

CI 41142

**HYD St. Margaret's Bay - Sandy Lake Fish
Passage**

FIN

NON-CONFIDENTIAL

December 16, 2016





UARB APPROVAL SHEET

Project Title: HYD St. Margaret's Bay - Sandy Lake Fish Passage

CI Number: 41142

Date: December 16, 2016

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate		
2011	4,191	4,191	<input type="checkbox"/>	Capital Project Authorization
2012	78,173	78,173	<input type="checkbox"/>	Unforeseen and Unbudgeted (U&U)
2013	231,271	231,271	<input type="checkbox"/>	Planned & Advanced (P & A)
2014	119,468	119,468	<input type="checkbox"/>	Subsequent Approval Item
2015	3,492,977	2,080,855	<input type="checkbox"/>	Authorization to Overspend (ATO)
2016		97,023	<input type="checkbox"/>	Scope Change
Total	\$3,926,079	\$2,610,980	<input checked="" type="checkbox"/>	Final Cost (FIN)

COMMENTS

Approved	\$3,926,079
Current Amount	\$2,610,980
Variance	(\$1,315,100)

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

Authorized Signatory
Mark Sidebottom
Chief Operating Officer

12 Dec 2016

DATE

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

DATE

CI Number: 41142**Title: HYD St. Margaret's Bay - Sandy Lake Fish Passage**

Start Date: 2011/11
In-Service Date: 2015/12
Final Cost Date: 2016/12
Function: Hydro
Forecast Amount: \$2,610,980

DESCRIPTION:

NS Power has taken a staged approach to the design and construction of the fish passage infrastructure on the St. Margaret's Bay (STM) Hydro System. The St. Margaret's Bay system is being evaluated for a fish passage that starts at the mouth of the Little Indian River and extends to the upper reaches of the Big Indian watershed. This will include passage beyond barriers at Little Indian Lake, Sandy Lake and Big Indian Lake. The initial phase of design required a review of various conceptual design options by an outside consultant. Based on those initial designs, NS Power has moved to a detailed design of a fish ladder for the Sandy Lake Dam. Within this project, NS Power is completing fish passage at Sandy Lake as well as evaluating and completing minor modifications required at the Little Indian Lake outlet to remove any potential barriers.

Summary of Related CIs +/- 2 years:
 No other projects in 2013, 2014, 2015, 2016 and 2017

JUSTIFICATION:

Justification Criteria: Environment

Depreciation Class: St. Margaret's Bay Hydro System

Estimated Useful Life: 50 years

Why do this project?

NS Power has been in discussions with Fisheries and Oceans Canada (DFO) on improvements to fish passages throughout the NS Power hydro system. DFO believes that establishing a fish passage on the STM Hydro System will create multi-species resource potential based on the optimum water pH and vast exposure to upstream habitat areas. The target species for such a fish passage system are Atlantic salmon and alewives (gaspereau), both of which remain a key focus for DFO under the revised Fisheries Act.

Why do this project now?

DFO and NS Power have been in discussions regarding the addition of a fish passage infrastructure on the STM Hydro System for a number of years. DFO approved the construction of the new dams at Big Indian (CI 17830, in 2011) and Sandy Lake (CI 31245 in 2012), with the understanding that NS Power would also be developing design options for fish passages at these systems. Recent changes to the Fisheries Act have resulted in a focus by DFO on commercial, recreational and Aboriginal fisheries as well as continuing to enhance partnerships with organizations that are best placed to improve productivity of local fisheries. Based on the recent upgrades to the STM Hydro System, and in keeping with the revised Fisheries Act, DFO submitted a letter to NS Power on February 26, 2013 formally requesting NS Power to design and then establish a fish passage at the Sandy Lake Dam. Completing this project in 2015 will allow for the multi-species resource potential to be achieved.

Why do this project this way?

NS Power has hired experts in the field of fish passage design, and is continuing to work with them through all phases of the design process. These consultants have developed a conceptual design that they believe will be effective for passing fish at the Sandy Lake dam, while remaining one of the lowest cost options for construction. The specific design being developed is a pool and weir fish ladder, which NS Power has experience with through construction and operation of similar fish ladders at other NS Power Hydro Systems.

Reason for Variance

The decrease of \$1.3 million is largely due to reduced materials, contract and contingency costs. The material and contract costs achieved through the procurement process being much lower than what was included in the original third party estimate. This was largely related to unit costs of concrete / formwork / rebar as well as the overall estimate of structural steel. For further details, please refer to the Account Variance sheet.

This project was not able to be Final Costed within six months of the in-service date as continued monitoring of the fish ladder was required once construction was complete in order to confirm that the fish ladder was functioning properly.

CI Number : 41142-H630

- HYD St. Margaret's Bay - Sandy Lake Fish Passage

Project Number H630

Parent CI Number :

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Cost Centre : 440

- 440-St.Margaret's Hydro System

Budget Version FIN Submission

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
094		094 - Interest Capitalized		123,988	0	123,988
095		095 - Proj Supp Term Labour AO		25	0	25
095		095-Thermal Regular Labour AO		991	0	991
095		095-COPS Contracts AO		(12,446)	0	(12,446)
095		095-Hydro Regular Labour AO		1,162	0	1,162
095		095 - Proj Supp Regular Labour AO		79,234	0	79,234
095		095-Thermal & Hydro Contracts AO		157,190	0	157,190
095		095-Hydro Overtime Labour AO		161	0	161
001	007	001 - THERMAL Regular Labour	007 - HGP - Environmental	94	0	94
001	007	001 - HYDRO Regular Labour	007 - HGP - Environmental	4,307	0	4,307
001	007	001 - Proj Supp Regular Labour	007 - HGP - Environmental	6,893	0	6,893
001	007	001 - Regular Labour (No AO)	007 - HGP - Environmental	1,320	0	1,320
002	007	002 - Overtime Labour (No AO)	007 - HGP - Environmental	7	0	7
002	007	002 - HYDRO Overtime Labour	007 - HGP - Environmental	1,192	0	1,192
010	007	010 - Office Supplies	007 - HGP - Environmental	9	0	9
011	007	011 - Travel Expense	007 - HGP - Environmental	161	0	161
012	007	012 - Materials	007 - HGP - Environmental	91,246	0	91,246
013	007	013 - POWER PRODUCTION Contracts	007 - HGP - Environmental	1,628,385	0	1,628,385
041	007	041 - Meals & Entertainment	007 - HGP - Environmental	249	0	249
001	085	001 - Regular Labour (No AO)	085 Design	3,405	0	3,405
001	085	001 - THERMAL Regular Labour	085 Design	4,097	0	4,097
001	085	001 - HYDRO Regular Labour	085 Design	25	0	25
001	085	001 - Proj Supp Regular Labour	085 Design	139,922	0	139,922
004	085	004 - Proj Supp Term Labour	085 Design	80	0	80
011	085	011 - Travel Expense	085 Design	7,114	0	7,114
028	085	028 - Consulting	085 Design	353,552	0	353,552
041	085	041 - Meals & Entertainment	085 Design	1,019	0	1,019
066	085	066 - Other Goods & Services	085 Design	17,598	0	17,598

Total Cost: 2,610,980 0 2,610,980

Original Cost:

41142 - HYD Sandy Lake Fish Passage

Account	Approved	FIN Submission	Variance	Explanation
001 - HYDRO Regular Labour	91,662	160,063	68,401	Increases in labour costs were due to additional efforts in working with Environmental Services and Department of Fisheries and Oceans in order to properly plan this project. Additional engineering, site construction and post construction monitoring were also required in order to prove the success of the project as fish were not present in Sandy Lake in over 50 years.
002 - HYDRO Overtime Labour		1,199	1,199	
004 - Proj Supp Term Labour	80	80	-	
010 - Office Supplies		9	9	
011 - Travel Expense	5,478	7,275	1,797	
012 - Materials	655,500	91,246	(564,254)	The decrease of \$838k in materials and contracts is largely driven by a reduction in concrete/formwork/rebar costs (\$545k) as unit costs used in the third party estimate were significantly higher than received through the procurement process and a reduction in structural steel (\$338k) which was a high level estimate of the amount of structural steel required in the third party estimate. The approved budget had a higher ratio applied to materials, however as charges were allocated, the majority of the work was contract labour
013 - POWER PRODUCTION Contracts	1,900,800	1,628,385	(272,415)	
028 - Consulting	441,783	353,552	(88,231)	The original budget included additional fish ladder design work in the event that fish were not returning to the fish ladder. No efforts were required here as the fish ladder worked as designed from the outset.
041 - Meals & Entertainment	1,402	1,268	(134)	
066 - Other Goods & Services	476,905	17,598	(459,307)	The \$477k budgeted in this account was contingency. The only costs applied to this account were miscellaneous items captured under Other Goods & Services as no contingency was required due to the construction costs being less than originally budgeted.
094 - AFUDC	140,853	123,988	(16,865)	
095 - Admin Overheads	211,616	226,317	14,700	
	3,926,079	2,610,980	(1,315,100)	