



# Nechako Fisheries Conservation Program

*Conserving and Protecting Salmon in the Nechako River*

*The spirit and intent of the  
Conservation Goal  
have been met.*



**RioTinto**



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada



**WWW.NFCP.ORG**

# NECHAKO FISHERIES CONSERVATION PROGRAM

## ABOUT THE NFCP

In 1950 Alcan signed an agreement with the province of BC that led to the Kemano Project including construction of the Kenney Dam on the Nechako River and the formation of the Nechako Reservoir. Between 1954 and 1980 there was no flow management plan for discharge from Skins Lake Spillway. In 1980, in response to concerns over salmon utilizing the Nechako River, a temporary flow schedule was enforced through a court injunction. Subsequently the Nechako River Working Group was formed to address water flow requirements for salmon downstream of the reservoir. This resulted in the *1987 Settlement Agreement* between DFO, BC, and Rio Tinto, which included conservation goals and a flow management schedule, which are still in place today.

The Nechako Fisheries Conservation Program (NFCP) was established to implement the *1987 Settlement Agreement* between Canada, B.C. and Rio Tinto (formerly Alcan). The NFCP is comprised of two committees: a Steering Committee and a Technical Committee. Both Committees are comprised of individuals representing the Canadian Federal Government (Fisheries and Oceans Canada), the British Columbia Provincial Government (Ministry of Forests, Lands and Natural Resource Operations) and Rio Tinto. The Technical Committee also includes one independent member.

The NFCP has three general goals.

- Nechako Chinook conservation;
- Manage flow and temperature to protect migrating sockeye salmon; and,
- Manage water releases consistent with the Annual Water Allocation in the Settlement Agreement.

The objectives of these goals are to:

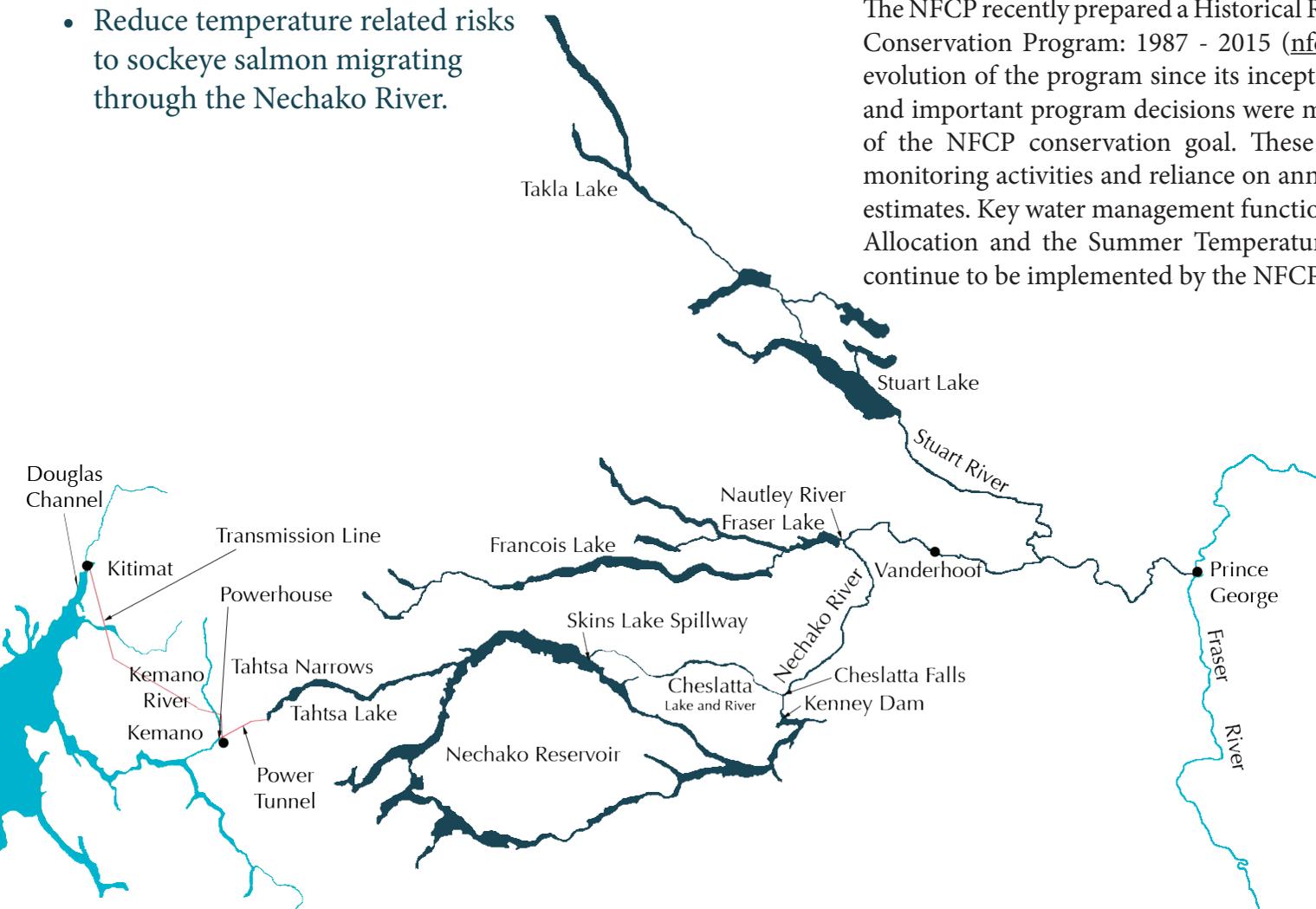
- Ensure that changes to instream habitat conditions do not jeopardize the population of Chinook in the Nechako River;
- Reduce temperature related risks to sockeye salmon migrating through the Nechako River.

The NFCP goals and objectives are implemented through monitoring of Chinook adults, Chinook fry and juveniles, water temperatures, and flow discharges. The NFCP also developed maximum flow guidelines, while recognizing a balance between environmental and social interests. Initially the NFCP program anticipated a reduction in annual reservoir discharge into the Nechako River as part of the Kemano Completion Project (KCP). When the KCP was canceled in 1995 the NFCP continued to do its work. The program underwent a thorough technical review in 2005. Based on the review of the results and starting in 2007, the program was streamlined to promote efficiencies while still addressing the conservation goal objectives.

The NFCP operates by holding annual meetings, teleconferences, engaging consultants and directing Rio Tinto flow management operations. NFCP flow management guidelines for Rio Tinto include flood protection as well as fish and wildlife conservation. Research and monitoring activities have focused primarily on juvenile and adult Chinook salmon. Over the past 27 years more than 300 technical reports and over 100 Decision Records have been prepared and are available at [nfcpc.org](http://nfcpc.org). Over this period total expenditures on the program are estimated at \$15 million.

Type of Report	
NFCP Annual Reports	Summer Temperature Management Program
Steering Committee Annual TOR Reports	Implementation and monitoring of habitat complexes
NFCP Annual brochures	Sand mapping
NFCP 5-year plans	Pilot fertilization reports
Chinook enumeration Nechako R.	Physical data summaries
Chinook enumeration Stuart R.	Cross-sectional survey of the Nechako River
Chinook carcass recovery Nechako R.	Riparian zone
Chinook carcass recovery Stuart R.	Winter physical conditions
Chinook fry emergence	Dissolved oxygen monitoring and substrate quality
Chinook juvenile outmigration	Evaluation framework and trend analysis
Chinook winter habitat utilization	Murray-Cheslatta data collection
Flow control	Technical Data Review

The NFCP recently prepared a Historical Review of the Nechako Fisheries Conservation Program: 1987 - 2015 ([nfcpc.org](http://nfcpc.org)) which summarizes the evolution of the program since its inception. 2015 was a milestone year and important program decisions were made to reflect the achievement of the NFCP conservation goal. These include a discontinuation of monitoring activities and reliance on annual DFO Chinook escapement estimates. Key water management functions including the Annual Water Allocation and the Summer Temperature Management Program, will continue to be implemented by the NFCP.



**Location of the Nechako River Watershed in Northern BC.**

# CHINOOK MONITORING

Nechako River Chinook have been monitored annually since 1952. The NFCP conservation goal stipulated a Target Population of 3,100 spawning Chinook, ranging from 1,700 to 4,000. Between 1988 and 2014 the Chinook population was estimated by means of helicopter counts and estimates of female residency time on spawning redds (nests). The DFO procedure relies on 2 annual helicopter flights compared to 5 that were undertaken previously by the NFCP.

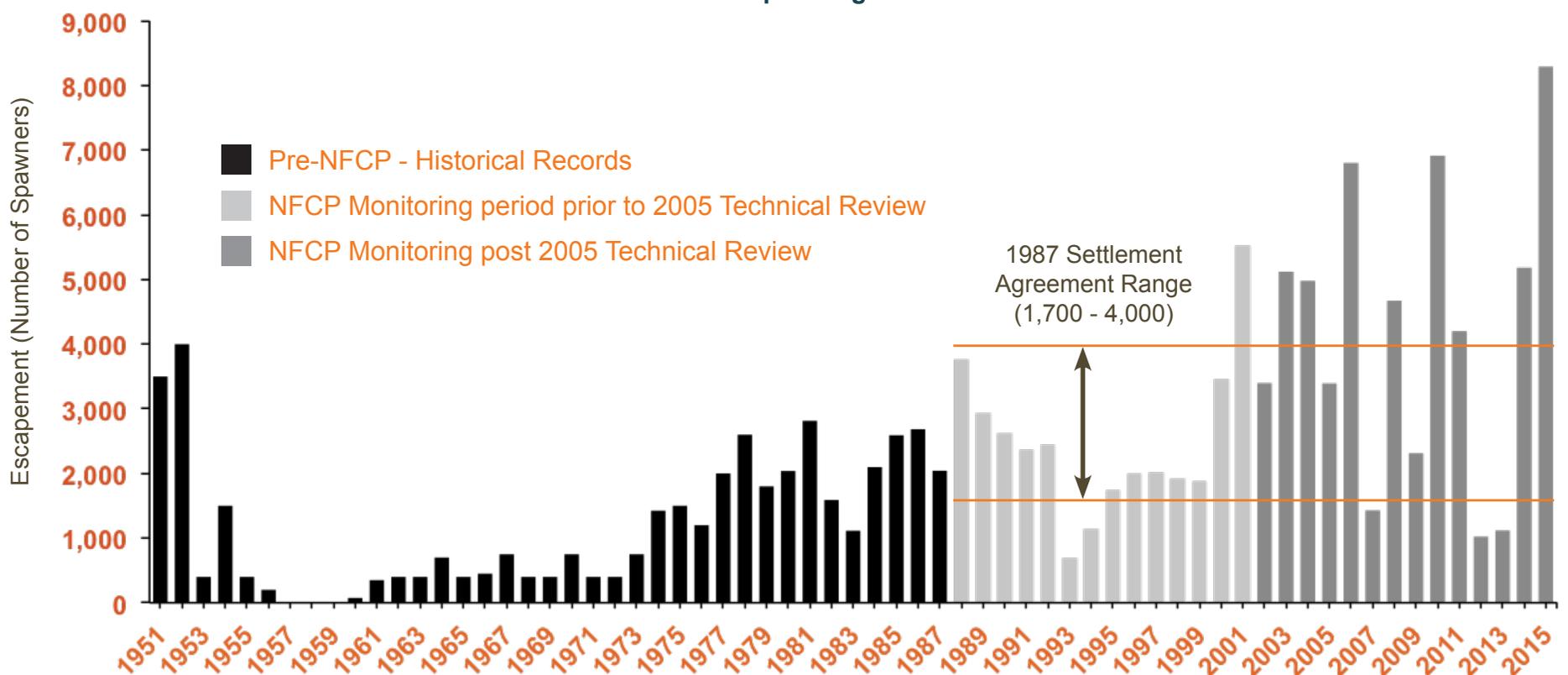
Over the 27 year duration NFCP monitoring period, escapements dipped below the 1,700 target population on 5 occasions. Numbers rebounded above 1,700 spawners in subsequent years suggesting that Nechako Chinook escapement fluctuations reflect annual variability as opposed to changes in Nechako River habitat quality or flow management.

The NFCP reached the conclusion in 2005 that “the spirit and intent of the Conservation Goal have been met.” This conclusion was confirmed in 2015 after the NFCP conducted an analysis of all the historical adult Chinook data:

1. Between 1951 - 1987, from historical records
2. Between 1988 - 2002, NFCP data prior to the 2005 Technical Review
3. Between 2003 - 2015, NFCP data after the 2005 Technical Review

Chinook population estimates showed that adult spawners in the recent period (2003-2015) increased on average by 69% compared to the earlier NFCP monitoring period, thus supporting a conclusion that the Conservation Goal has been met.

**Number of adult Chinook spawning in the Nechako River.**



## JUVENILE CHINOOK ASSESSMENT

The NFCP monitored fry and juvenile Chinook salmon annually between 1990-2002, as well as in 2010. The timing and number of Chinook fry emerging from the gravel, as well as the distribution, size and abundance of juvenile Chinook in the Nechako River provided an indication of the habitat quality. Results of the monitoring confirmed Nechako River fry and juvenile habitat stability. Over the period of observation, sufficient numbers of juveniles were produced to generate adult population escapements that generally fluctuated within the limits of the Conservation Goal.

**Chinook fry.**

## WATER MANAGEMENT

### Annual Water Allocation

The NFCP Technical Committee is responsible for ensuring the implementation of the Annual Water Allocation (AWA) from the Nechako Reservoir. The objective of the AWA is to conserve Nechako Chinook and to maintain the Skins Lake Spillway discharge at a minimum mean annual release of 36.8 m<sup>3</sup>/s, not including the volume of water needed to conduct the Summer Temperature Management Program. Annual flows have been consistently maintained above this level. During years when there is a large snowpack, mean annual releases are significantly greater than 36.8 m<sup>3</sup>/s.

### Summer Temperature Management Program

The objective of the Summer Temperature Management Program (STMP) is to moderate elevated water temperatures in the Nechako River during sockeye migrations by manipulating the timing and volume of Skins Lake Spillway discharges. Specific water temperature targets and protocols have been developed to effectively reduce temperature-related risks during the migration period. The goal is to minimize occurrences of water temperatures above 20°C in the Nechako River at Finmore (upstream of the Stuart River confluence). On average the STMP is successful at reducing temperature exceedances to 3.6 days over the STMP period between 20 July to 20 August.

### Skin's Lake Spillway.



## CONCLUSIONS

The NFCP work has demonstrated that the Nechako Chinook population is healthy and meets the Conservation Goal in most years. Additionally, monitoring of fry emergence and juvenile outmigration between 1988 and 2010 has shown that the incubation and fry rearing habitats have remained stable in the Nechako River. The numbers of fry produced are sufficient to generate a return of spawners within the Conservation Goal range.

The scope of the NFCP mandate relative to sockeye conservation is to operate the STMP. The STMP has limited the frequency of mean daily temperatures that have exceeded 20°C at the Nechako-Stuart confluence and effectively mitigates warming effects on sockeye salmon over the STMP period between 20 July to 20 August.

The NFCP conducted its first data review 11 years ago. The results of monitoring programs carried out since that time confirm:

1. There was a 69% increase in Chinook spawner population size over the period 2003-2015 when compared with the prior data set covering 1988-2002;
2. Over the period 2010-2015 exceedances of the 20°C temperature target measured at the Nechako/Stuart confluence averaged 3.6 days over the STMP control period;
3. The AWA flow objective (mean annual flow above 36.8 m<sup>3</sup>/sec) has been consistently achieved; and,
4. The spirit and intent of the Conservation Goal defined in the 1987 Settlement Agreement continues to be met.

During 2015 the NFCP decided to end biological monitoring and to rely on DFO Stock Assessment Division monitoring in future, based on 2 annual helicopter over flights. The NFCP is satisfied that the reduced monitoring effort will be sufficient to detect future salmon conservation issues should any arise.

During its initial work the NFCP recognized that sufficient time would need to elapse before it could assess whether the Conservation Goal had been achieved. The timeframe identified to ensure that the Nechako River Chinook population was stable and within the target value established by the 1987 Settlement Agreement was 20 to 25 years, or 4-5 complete Chinook life cycles. By 2015, the NFCP had completed 27 years of adult Chinook monitoring equivalent to more than 5 complete Chinook life cycles. The program has therefore collected sufficient data to evaluate and confirm that the spirit and intent of the Conservation Goal has been met.

In the future, the NFCP will continue to annually carry out core programs such as the Annual Water Allocation and the Summer Temperature Management Program. Flow management in the Nechako River will continue to be conducted under the auspices of the NFCP and implemented by Rio Tinto.

The NFCP recognizes that its mandate is focused only on Chinook, sockeye and water management. However, in pursuing its mandate the NFCP has collected a wealth of information about the Nechako River that could be relevant for other purposes including conservation of Nechako White Sturgeon. All NFCP reports are publicly available. We encourage you to visit the NFCP website or to contact us for more information.

For further information on the NFCP please contact:

David Levy, NFCP Independent Member - DAVIDLEVY@SHAW.CA - 604-929-2083