$134,700</b>
Year 26	actual	-	\$61,000	\$61,000	<b>\$73,700</b>
Year 27	projected	-	\$70,700	\$70,700	<b>(\$3,000)</b>
Total	projected	\$377,100	\$374,100	\$751,200	<b>(\$3,000)</b>

At the end of Year 26, RTA had expended \$73,700 more funds than DFO. Following Year 27 the imbalance will be effectively retired when RTA will have expended \$3,000 more than DFO over the 5-year monitoring period.

**NECHAKO FISHERIES CONSERVATION PROGRAM**

**STEERING COMMITTEE - BRIEFING DOCUMENT  
OUTLINE OF COMPLETED YEAR 26 AND PROPOSED YEAR 27 PROJECTS**

**ATTACHMENT #1**



# NECHAKO FISHERIES CONSERVATION PROGRAM

## STEERING COMMITTEE - BRIEFING DOCUMENT OUTLINE OF COMPLETED YEAR 26 AND PROPOSED YEAR 27 PROJECTS

### REMEDIAL MEASURES

#### Summer Water Temperature Management Program

Nechako River flows and water temperatures are managed using a computer-based program referenced in the Settlement Agreement. The program protocol uses a trend analysis developed from five-day meteorological forecasts to schedule releases from Skins Lake Spillway to attempt to maintain mean daily water temperatures at or below 20.0°C in the Nechako River upstream of the Stuart River (Finmoore).

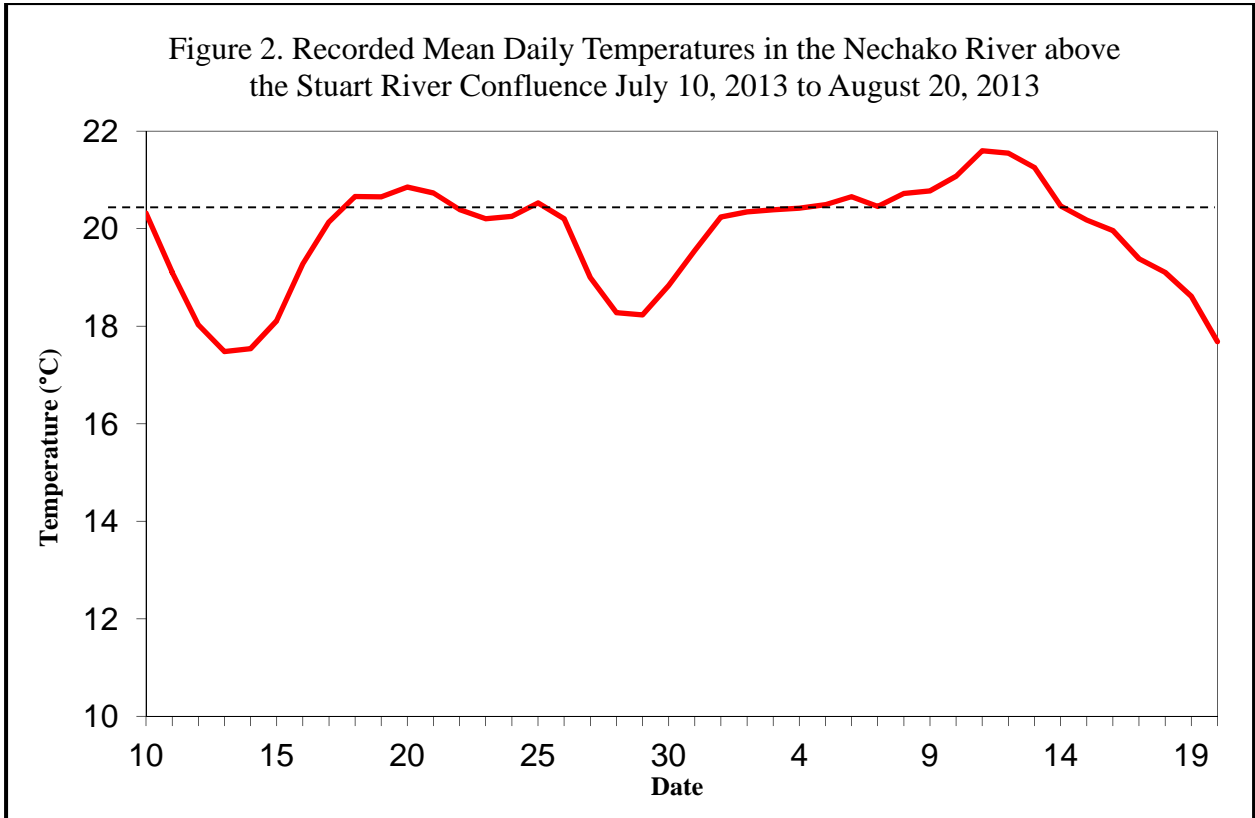
#### **YEAR 26** **2013/2014**

The Summer Temperature Management Program (STMP) was operated in the summer of 2013 in accordance with the Propocol referenced in the 1987 Settlement Agreement. Generally, the summer of 2013 was warmer than average and releases from the Skins Lake Spillway were required to maintain the discharge in the Nechako River below Cheslatta Falls at or near the maximum discharge of 283 m<sup>3</sup>/s for 23 of the 31 days in the control period (July 20 to August 20). . Figure 2. shows the water temperatures recorded in the Nechako River upstream of the Nechako-Stuart River confluence (at Finmore).

#### **YEAR 27** **2014/2015**

The 2014/2015 Summer Water Temperature Management Project will follow the same protocol and will be conducted in a manner consistent with previous project years.

Figure 2. Recorded Mean Daily Temperatures in the Nechako River above the Stuart River Confluence July 10, 2013 to August 20, 2013



**REMEDIAL MEASURES  
(Continued)**

**Flow control**

The NFCP Technical Committee is responsible for the management of the annual water allocation from Nechako Reservoir to best benefit fish in the Nechako River.

**YEAR 26  
2013/2014**

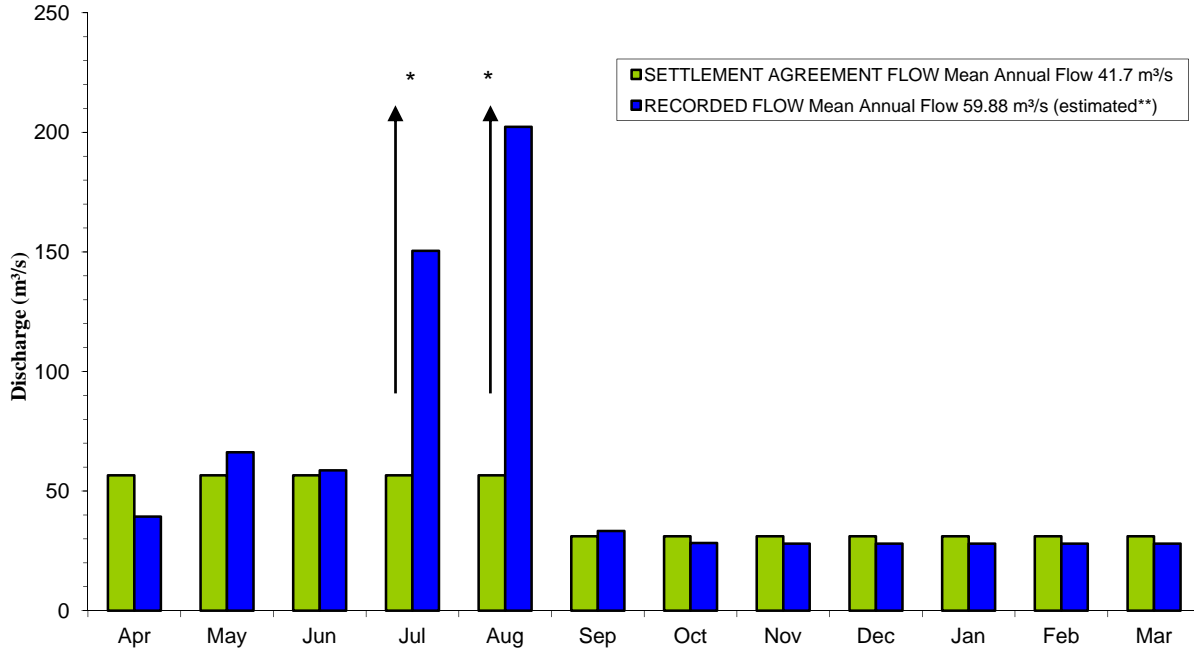
In 2013/2014, the release of the Annual Water Allocation was initiated in April as noted in Figure 3. Releases from the reservoir remained at requested levels (49m<sup>3</sup>/s) from late April to the start of the STMP in July. In the latter part of the STMP in late August, releases were decreased, to control the discharge in the Nechako River below Cheslatta Falls to approximately 31.8 m<sup>3</sup>/s through the spawning period in September. It is anticipated the releases will remain at ~31.8 m<sup>3</sup>/s for the remainder of the fall and winter.

It is estimated that the mean annual discharge from the reservoir will be 36.82m<sup>3</sup>/s, slightly greater than the required release of 36.8 m<sup>3</sup>/s.

**YEAR 27  
2014/2015**

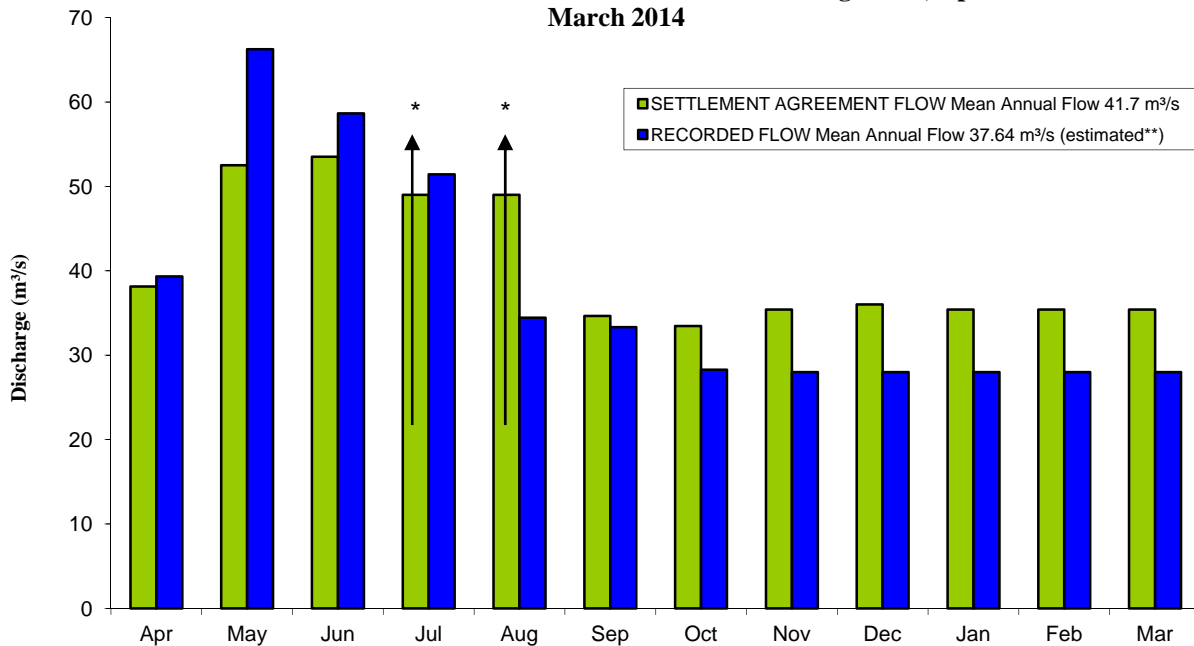
In 2014/2015, flow allocation will again be managed by the NFCP to best utilize the annual water allocation.

**Figure 3 - Comparison between Settlement Agreement and Recorded Flow in Nechako River below Cheslatta Falls, April 2013 to March 2014**



\* Additional Flows as Required for Cooling Purposes  
 \*\* Nov., Dec, Jan., Feb., and Mar. data are assumed

**Figure 4 - Comparison between Settlement Agreement and Recorded Flow in Nechako River below Cheslatta Falls - without Added Cooling Flows, April 2013 to March 2014**



\* Additional Flows as Required for Cooling Purposes  
 \*\* Nov., Dec, Jan., Feb., and Mar. data are assumed.

**REMEDIAL MEASURES  
(Continued)**

**NFCP Flow Discrepancy Project**

Periodically a discrepancy is apparent between the flow records for the Skins Lake Spillway and the Nechako River below Cheslatta Falls. An investigation into the potential reasons for these discrepancies was carried out in February 1999. The investigation indicated that the most likely cause was the use of preliminary data for the station below Cheslatta Falls in making the comparison. There is also the possibility of groundwater recharge occurring in the fall.

**YEAR 26  
2013/2014**

The flow discrepancy project was undertaken in 2013-14 as a flow anomaly was detected. As of the date of this writing, the report has not been finalized but preliminary data indicates that the SLS release is as required under the Settlement Agreement.

**YEAR 27  
2014/2015**

During 2014/2015 a contingency budget will again be established to allow investigation of the source of any observed discrepancy between the Skins Lake Spillway and the WSC gauging station (#08JA017) in the Nechako River below Cheslatta Falls.

Additionally, the Water Survey of Canada will conduct spot checks of the flows at station 08JA4017 to allow a comparison of flows with spillway releases, should an anomaly in the relationships be detected.

# NECHAKO FISHERIES CONSERVATION PROGRAM

## STEERING COMMITTEE - BRIEFING MEMO OUTLINE OF COMPLETED YEAR 26 AND PROPOSED YEAR 27 PROJECTS

### MONITORING

#### Adult Spawner Enumeration

The number of adult chinook salmon returning to the Nechako River is the ultimate indicator of achievement of the Conservation Goal.

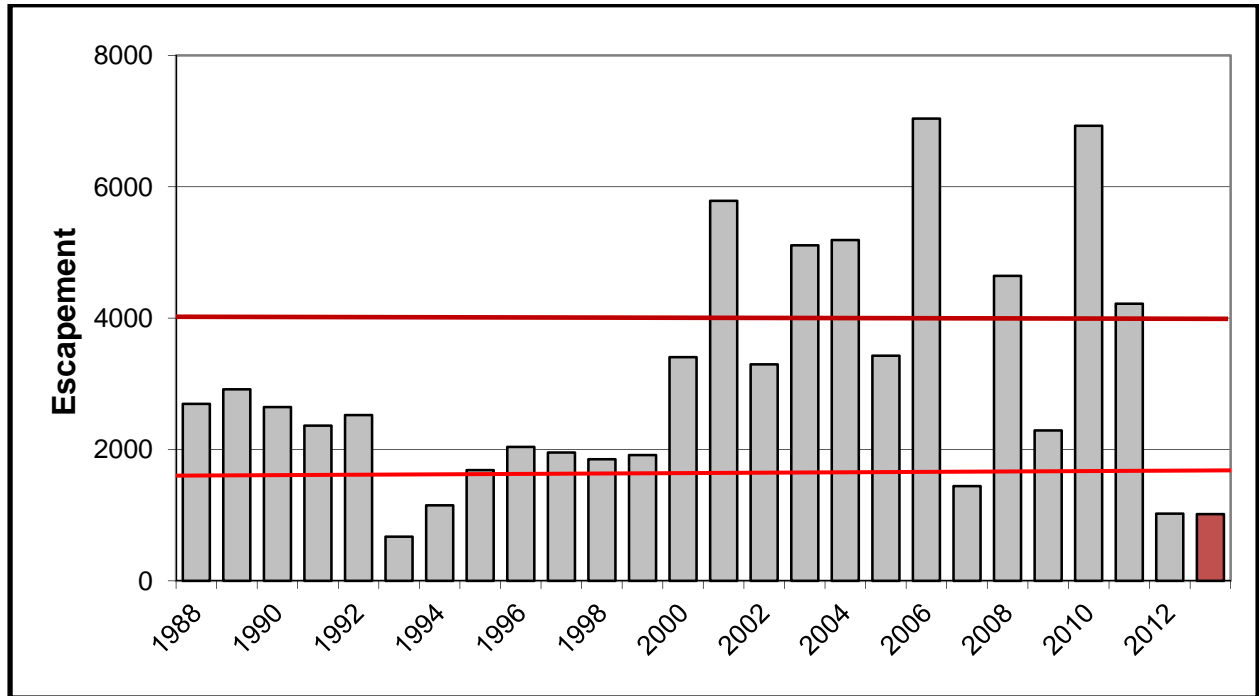
#### **YEAR 26** **2013/2014**

In 2013, 4 over-flights were undertaken between August 4 and September 25. Results indicated a preliminary escapement estimate of 1017 spawners to the Nechako River (Figure 5), below the lower target of the conservation goal of 1700 chinook.

#### **YEAR 27** **2014/2015**

In 2014, the approach to the adult enumeration on the Nechako River will again include the aerial count portion of the project. The re-scheduling of the residence time assessment in 2015 is in keeping with a 5-year frequency of measurement (previous measurement was in 2009).

**Figure 5. Nechako Chinook Escapement: 1988 - 2013. Red lines show the NFCP conservation goal targets of between 1700 and 4000 chinook**



**MONITORING  
(Continued)**

**Adult Carcass Recovery**

Life history information on freshwater and marine components of Nechako River chinook salmon can be ascertained by analyzing adult carcasses near the spawning grounds. Age at return, time of fresh water residency, and egg deposition are important data to enable results from other monitoring projects to be interpreted.

**YEAR 26  
2013/2014**

Samples taken for age analyses were sent to the aging laboratory and the 2013 age data is not yet available. The data will be analyzed and compiled into a future NFCP report.

**YEAR 27  
2014/2015**

In 2014, the carcass recovery project will continue to collect biological data on size, sex, age, life history, egg retention and fecundity of Nechako River chinook. The current budget proposal allows for continuation of the project consistent with prior years.



**MONITORING  
(Continued)**

**Fry Emergence**

The key incubation environment indicator is the quality and quantity of emerging fish from the gravel. A monitoring project designed to assess emergent success serves as an early warning indicator of any changes in the incubation environment and defines potential recruitment of chinook in the Nechako River.

**YEAR 26  
2013/2014**

The next fry emergence project is scheduled for 2015/2016 therefore no new work was undertaken in 2013/2014.

**YEAR 27  
2014/2015**

The next fry emergence project is scheduled for 2016/2017 therefore no new work will be undertaken in 2014/2015.

**MONITORING  
(Continued)**

**Juvenile Outmigration**

To provide an "early warning" indication of any change in numbers or condition of Nechako River chinook, an index monitoring project was formerly conducted on an annual basis. This project is designed to provide important management information 4 to 5 years prior to return of adult spawners. Data collected to date has resulted in the development of spawner to out-migrant and spawner to rearing juvenile (CPUE) relationships for the Nechako River. Following the schedule set by the NFCP 5-year plan, measurements of juvenile outmigration are to be conducted every five years.

**YEAR 26**  
**2013/2014**

The next juvenile outmigration project is scheduled for 2015/2016 therefore no new work was undertaken in 2013/2014.

**YEAR 27**  
**2014/2015**

The next juvenile outmigration project is scheduled for 2016/2017 therefore no new work will be undertaken in 2014/2015.

**MONITORING  
(Continued)**

**Physical Data Collection**

The timing of emergence, growth rates, and life history dynamics of chinook salmon are closely related to the temperature of their environment. Therefore, the maintenance of the river temperature database is important for designing and/or supporting monitoring projects and assessing the timing of life history events.

**YEAR 26  
2013/2014**

In 2013/2014, no collection of temperature baseline data under the auspices of the NFCP took place

**YEAR 27  
2014/2015**

In 2014/2015, no collection of temperature baseline data under the auspices of the NFCP will take place.

**MONITORING  
(Continued)**

**Outstanding NFCP Report Publication and Web Site  
Maintenance**

The NFCP has completed over 150 project reports summarizing the results of various remedial measures, applied research, monitoring and data collection projects over the last 25 years of the program. Completed reports for 2013 will be put on the NFCP website in PDF format along with annual programs and new initiatives.

**YEAR 26  
2013/2014**

The NFCP web site was maintained under the direction of the Independent Member.

In 2012/2013 (Year 25), outstanding reports to 2013 under DFO authorship were completed.

**YEAR 27  
2014/2015**

The NFCP web site will be maintained under the direction of the Independent Member.

The NFCP will complete and publish the 2014 enumeration and carcass recovery reports. Anticipated revisions to the website include updating of annual programs, decision records, technical report posting and descriptions of new initiatives.

A pamphlet will be prepared for distribution in northern B.C. to summarize NFCP activities in 2014.

**NECHAKO FISHERIES CONSERVATION PROGRAM**

**STEERING COMMITTEE - BRIEFING MEMO  
OUTLINE OF COMPLETED YEAR 26 AND PROPOSED YEAR 27 PROJECTS**

**APPLIED RESEARCH**

**YEAR 25  
2013/2014**

No applied research projects were conducted in 2013/2014

**YEAR 26  
2014/2015**

No applied research projects are planned in 2014/2015.