



**INVESTMENT REQUEST FORM**

<b>BUSINESS UNIT:</b> Hydro Kennebec, LLC		<b>DATE:</b> 2006-01-24		<b>IRF NO.</b> 06-530013	
<b>TYPE OF REQUEST</b>					
<input checked="" type="checkbox"/>	Initial	<input type="checkbox"/>	Supplemental	<input type="checkbox"/>	Scope Change
<b>CATEGORY</b>					
<input checked="" type="checkbox"/>	Capital	<input type="checkbox"/>	Major Repair	<input type="checkbox"/>	Lease
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Other
<b>PROJECT TITLE</b>					
GSKEN Downstream Surface Fish Passage					
<b>BRIEF PROJECT DESCRIPTION</b> (see page 2 for more details)					
This investment request will provide the funding to design and install a downstream fish <sup>passage</sup> for shad, herring and salmon at the Hydro Kennebec station that will bypass 300 CFS (4% of total station flow). This passage is a future license requirement of the station and has been developed in agreement with State and Federal agencies.					
<b>PROJECT COST- \$000</b> (see page 3 for more details)					
<i>Estimate</i>				\$290	
Per this IRF				\$290	
Previously approved				\$0	
Total project cost				\$290	
<i>Amount Included In Annual Plan</i>				\$0	
<b>FINANCIAL ANALYSIS</b>					
Annual Benefits -\$000		IRR-%	NPV-%	Payback period – years	
<b>SCHEDULE – Month/Year</b>					
Beginning of Work:		February 2006		Completion of Work: November 2006	
<b>APPROVALS</b>					
<b>Title</b>	<b>Signature</b>	<b>Date</b>	<b>Title</b>	<b>Signature</b>	<b>Date</b>
Applicant	<i>A. D. Modula</i>	1/25/06	Regional VP	<i>[Signature]</i>	2/20/06
Assets Manager	<i>A. D. Modula</i>	1/25/06	Corporate Controller	<i>[Signature]</i>	Feb 23/06
Safety/ Environmental Specialist	<i>R. Smith</i>	2/17/06	Chief Technical Officer	<i>[Signature]</i>	2006 02 21
General Manager System Control	<i>Dave P. [Signature]</i>	2/17/06	Corporate President	<i>[Signature]</i>	
Business Controller	<i>Patricia Keane</i>	1/25/06	Board		
General Manager	<i>[Signature]</i>	2/17/06			



**INVESTMENT REQUEST FORM – PROJECT DESCRIPTION**

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**PROJECT TITLE**

GSKEN Downstream Surface Fish Passage

**DESCRIBE CURRENT SITUATION AND WHY PROJECT IS REQUIRED**

Currently the Hydro Kennebec station does not have any means of transporting adult eel, shad, herring or salmon downstream pass the dam and station other than through the hydro turbines. The 2006 completion and operation of a fish lift at the FPL's Lockwood station is expected to result in 5,000 to 6,000 shad being release upstream of Hydro-Kennebec. Downstream passage through the turbines is expected to result in 15%-20% mortality.

Providing safe downstream passage is a requirement of the station's FERC license. BPNE, State and Federal agencies have agreed to the design concept of this downstream surface passage. Once completed, this gated passage will provide effective passage.

**PROPOSED SOLUTION**

This project will construct a surface gate of approximately 4' x 7' on the station bull nose concrete structure that separates the station from the dam structure. This gated structure will pass the required 300 CFS to satisfy the agency requirement for such a passage to accommodate 4% of the total station maximum flow. A surface boom extending down approximately 10' will be installed as an addition means to transport these surface fish over to the gate bypass. Also a vertically mounted flow inducer will be installed at the bottom of the trash rack area to aid in moving eels and fish species upwards towards the gated opening.

**Safety & Environmental:** This project will be considered high risk and therefore the successful contractor will need to provide a project safety & environmental plan (SEP) for approval before the start of the project.

**Production Impact:** At this point in the project design it is anticipated that the station will need to be taken out of service or for 5-7 days at various time to facilitate construction and installation of the boom and flow inducer. It would also be anticipated that there would be a 4-5 day period when the station flow would need to be reduced to a lower intake velocity to allow for work to progress in the fore bay area.

While the fish passage is being utilized at it's capacity of 300 cfs it is estimated that a loss of flow for generation will total approximately \$147,000 per year.

**Commercial Terms:** It is planned that Cianbro Corporation will be performing this project work on a T&M basis (with a budgetary estimate) due to the complexity and unique nature of this bypass structure. *five denied*

**20 Year Plan:** This was not part of the 20 year plan at Hydro Kennebec

**OPTIONS EXAMINED**

**Option 1 - Estimated lost generation from shutting down station in July-October for passage of eel and adult shad = 15.6 GWH in power and <sup>per year</sup> \$1,500,000 (\$97/MWH) in revenue. Therefore, this option is not cost effective**

**Option 2 - Estimated lost generation from shutting down station in September-October (12 hours per day) for passage of eel only = 5.5 GWH per year or \$533,000 in revenue at \$97 MWH.**



**EXPECTED BENEFITS (financial calculations if monetary benefits)**

This by pass will allow BPNE to satisfy the license requirement for downstream passage. This option will also allow the station to maintain power production during the downstream migration therefore eliminating station outages during this period.

Also, through the use of the deflector boom leading to the gated structure, this will aid in moving debris around the station and aid in reducing power loss due to debris build up on the trash racks

**VARIANCE -- estimated cost versus annual plan - \$000**

Estimate cost per Page 1	\$290
Amount included in Annual Plan	\$0
Variance	\$290

If variance greater than 20% or \$100,000 please provide details: This project was not included in the 2006 station spending plan due to the fact that it was not confirmed until August 2005 that Delta's plan for passage was unacceptable to the agencies.



**INVESTMENT REQUEST FORM – COST ESTIMATE**

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GSKEN Downstream Surface Fish Passage					
<b>COST ESTIMATE BREAKDOWN - \$000</b>					
Activities	Labour	Contractor	Material	Others	Total
Concrete demolition		\$75			
Coffer Dam			\$30		
Gate Installation		\$35			
Current Inducer			\$50		
Rack Overlay		\$15			
Deflector Boom			\$35		
<b>Sub-total</b>		<b>\$125</b>	<b>\$115</b>		<b>\$240</b>
<b>Contingency (20%)</b>		<b>\$25</b>	<b>\$25</b>		<b>\$50</b>
<b>Total</b>					<b>\$290</b>