

WATER POWER ACT LICENCES

LAURIE RIVER #2 GENERATING STATION SHORT-TERM EXTENSION LICENCE APPLICATION

SUPPORTING DOCUMENTATION

Prepared for:

Manitoba Water Stewardship

200 Saulteaux Crescent

Winnipeg MB R3J 3W3

Prepared by:

Manitoba Hydro

360 Portage Avenue

Winnipeg MB R3C 2P4

October 28, 2010

Report No: PS&O - 10/06

PUBLIC OPERATIONS DEPARTMENT
SALES & OPERATIONS DIVISION
HYDRO POWER SUPPLY
POWER

HYDRO POWER ACT LICENCES
GENERATOR #2 GENERATING STATION
WATER EXTENSION LICENCE APPLICATION
LAURIE RIVER
SHORT-TERM EXPORTING DOCUMENTATION
SUPPORT



PREPARED BY:

Original Signed By:
S.Herbert

REVIEWED BY:

Original Signed By:
B.W. Giesbrecht

APPROVED BY:

Original Signed By:
W.V. Penner

NOTED BY:

DATE:

REPORT NO:

PS&O - 10/06



1.0 INTRODUCTION

This report is provided at the request of Manitoba Water Stewardship to provide additional information in support of a short-term extension licence application. Manitoba Hydro requested this extension licence on February 04, 2010 in accordance with Section 92 of The Water Power Regulation, Manitoba Regulation 25/88R of *The Water Power Act* (WPA).

Manitoba Hydro operates the Laurie River #2 Generating Station (GS) in accordance with the Final Licence for the Development of Water Power at the Laurie River #2 Site on the Laurie River. This licence was issued in accordance with the provisions of *The Water Power Act* on May 31, 1963. The licence was issued for a term of 40 years to be computed from March 1, 1958.

Manitoba Hydro submitted an application to renew the Final Licence on June 09, 1989. With recent staffing improvements by both Manitoba Hydro and Manitoba Water Stewardship, there is a renewed focus on issuing a renewal of the Final Licence.

2.0 PROJECT COMPONENTS

The Laurie River #2 GS is located approximately 210 km (130 miles) northwest of Thompson and approximately 10 km (6 miles) upstream of Laurie #1 GS as shown in Figure 1. Figure 2 is an overall site map that shows the layout of the major project components. Photographs 1 and 2 show the Laurie River #2 GS powerhouse and spillway.

The Laurie River #2 GS is a part of the Laurie River Development. Other regulating structures associated with this development include the Laurie River #1 GS, Russell Lake Dam, Eager Lake Dam, Loon River Diversion and the Kamuchawie Lake Weir (a regulating structure not specifically included in the licence), as shown in Figure 1.

The Laurie River #2 GS consists of a powerhouse, spillway and gravity structures and has a name plate capacity of 7,000 horsepower (5 MW). Construction of the station was completed by Sherritt Gordon Mines Limited to supply their mining operations in the area. The generating station originally went into operation in 1958 and was officially transferred to Manitoba Hydro on May 01, 1970.

The station components include a one unit powerhouse, a main dam, a five bay stoplog controlled spillway, three gravity dams and two dykes. Figures 3, 4, 5 and 6 show general arrangements of the concrete and earth structures. Table 1 summarizes major characteristics of the station.

Table 1: Laurie River #2 G.S. Major Characteristics

Construction Period	1956 to 1958
Capacity	7,000 horsepower (5 MW)
Average Annual Generation	29 million kW-h
Waterfall Drop (head)	18.1 m (59.5 ft)
Maximum Licence Forebay Elevation	Not specified in WPA licence
Normal Maximum Forebay Elevation (NMFE)	64.9 m (213 ft)*
Available Freeboard @ NMFE - Conc. Structures	0.6 m (2.0 ft) *without wind or wave effects
Available Freeboard @ NMFE - Earth Structures	2.1 m (7.0 ft) *without wind or wave effects

* Assumed local datum

Table 2 summarizes major characteristics of the Laurie River #2 powerhouse, spillway, gravity dams and dykes.

Table 2: Laurie River #2 G.S. Component Characteristics

Powerhouse	Number of Units	2
	Length	15.8 m (52.0 ft)
	Deck Elevation	65.5 m (215.0 ft)*
	Discharge Capability (at full gate)	34 m ³ /s (1,200 ft ³ /s)
	Power Production Unit 1	3,500 horsepower
Spillway	Number of Bays	5 bays
	Length	30.5 m (100.0 ft)
	Deck Elevation	65.5 m (215.0 ft)*
	Discharge Capability (at normal maximum forebay elevation)	440 m ³ /s (15,400 ft ³ /s)
North Gravity Structure	Length	51.8 m (170.0 ft)
	Design Crest Elevation	65.5 m (215.0 ft)*
Centre Gravity Structure	Length	56.1 m (184.0 ft)
	Design Crest Elevation	65.5 m (215.0 ft)*
South Gravity Structure	Length	57.0 m (187.0 ft)
	Design Crest Elevation	65.5 m (215.0 ft)*
Main Dam	Length	120.4 m (395.0 ft)
	Design Crest Elevation	67.1 m (220.0 ft)*
Dyke A	Length	129.5 m (425.0 ft)
	Design Crest Elevation	67.1 m (220.0 ft)*
Dyke B	Length	140.2 m (460.0 ft)
	Design Crest Elevation	67.1 m (220.0 ft)*

* Assumed local datum

3.0 WATER POWER LICENSING REQUIREMENTS

3.1 Licence Terms

The Final Licence stipulates that:

“Now therefore, under authority of and subject to the provisions of the Water Power Act and Regulations thereunder, this Final Licence is issued granting to the lawful holder thereof the right to impound, divert and use the waters of the Laurie River at No. 2 Power Site in the Granville Lake Mining Division of The Pas Mining District of the Province of Manitoba, to develop power or energy therefrom....”

Order-in-Council Number 94/68 and subsequent agreement dated 1970 05 01 between The Manitoba Hydro-Electric Board, Sherritt Gordon Mines Limited, LGD of Lynn Lake and Laurie River Power Company Limited provided for the transfer of the Laurie River Development including water power licences, facilities, dams, reservoirs, transmission lines and distribution system to Manitoba Hydro. A renewal of the Final Licence would identify Manitoba Hydro as the Licensee.

3.2 Licence Area

The licence area extends from approximately 2.0 km (1.2 miles) downstream of the Laurie #1 GS north approximately 50 km to Story Lake, south approximately 23 km to Evans Creek and west to the Manitoba/Saskatchewan border. During the final licence renewal, Manitoba Hydro intends to significantly reduce the lands associated with this licence. The licence area is shown in Manitoba Water Stewardship file number 65-34-1017. New severance line drawings that reflect all approved changes to the licence area and also show the proposed reduction will be submitted as part of the Final Licence renewal process.

4.0 MONITORING PROGRAMS

4.1 Water Levels

The forebay water level at Laurie River #2 GS is measured using a water level (staff) gauge mounted on the centre gravity structure. The On-site Operator determines the forebay water level by reading the staff gauge directly. Water level data is sent daily to the System Control Centre and the Hydraulic Operations Department. The Hydraulic Operations Department staff enters the data into a hydrometric database that is accessible to interested parties within Manitoba Hydro. Calibration and maintenance of the water level gauge is performed by Relay and Metering Department staff.

4.2 Dam Safety

Manitoba Hydro's Dam Safety Program is based on the Canadian Dam Association Guidelines. Both concrete and earth structures continue to be inspected at regular intervals for any anomalies or deficiencies. Routine inspections by Manitoba Hydro staff are performed twice per month for the earth structures and bi-monthly for the concrete structures, including the spillway. Additional inspections of all water retaining structures are performed by specialists from Manitoba Hydro's Engineering Services Division annually. SNC Lavalin is currently performing a Dam Safety Review (DSR) inspection of all the primary structures within the Laurie River Development. As part of the Water Power Act licence renewal process, we will be providing a condition assessment report of the generating station and its associated structures.

4.3 Aquatic Monitoring

All of the fisheries on the Laurie River are excellent angling destinations. Laurie River Lodge at McGavock Lake caters to nonresident anglers seeking trophy angling and the lakes upstream are cache lakes of Laurie River Lodge and are also popular remote angling destination for road based anglers. There are or have been commercial fisheries on Russell, Kakayak and to a lesser degree Mounteney Lakes but all are impacted by the end of scheduled rail service between Pukatawagan and Lynn Lake. Plumtree Lake has a lightly used outcamp of Northern Lites Lodge and downstream of Laurie River #2 GS, Trophy Lake offers excellent angling.

Manitoba Hydro is unaware of any aquatic monitoring in the immediate vicinity of the Laurie River Generating Stations. System wide monitoring of aquatic ecosystem health including water quality, lower trophic levels and fish sampling is taking place downstream on Southern Indian Lake under the Coordinated Aquatic Monitoring Pilot Program (CAMPP); a program of activities by which the Government of Manitoba and Manitoba Hydro are working together to provide objective information about hydrometric and environmental effects of hydro-electric development.

5.0 SYSTEM UPGRADES, STUDIES AND AGREEMENTS

5.1 System Upgrades/Studies

A significant amount of concrete rehabilitation on the powerhouse and spillway was completed in 1995.

Extensive rehabilitation and upgrading of electrical and mechanical components of the station were completed in 1996/97.

The structural stability of the spillway and north, south and centre gravity structures was improved by installing post tensioned anchors in 2006.

5.2 Agreements

Manitoba Hydro and the Pickerel Narrows Community Association Inc. signed an Agreement in 2006 to address issues arising from the effects of Manitoba Hydro works. Settlement proceeds are used by the Association for Community Development Projects.

From time to time, Manitoba Hydro has entered into project-specific agreements with local commercial fishermen to provide assistance with fishing infrastructure that may have been affected by the operation of the Laurie River Development.

6.0 CLOSURE STATEMENT

Manitoba Hydro operates the Laurie River #2 Generating Station in accordance with the Final Licence for the Development of Water Power at the Laurie River #2 Site on the Laurie River. Manitoba Hydro operates and maintains the generating station and associated structures based on the Canadian Dam Association Guidelines.

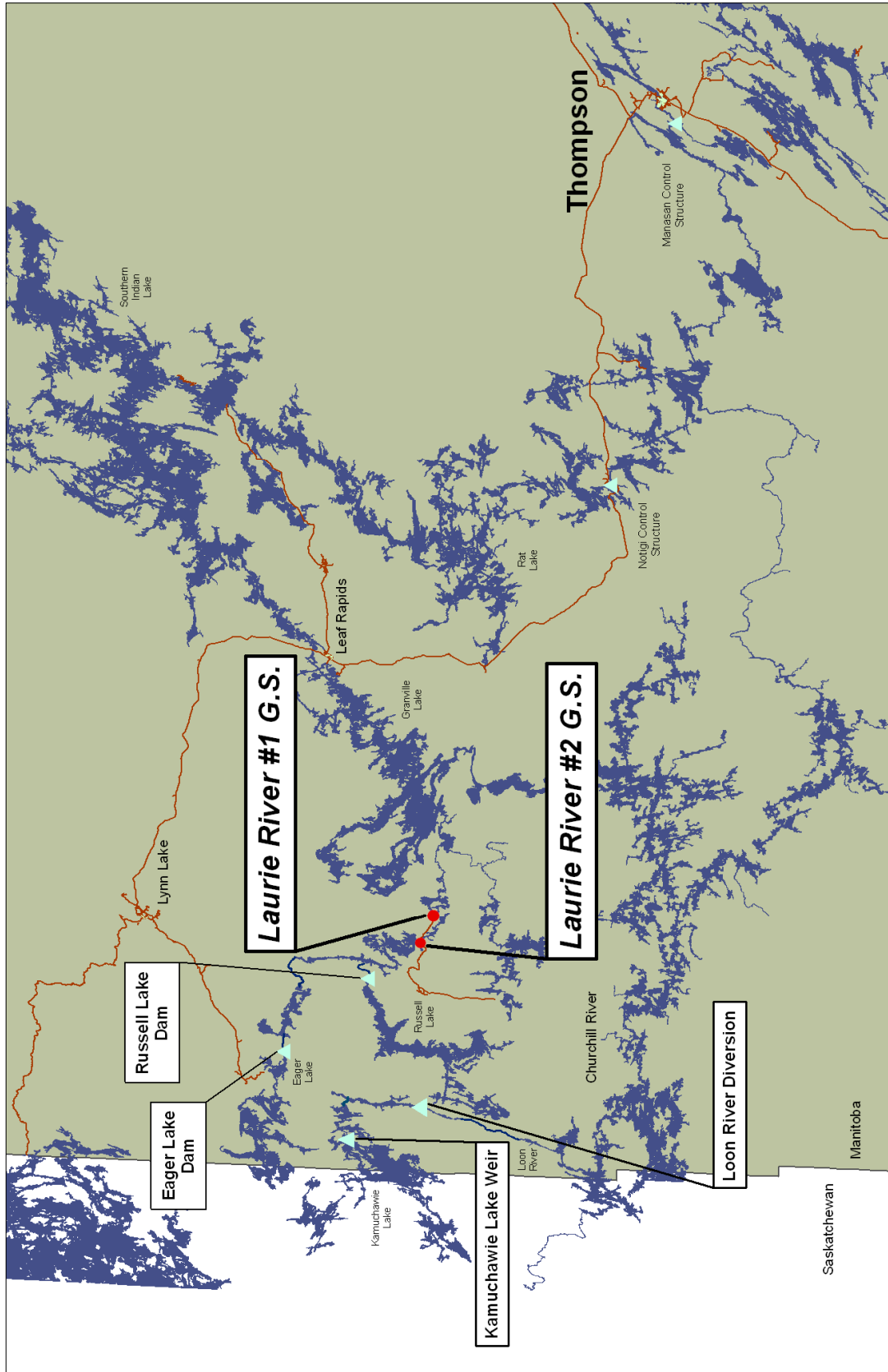


Figure 1: Laurie River Development - General Location

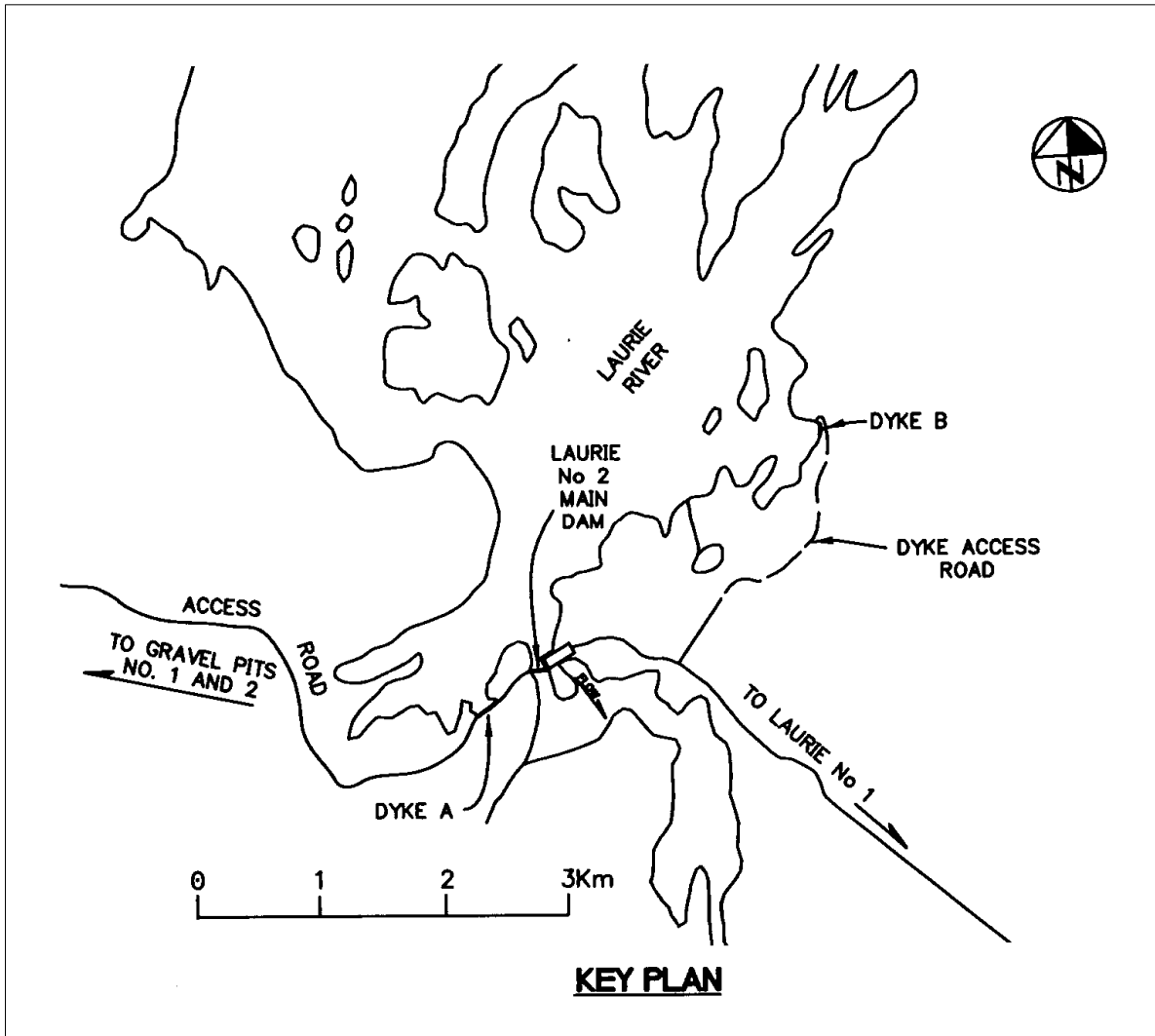


Figure 2: Laurie River #2 - Overall Layout of Project Components

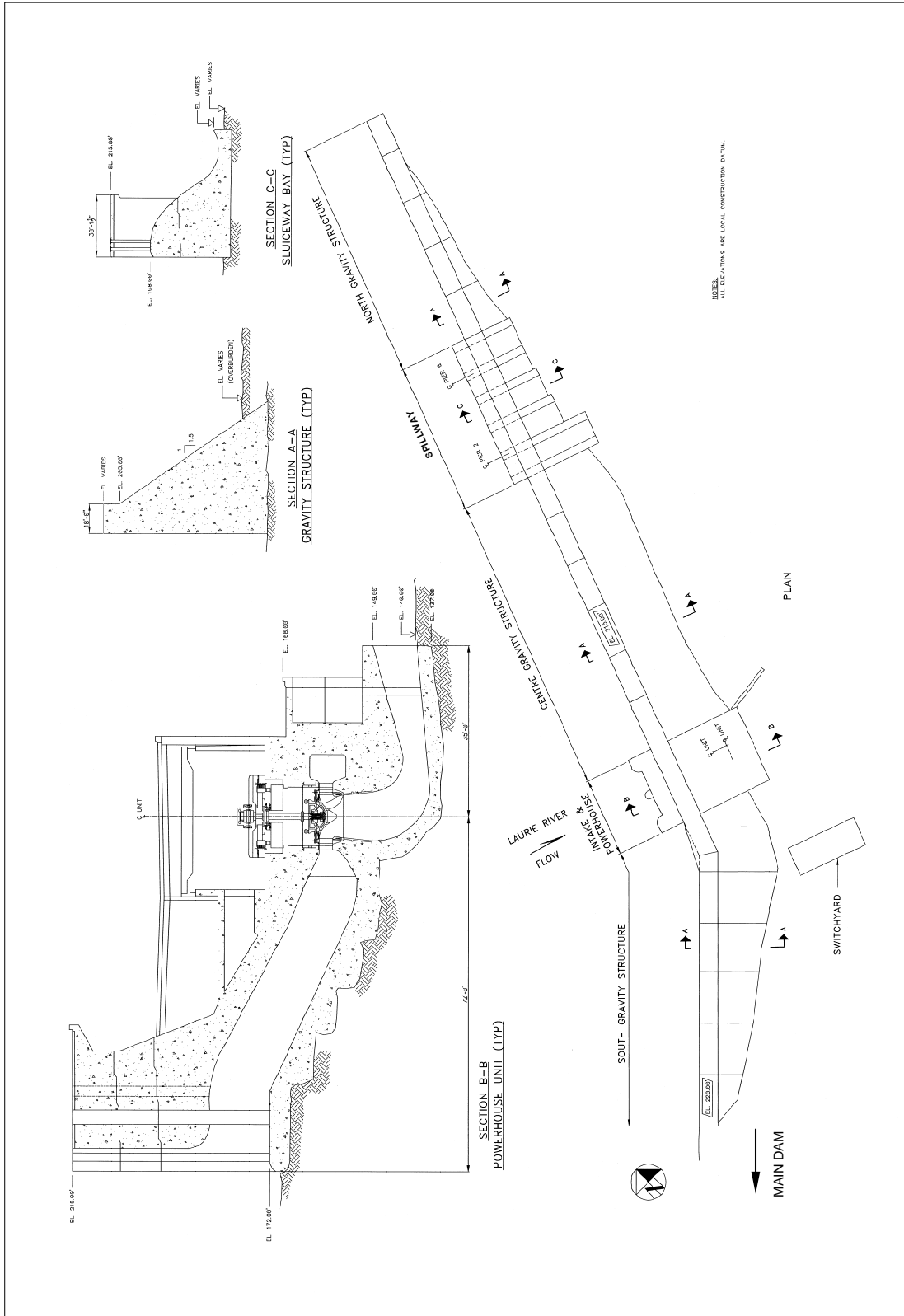


Figure 3: Concrete Structures - Plan and Elevation

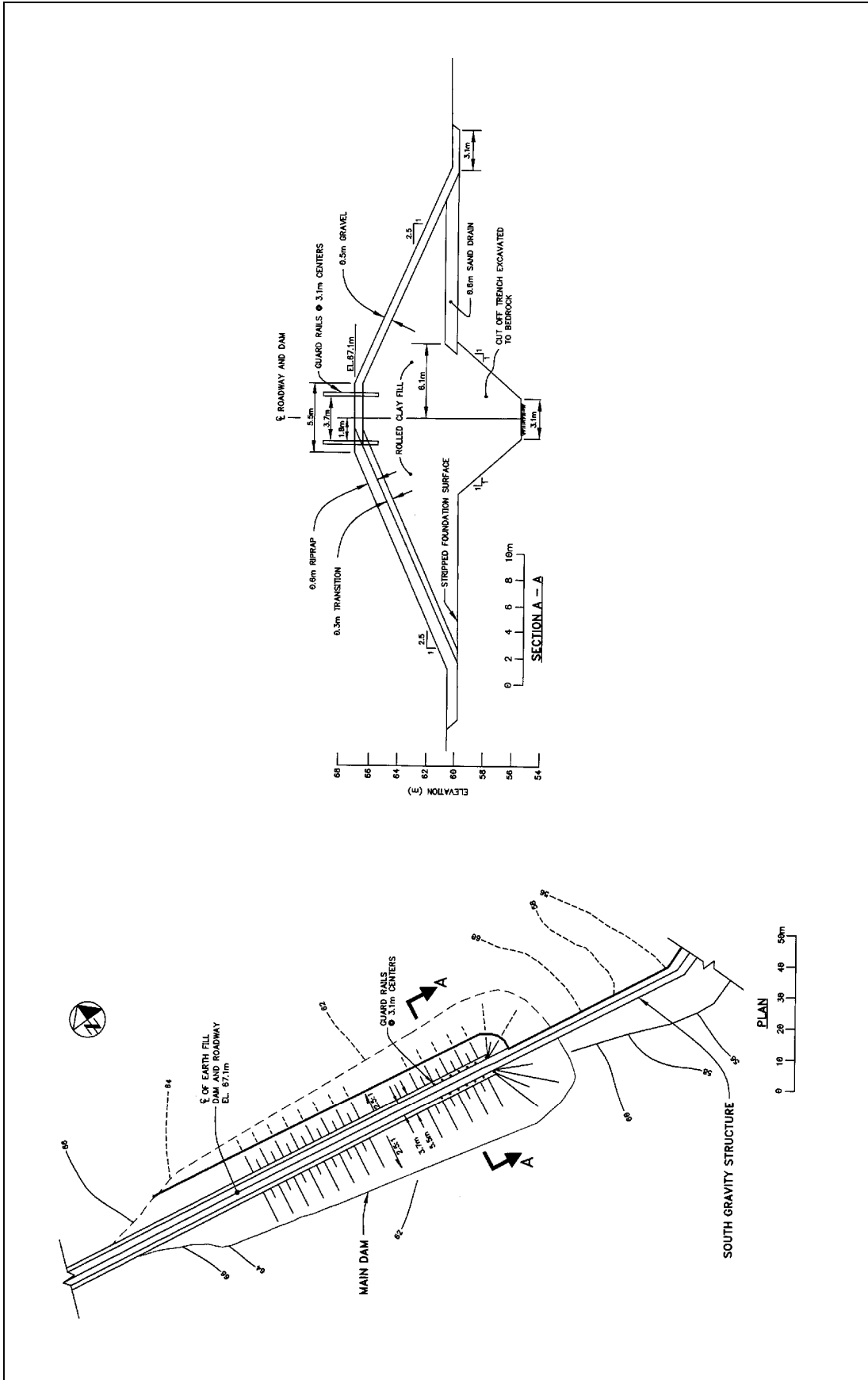


Figure 4: Main Dam - Plan and Elevation

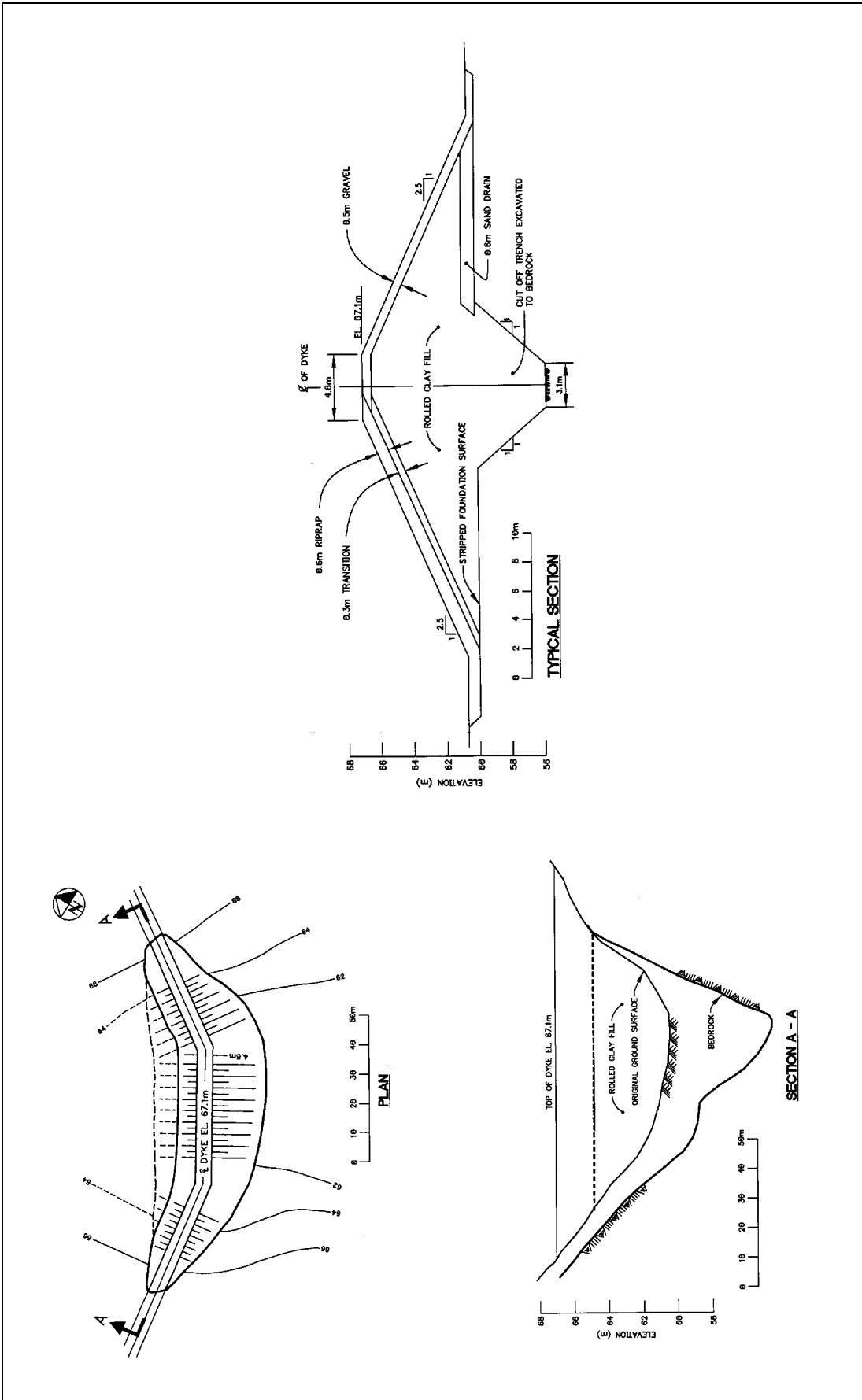


Figure 5: Dyke A - Plan and Elevation

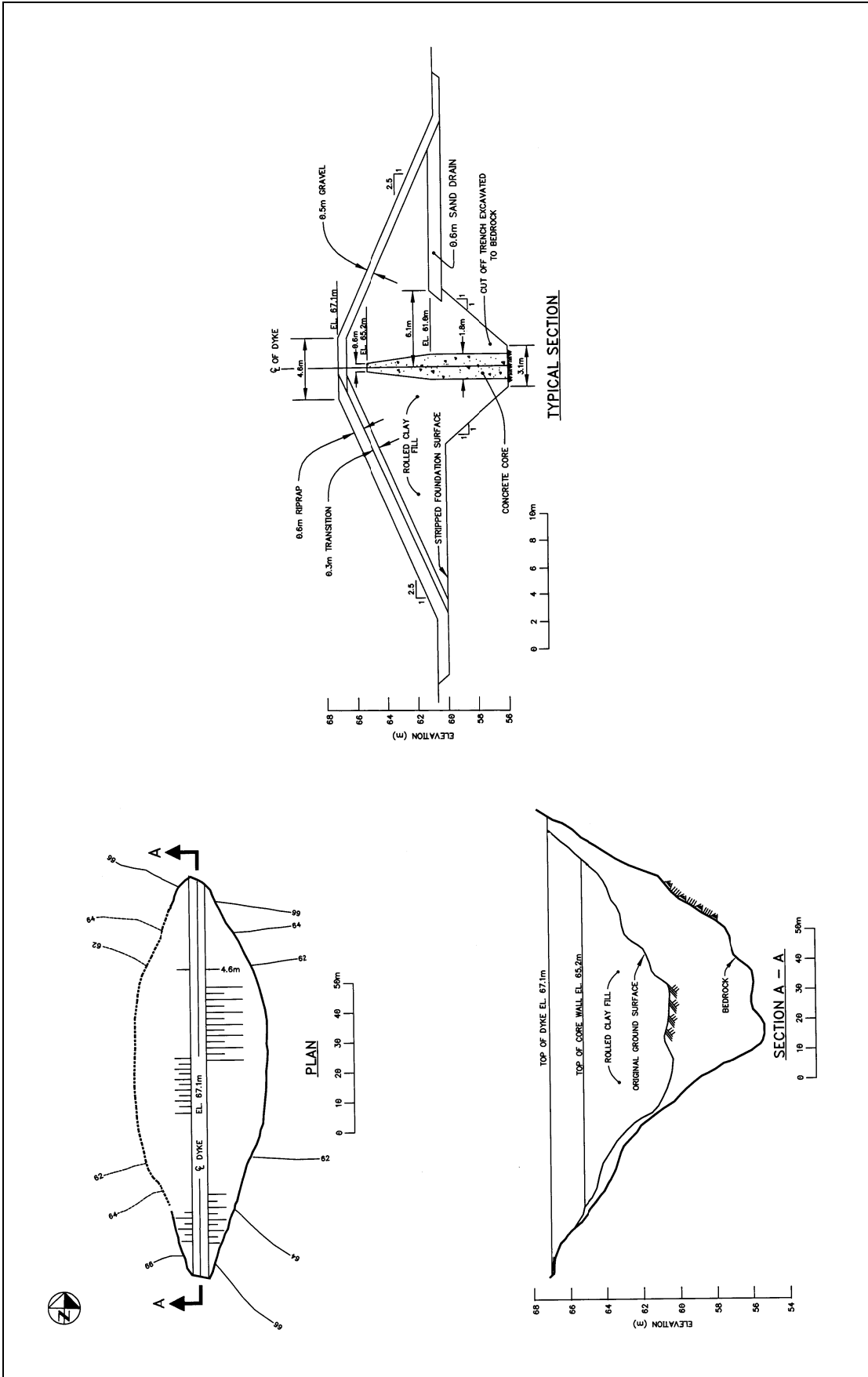


Figure 6: Dyke B - Plan and Elevation



Photograph 1: Laurie River #2 Generating Station



Photograph 2: Laurie River #2 Generating Station