

Jordan River Water Use Plan

**Jordan River Generating Station
Elliott Dam Fish Water Release**

Reference: JORWORKS-1

Engineering Completion Report JOR06MTC 103

December 12, 2008

BC Hydro Engineering

December 2008

COMPLETION REPORT

Date: 12 December 2008

File: JOR06MTC 103

**Jordan River Generating Station
Elliott Dam Fish Water Release****1.0 PROJECT INFORMATION**

Project Shortname:	JOR06MTC 103	Project Initiator:	Ian Dodd
Project Title:	Elliott Fish Water Release	Project Sponsor:	Sandy Reid
Project Phase:	Implementation	Project Manager:	Dave Epp
Authorization:	RFS project JOR06MTC 103	Originating Organization:	Generation

1.1 Project Team

Civil Design	Peter Burville, ASCT;
Civil Review	Omri Olund, P.Eng.
Hydraulic Design	Faizal Yusuf, P.Eng.
Hydraulic Check	Janet Wong, P.Eng.
Hydraulic Review	Kathy Groves, P.Eng.
Mechanical Design	Paul Geddes, P.Eng.
Mechanical Check & Review	Christa Groves, P.Eng.
Environmental Review	Goff Longworth

2.0 PROJECT OBJECTIVES**2.1 Project Background**

The Consultative Committee (CC) for the Jordan River Water Use Plan (WUP) agreed to an objective to maximize fish populations in the Lower Jordan River below Elliott Dam. No base flows had been provided below the dam and therefore the committee considered a number of alternatives for releasing base flows. It was agreed to release a base target flow of 0.25 cubic meters per second year-round through the dam. It was expected that the increased base flow would result in improved ecosystem condition and an increase in habitat for fish from the mouth of the river, up to and including the river 300 m below Elliott Dam.

2.2 Scope Objectives

Design and installation of components to maintain a continuous release of water downstream of Elliott Dam, and provide a method for controlling this flow, at any point between 0 and 0.375 m³/s over the operating range of the reservoir, to an accuracy of ± 2% at 0.25 m³/s, to meet BC Hydro's Jordan River Water Use Plan commitments.

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3.0 DESIGN

The flow release mechanism consists of pipe drawing water from the Elliott Dam head pond, connected to a flow control valve and a flow meter in the dam drainage gallery, connected to a pipe which discharges into the spillway flip bucket. Based on the signal from the flow meter, the flow control valve is automatically actuated to ensure a continuous flow independent of the Elliott Reservoir level. Flow is currently set at of $0.25 \text{ m}^3/\text{s}$ ($\pm 2\%$).

The design basis for the fish water release mechanism is given the following report:

Title	Report No.	Date
Elliott Dam Fish Water Release - Civil, Hydraulic, and Mechanical Design Basis	Engineering File: JOR06MTC 103	25 March 2008

4.0 IMPLEMENTATION

Phase I of the project, which included inserting a pipe through the upstream face of the dam was completed in 2004. BC Hydro took the opportunity to complete Phase I during a maintenance period when the head pond was drained.

Phase II of the project, which included installing the flow meter, flow control valve, and downstream pipe, was completed in January 2008.

5.0 OPERATION AND MAINTENANCE

5.1 Operation

Flow through the flow release mechanism is independent of reservoir level. It can be set to release anywhere between 0 and $0.375 \text{ m}^3/\text{s}$ over the full reservoir operating range, i.e., from the minimum reservoir operating elevation of 1066.27 ft (325 m) to the spillway crest elevation of 1102.00 ft (335.88 m).

Flow is currently set at $0.25 \text{ m}^3/\text{s}$.

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5.2 Maintenance

All system components were selected to minimized maintenance requirements. However, as further detailed in the Operations and Maintenance Manual, is it recommended at the:

10" Vee-Ball Rotary Control Valve

Type 1052 Size 40 Rotary Actuator

67CFR Pressure Regulator

all be inspected in calendar year 2009, and at 5 year intervals thereafter.

As this work will require an outage of a few hours, it is recommend that the work should either be performed at a time when water is flowing over the spillway, or provision should be made for pumps to maintain minimum flows past Elliott Dam.

6.0 RECOMMENDATIONS

- Inspection and maintenance should be performed as detailed in Section 5.2
- Fish water flow meter readings should be added to PI/OI, once the system is fully implemented at Jordan River Generating Station. This will allow for flow rates to be archived.

7.0 FINANCIAL CLOSURE

Approved funds:	\$676 K
Actuals:	\$670 K

8.0 PROJECT COMPLETION

JOR06MTC 103 has been successfully completed in accordance with the Project Management Procedures of BC Hydro and of Engineering Services.