

AGENDA
EAST GOSHEN TOWNSHIP
BOARD OF SUPERVISORS

Tuesday, June 28, 2016
7:00 PM

Meeting will be held at the Goshen Fire House, 1320 Park Avenue

1. Call to Order
2. Pledge of Allegiance
3. Moment of Silence – Supervisor Carmen Battavio
4. Ask if anyone is recording the meeting
5. Chairman’s Report
6. Public Hearing - none
7. Emergency Services Reports
 - WEGO – none
 - Goshen Fire Co. - none
 - Malvern Fire Co – none
 - Fire Marshal – none
8. Financial Report – none
9. Old Business - none
10. New Business
 - a. Hershey Mill Dam
 - [March 17, 2016 – Memo](#)
 - [May 13, 2016 – Gannett Fleming letter](#)
 - Additional Information is available under the About Us tab at www.eastgoshen.org
 - b. Milltown Dam
 - [March 22, 2016 – Excerpt from Presentation](#)
 - Additional Information is available under the About Us tab at www.eastgoshen.org
11. Any Other Matter
12. Approval of Minutes - none
13. Treasurer’s Report - none
14. Correspondence, Reports of Interest
15. Public Comment – Hearing of Residents
16. Adjournment

The Chairperson, in his or her sole discretion, shall have the authority to rearrange the agenda in order to accommodate the needs of other board members, the public or an applicant.

Dates of Importance

Jun 28, 2016	Applebrook Golf	1:00 pm
Jun 28, 2016	Board of Supervisors (Special Meeting)	7:00 pm
Jun 30, 2016	Farmers Market at Park	3:00 pm
Jul 05, 2016	Board of Supervisors	7:00 pm
Jul 06, 2016	Planning Commission	7:00 pm
Jul 07, 2016	Farmers Market at Park	3:00 pm
Jul 07, 2016	Chester County Band (Amphitheater)	6:00 pm

Jul 11, 2016	Municipal Authority	7:00 pm
Jul 12, 2016	ABC's of Science at Park	10:00am
Jul 13, 2016	Conservancy Board	7:00 pm
Jul 14, 2016	Farmers Market at Park	3:00 pm
Jul 19, 2016	Peter Pan at Park	10:00am
Jul 19, 2016	Board of Supervisors	7:00 pm
Jul 20, 2016	Moliere's Tartuffe at Amphitheater	6:30pm
Jul 20, 2016	Futurist Committee	7:00 pm
Jul 21, 2016	Farmers Market/Car Cruise at Park	3:00 pm (Market)/5:00 pm (Car Cruise)
Jul 24, 2016	A Midsummer's Night's Dream at Amphitheater	4:00pm
Jul 26, 2016	Magical Illusions	10:00am

Newsletter Deadlines for Summer of 2016: May 2, 2016

Memo

East Goshen Township

Date: March 17, 2016
To: Board of Supervisors
From: Rick Smith, Township Manager
Re: Hershey Mill Dam

The attached worksheet outlines the cost to:

- Improve Spillway so that the dam will pass the design storm,
- A Partial Breach (lowering the existing concrete spillway by six feet) as suggested by PADEP,
- A Full Breach

Under the Improve Spillway option, we would be responsible for all of the typical costs associated with operating and maintain a dam.

If we went with the Partial Breach and Full Breach options we would still incur some expense to maintain the lowered dam or the open space.

Hershey Mill Dam 30 Year Life Costs

6/23/2016

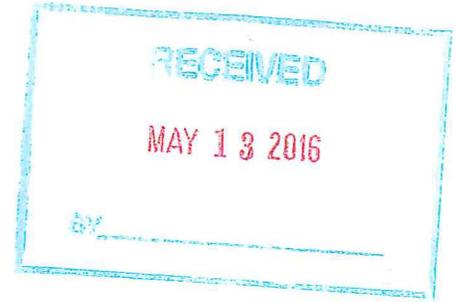
Option	Design/Permit	Bidding	Construction	Inspection	Contingency	Total	Yearly	30 Year Cost
				5% of Construction	10% of Construction		Inspection and/or Maintenance	
Improve Spillway	\$37,160	\$3,300	\$302,025	\$15,101	\$30,203	\$387,789	\$4,000	\$458,054
Partial Breach	\$11,100	\$3,300	\$96,456	\$4,823	\$10,756	\$126,434	\$2,000	\$266,965
Full Breach	\$11,100	\$3,300	\$97,674	\$4,884	\$10,877	\$127,835	\$2,000	\$268,366

Comments

Design/Permit	<p>See 2/3/12 proposal for Improve Spillway cost. This work has been completed and we have a permit</p> <p>See 12/29/15 proposal for Partial Breach cost</p> <p>Based on 3/16/16 conversation with Adam ok to use Partial Breach estimate for Full Breach</p>
Bidding	See 8/27/14 proposal for bidding costs
Construction	See 3/16/16 cost estimate
Inspection	Based on 3/16/16 conversation with Adam use 5% of construction cost
Contingency	<p>Based on 3/16/16 conversation with Adam use 10% of Construction Cost since we have the plans and permit for the Improve Spillway Option</p> <p>Based on 3/17/16 conversation with Adam use 10% of Design/Permit and Construction Cost since we do not have the plans and permit for the Partial Breach or Full Breach Options.</p>
Yearly Costs	<p>Assume Annual Inspection @ \$2,000 & Routine Maintenance @ \$2,000 for Improve Spillway Option</p> <p>Assume Routine Maintenance @ \$2,000 for Partial Breach and FullBreach Options</p>



Excellence Delivered **As Promised**



May 13, 2016

Mr. Rick Smith, Jr., Township Manager
East Goshen Township
1580 Paoli Pike
West Chester, PA 19380-6199

Dear Mr. Smith,

**Subject: Dam Related Engineering Services for East Goshen Township
Hershey Mill Dam (DEP ID No. D15-125)
Construction Cost Review**

East Goshen Township (Township) is currently in the process of evaluating alternatives for either modifying or breaching Hershey Mill Dam (DEP ID No. D15-125). Preliminary cost estimates for three options were provided to the Township in an April 6, 2016 letter from Edward B. Walsh & Associates. As requested by the Township, Gannett Fleming reviewed information provided for each option and is providing an opinion on the construction costs and feasibility of the three options. The three options being considered are described below.

Option 1 – New Auxiliary Spillway. Includes adding a 58-foot-wide auxiliary spillway adjacent to the existing 22-foot-wide principal spillway and raising the top of dam by as much as 1.5-feet in some areas to elevation 450.5 in order to convey the 100-year flood without overtopping the embankment. The crest of the new auxiliary spillway will be four inches higher than the crest of the principal spillway. The Township has secured a permit from the Pennsylvania Department of Environmental Protection (DEP), Division of Dam Safety for this option. The permit was issued on July 7, 2014. The construction cost prepared by Edward. B. Walsh & Associates for this option is \$302,025.

Option 2 – Lower Principal Spillway. Option 2 involves lowering the crest of the principal spillway 6 feet and removing upstream sediment deposits as needed by excavating pilot channels through the reservoir to direct flows towards the spillway. The construction cost prepared by Edward. B. Walsh & Associates for this option is \$96,456.

Option 3 – Decommission Dam. Option 3 involves breaching the embankment down to the natural streambed and re-establishing the stream channel through the sediment deposits in the reservoir. The construction cost prepared by Edward. B. Walsh & Associates for this option is \$97,674.

Gannett Fleming, Inc.

DOCUMENTS PROVIDED FOR REVIEW:

The opinions provided within this letter were developed based information presented in the following documents:

- Letter from Edward B. Walsh & Associates, Inc., dated April 6, 2016 containing a breakdown of the estimated construction costs for Options 1, 2 and 3.
- Construction drawings (six sheets) entitled "Restoration Plan for Hershey's Mill Dam" as prepared by Edward B. Walsh & Associates, last revised June 11, 2014.
- Dam Permit issued by DEP, Division of Dam Safety on July 15, 2014.
- East Goshen Township Memo by Rick Smith dated March 17, 2016.

Only Option 1 has been advanced to the point where permits have been obtained. No drawings, concept sketches, or construction quantities for Options 2 and 3 have been provided.

GANNETT FLEMING OPINIONS

Option 1 – New Auxiliary Spillway. In the absence of supporting calculations for the new auxiliary spillway shown on the drawings prepared by Edward B. Walsh & Associates, there appear to be certain components of the design that may require additional investigation. Based on our cursory review of the information provided, the following provides our opinion on the estimated construction cost and areas where additional detail may be needed.

- Risk of Flood Damage During Construction: The construction cost estimate includes \$17,550 for water control during construction of which \$12,350 consists of pumping the stream(s) around the work area or over the existing spillway for a period of up to 1 month. The proposed pumping system would need to be operated continuously for at least a month. The specified cost appears to be very low for this critical work item. In addition, diversion and care of water for dam projects carries substantial risk, and this risk is normally transferred to the Contractor, since the contractor controls the site and the means and measures to divert the flow through the work area. The risk associated with providing diversion and care of water during construction does not appear to be reflected in the current construction cost estimate. It is likely that during the construction period, a heavy rainfall will occur that will exceed the capacity of the proposed pumping system and flood the construction site. In addition to damaging work in progress, there is the potential to damage the adjacent dam features and/or cause sediment deposits within the reservoir to be flushed downstream. Any changed conditions encountered during construction, or bad weather, could also delay the project and extend the time needed to pump the flow around the work area.

- Dewatering the Site: Construction of the proposed auxiliary spillway involves placement of a concrete slab on a suitable foundation. In order for this to take place, the foundation excavation must be fully dewatered and dry. This is typically accomplished through the use of sump pits and/or groundwater dewatering wells. Foundation dewatering does not appear to be reflected in the current cost estimate.
- Unknown Foundation Conditions: No subsurface or foundation information for the new Auxiliary spillway is provided on the drawings. It is unclear if subsurface investigations have been performed to sample foundation materials, locate bedrock and classify the soils located within/under the proposed auxiliary spillway. Therefore the foundation conditions for the auxiliary spillway appear to be unknown. Understanding the foundation conditions for the auxiliary spillway is important. If the spillway is founded on erodible overburden material, which appears to be the case, the auxiliary spillway design should include a seepage analysis and would likely require a seepage cutoff wall and filtered drain system to control seepage under the structure and prevent a piping failure. If the auxiliary spillway structure is founded on bedrock, foundation treatment would include additional excavation and effort to clean and inspect the foundation rock, and place backfill concrete to the desired foundation grade.
- Seepage, Collection and Filter System: The drawings indicate the addition of a short filter diaphragm at the left end of the proposed spillway to collect seepage which may occur around the left end of the spillway. No seepage collection and filtering system is shown for seepage under the spillway. It is recommended that this feature be considered in the design, especially if the auxiliary spillway is founded on erodible material.
- Fill Materials, Placement, Compaction and Testing: The drawings indicate that material removed from the embankment to construct the spillway expansion will be stockpiled and reused to backfill the spillway. While this appears to be a reasonable approach, no information is provided to confirm if this material is suitable as “impervious” backfill. Pending soil test results, offsite “impervious” material may need to be imported to the site at an additional cost. No information on fill placement, compaction and testing requirements could be found within the information provided.
- Sheet Pile Wall Details: The design shows placement of a steel sheet pile wall running upstream-downstream through the embankment along the left side of the principal spillway to support the excavation for the new auxiliary spillway. It is assumed that the sheet pile wall will remain in place at the completion of the project. The placement of this sheet pile wall will create a potential seepage path through the embankment. Seepage treatment details for the sheet pile wall are not shown on the drawings.
- Stone Facade Details: The downstream face of the proposed spillway contains a vertical concrete wall that is to be treated with a stone facade to match the appearance of the existing spillway. Information such as the thickness of the stone facade, how the facade will be anchored to the vertical concrete wall, etc. are not clearly evident from the information provided. Such details may impact the cost of the facade and may also

necessitate modifications to the spillway cross section (i.e., additional detail needed for the concrete foundation that supports the facade and the length that the spillway crest slab overhangs the facade).

- Concrete Details: The proposed spillway is to be comprised of a concrete foundation slab, a vertical concrete wall at the downstream face of the spillway, a concrete slab for energy dissipation downstream of the spillway and a concrete slab to form the crest of the spillway. Given the length and width of the proposed concrete features, construction and expansion joints with waterstops will be required to control cracking of the concrete and seepage through the structure.
- Potential for Changed Conditions: Rehabilitation of existing dams often includes working with limited information, especially when as-built records and subsurface information are not available for the structure. During excavation for the proposed modifications, unanticipated features and conditions can be encountered that can substantially impact the intended design or require additional modifications to the dam. The Township should include a contingency in their budget for this option to address the potential for changed conditions. Contingencies in the range of 20 to 30 percent are appropriate for the unknowns associated with Option 1.

Based on the above, the current estimate of \$302,025 appears low for Option 1.

Option 2 – Lower Principal Spillway. Without a detailed design, construction quantities, or a detailed description of what is included in Option 2, we are unable to determine if the construction cost estimate of \$97,000 is reasonable. However, we offer the following opinions related to unit costs, many of which are applicable to Options 1, 2 and 3:

- Mobilization and Demobilization: These costs are typically assumed to be approximately seven (7) percent of the construction cost. The mobilization costs provided in the estimates are in the vicinity of one (1) percent.
- Excavation Costs: Excavation costs for common earth normally range between \$5 and \$20 per cubic yard depending on the volume of material, type of equipment used, and haul distance for spoiling the material. Excavation costs provided in the estimate assume a unit cost of \$5 per cubic yard. We would also anticipate an additional cost to spoil, compact, grade and stabilize the material once it is at its final destination. Onsite spoiling costs may be in the range of \$5 to \$10 per cubic yard of material.
- Erosion and Sediment Control Costs: The erosion and sediment control costs appear to be reasonable for the scale of the project.
- Potential for Changed Conditions: As discussed under Option 1, rehabilitation of existing dams often includes working with limited information, especially when as-built records and subsurface information are not available for the structure. During excavation for the proposed modifications, unanticipated features and conditions can be encountered

that can substantially impact the intended design or require additional modifications to the dam. The Township should include a contingency in their budget for this option to address the potential for changed conditions. Contingencies in the range of 30 percent are appropriate for conceptual designs. The cost estimate provided within the Edward B. Walsh & Associates letter dated April 6, 2016 contains a contingency of approximately 14 percent. Given the above, we would recommend increasing the contingency.

Assuming the items/quantities listed in the Option 2 cost estimate are reasonable and comprehensive of the project, the construction cost estimate of \$97,000 appears low based on the observations listed above.

Option 3 – Decommission Dam. Similar to Option 2, without a detailed design, construction quantities, or a detailed description of what is included in Option 3, we are unable to determine if the construction cost estimate of \$97,000 is reasonable. However, the comments offered with respect to Option 2 also apply to Option 3. In our opinion, the main uncertainty and risk associated with Option 3 is the control of water and the management of the reservoir sediment. The construction cost estimate has allocated \$11,760 for the control of offsite runoff through the work area. Depending on the methods used and the length of time for which these facilities must be maintained, these costs may be low. The volume of sediment to be removed and the location where the sediment will be spoiled will significantly influence the construction costs. It is our understanding that sediment sampling performed by URS in 2008 found the reservoir sediments to be “clean”; therefore, the reservoir sediments can be spoiled onsite. Assuming the items/quantities listed in the Option 3 cost estimate are reasonable and comprehensive of the project, the construction cost estimate of \$97,000 appears low based on the observations listed above.

An option that does not appear to have been considered is to lower the entire dam to the point where it is no longer a regulated structure and retains the reservoir sediment. This approach may be less expensive than decommissioning the dam if removal of substantial sediment deposits is required.

In summary, it is our opinion that the construction cost estimates for Options 1, 2 and 3 are on the low side. The cost for Option 3, however, may be diminished by obtaining outside funding through a grant or if the project is used to mitigate environmental impacts for another project.

Gannett Fleming
Mr. Rick Smith
East Goshen Township

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May 13, 2016

If you have any questions or need additional information, please do not hesitate to call me or Paul Schweiger at 717-763-7212, extensions 2828 and 2504, respectively.

Sincerely,

GANNETT FLEMING, INC.
Environmental Resources Division



ERIC C. NEAST, P.E.
Project Manager
Dams and Hydraulics Section

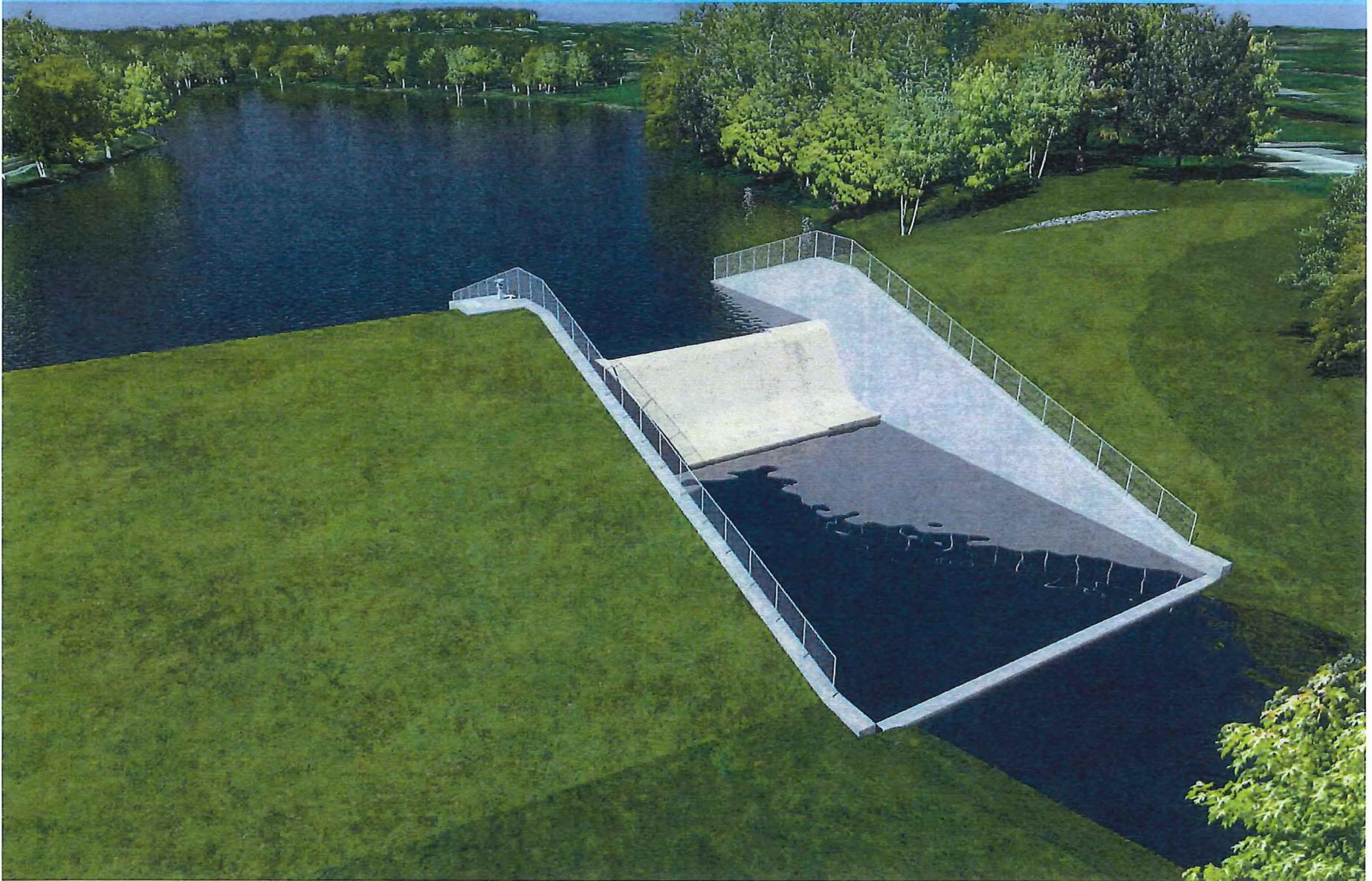
**EAST GOSHEN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA
MILLTOWN DAM (DEP ID NO. D15-146)**



**EAST GOSHEN TOWNSHIP
BOARD OF SUPERVISORS MEETING
MARCH 22, 2016**



ALTERNATIVE 1 INCREASE EMBANKMENT HEIGHT



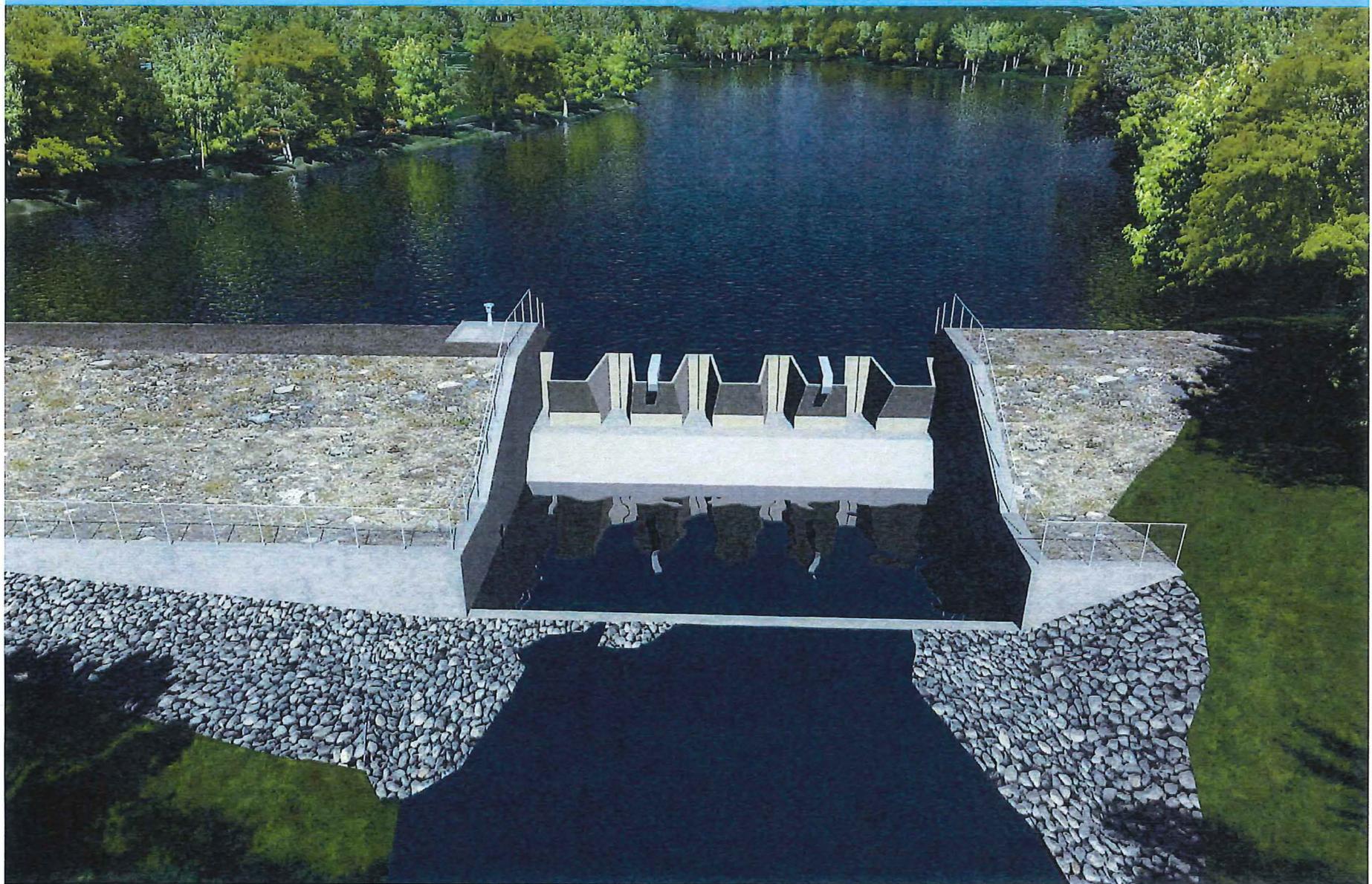
ALTERNATIVE 2 INCREASE SPILLWAY WIDTH



ALTERNATIVE 3 RAISE EMBANKMENT AND WIDEN SPILLWAY



ALTERNATIVE 4 FUSEGATES



ALTERNATIVE 5 WIDEN SPILLWAY WITH LABYRINTH



ALTERNATIVE 6 ACB EMBANKMENT OVERTOPPING PROTECTION



ALTERNATIVE 7 RCC EMBANKMENT OVERTOPPING PROTECTION

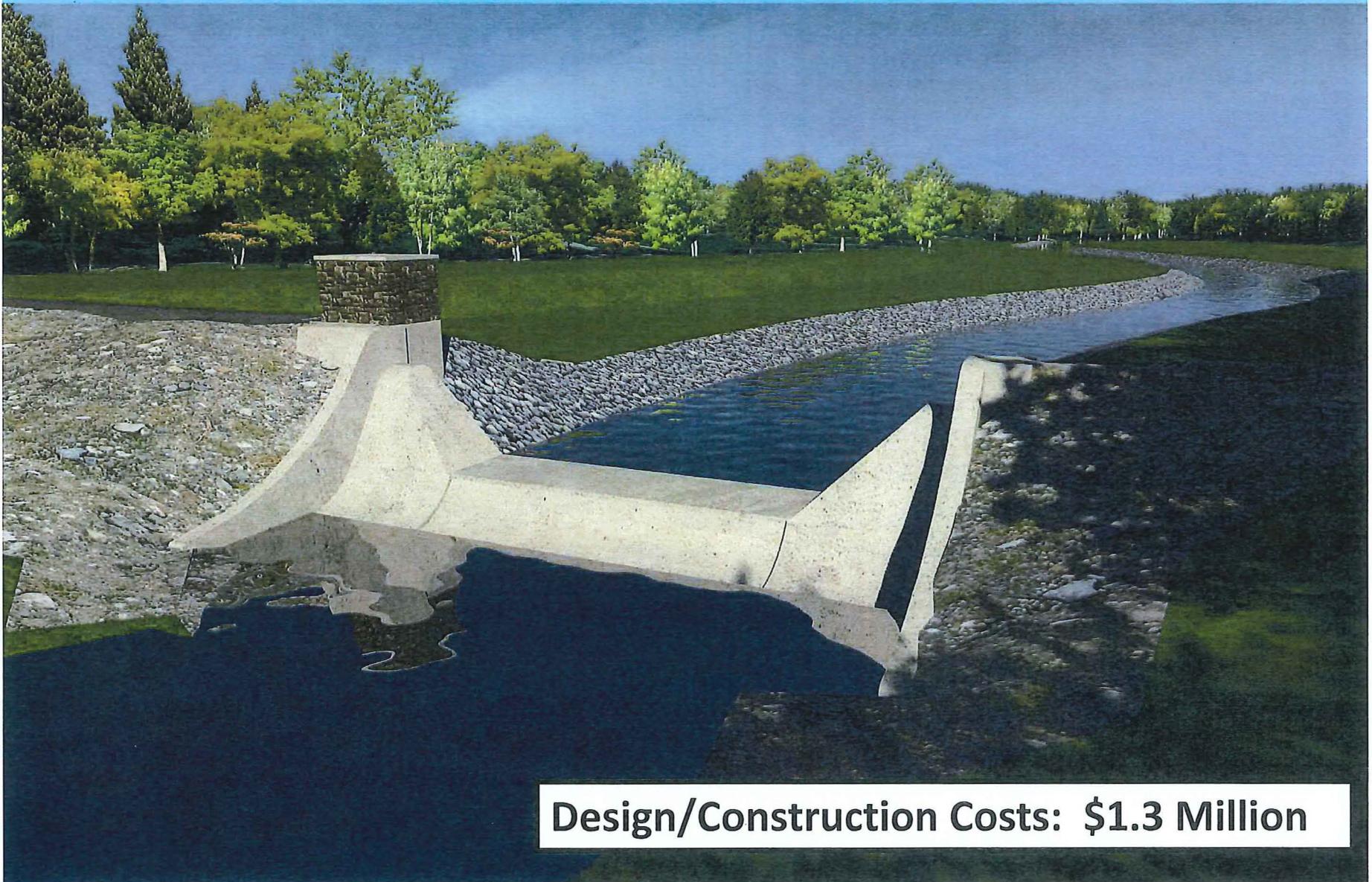


ALTERNATIVE 8 DECOMMISSION DAM



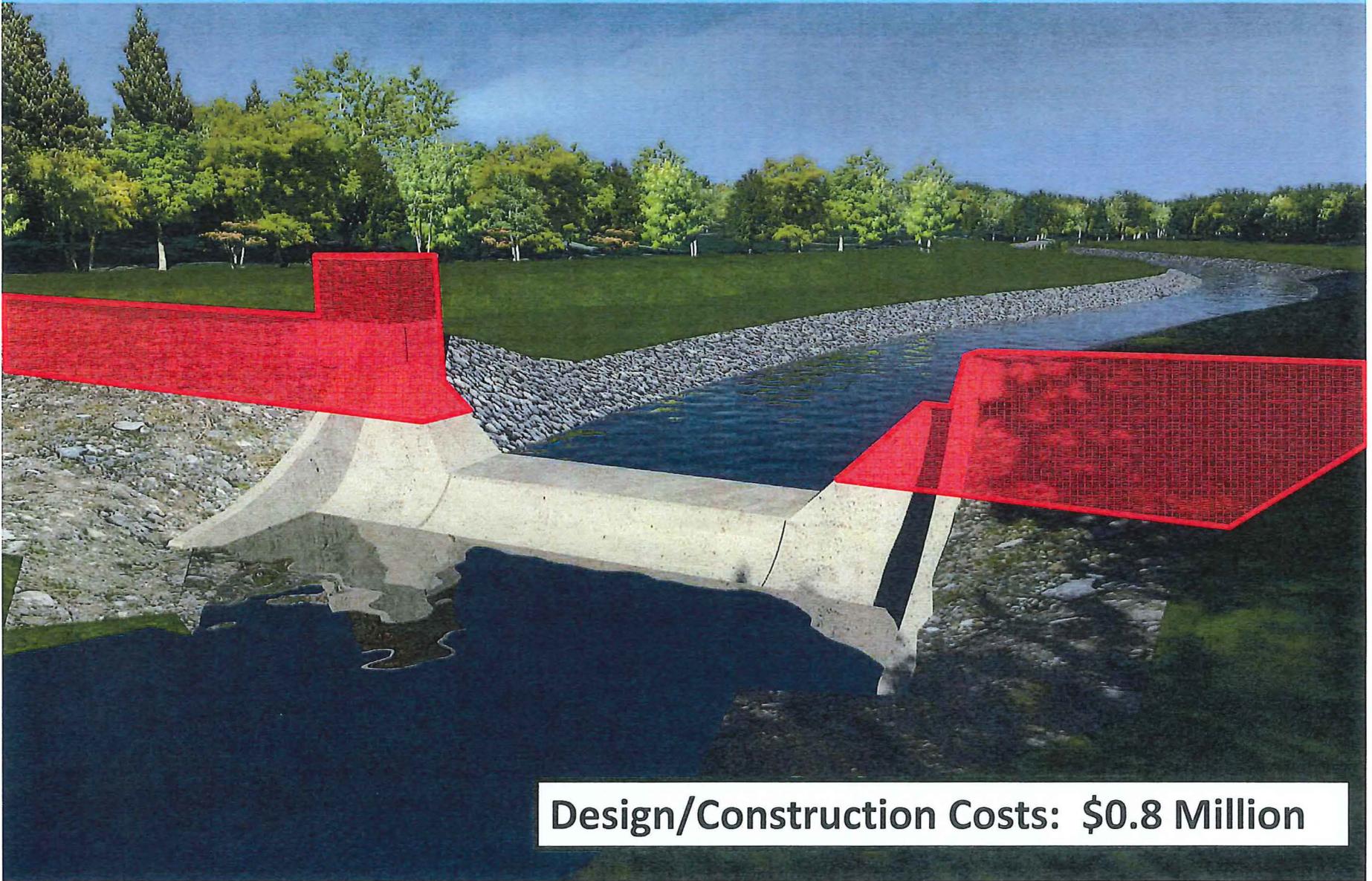
Design/Construction Costs: \$3.1 Million

ALTERNATIVE 9 PARTIAL BREACH – REDUCED HAZARD CLASS?



Design/Construction Costs: \$1.3 Million

ALTERNATIVE 10 PARTIAL BREACH – REDUCE HAZARD CLASS!



Design/Construction Costs: \$0.8 Million

Table 10-3
Summary of 30-Year Life Cycle Costs

Alternative Description	Initial Project Cost⁽¹⁾	30-Year O&M Costs⁽²⁾	Dredging Costs⁽³⁾	30-Year Total Cost
Increase Capacity Alternative 1 Increase Spillway Depth	\$6.6 Million	\$0.6 Million	\$1.1 Million	\$7.2 to \$8.3 Million
Increase Capacity Alternative 2 Increase Spillway Width	\$9.6 Million	\$0.6 Million	\$1.1 Million	\$10.2 to \$11.3 Million
Increase Capacity Alternative 3 Increase Spillway Width & Depth	\$6.8 Million	\$0.6 Million	\$1.1 Million	\$7.4 to \$8.5 Million
Increase Capacity Alternative 4 Fusegates	\$5.8 Million	\$0.6 Million	\$1.1 Million	\$6.4 to \$7.5 Million
Increase Capacity Alternative 5 Widen Spillway with Labyrinth	\$6.7 Million	\$0.6 Million	\$1.1 Million	\$7.3 to \$8.4 Million
Increase Capacity Alternative 6 ACB Overtopping Protection	\$3.2 Million	\$0.7 Million	\$1.1 Million	\$3.9 to \$5.0 Million
Increase Capacity Alternative 7 RCC Overtopping Protection	\$2.4 Million	\$0.7 Million	\$1.1 Million	\$3.1 to \$4.2 Million
Decommissioning Alternative 8 Dam Breach with Restored Channel	\$3.1 Million	N/A	N/A	\$3.1 Million
Partial Dam Breach Alternative 9 Partial Dam Breach (High Hazard Dam)	\$1.3 Million	\$0.5 Million	N/A	\$1.8 Million
Partial Dam Breach Alternative 10 Partial Dam Breach (Low Hazard Dam)	\$0.8 Million	\$0.4 Million	N/A	\$1.2 Million