

**Hershey’s Mill Dam
Design Phase for DEP Option 1 - Concrete Dam Installation**

1.	Core Borings/Geotechnical Testing and Report (Subcontract to <i>David Blackmore & Associates</i>)	\$6,000.00
2.	Additional survey – upslope areas, laydown/work/access areas, additional Site plans	\$8,500.00
3.	Dam design and Construction Sequence	\$40,000.00
4.	Revise Floodplain Study/check results	\$4,500.00
5.	Environmental Impact Analysis (Subcontract to <i>Mellon Biological Services</i> , includes Alternatives Analysis)	\$3,000.00
6.	Dam permit plan preparation, review, approval DEP	\$25,000.00
7.	Erosion and Sedimentation Control Plan (Submit to Chester County Conservation District)	\$5,000.00
8.	NPDES Permit (PAG 2) Application/review fees	\$3,000.00
Design Phase Subtotal		\$95,000.00

Note: An important part of the dam design and construction sequencing will be to devise an effective method to impound and release the accumulating water from the stream channel and reservoir basin during construction. Whether the dam can be constructed in one phase or two will largely depend upon the existing drain inlet’s elevation/depth and proximity to the existing and planned dam structures, the adequacy of size and capacity for final operation purposes, and the feasibility of extending or relocating this inlet if it is not behind the new dam’s location. Should a replacement, expanded, or alternate release route(s) be needed, then the additional penetration(s) through the existing dam will also need to be incorporated into the design and sequencing of construction.

**Hershey’s Mill Dam
Construction Phase for DEP Option 1 - Concrete Dam Installation**

1	Contractor Mobilization and Pond Dewatering.....	\$10,000.00
2	Erect outer (dry) sediment control Barriers, delineate area of disturbance.....	\$6,000.00
3	Excavate stream channel, install coffer dam around existing drain pipe, 700 cy	\$68,000.00
4	Complete excavation for Phase 1 Dam (Silt disposal 1), 2,300 cy	\$157,000.00
5	Pour concrete foundation for Phase 1 Dam, 600 cy	\$180,000.00
6	Install new drain/valve assembly; Pour remainder of Phase 1 dam, 670 cy	\$296,000.00
7	Excavate, reconfigure coffer dam/reservoir to route stream channel/basin flow through new drain assembly	\$55,000.00
8	Complete excavation/demolition for Phase 2 Dam (Silt disposal 3), 1,600 cy	\$116,000.00
9	Pour concrete foundation for Phase 2 Dam, then Phase 2 Dam Structure, 450 cy	\$170,000.00
10	Backfill as required	\$120,000.00

Yerkes Associates – August 14, 2009

11	Install concrete spillway cap	\$15,000.00
12	Install emergency spillway rip-rap, backfill and stabilize disturbed areas, 1,800 sy.....	\$148,000.00
13	Fill Pond and test	\$25,000.00
14	Demobilize	\$10,000.00
Construction Phase Subtotal		\$1,376,000.00
DEP Option 1 TOTAL		\$1,471,000.00

Assumptions;

1. A concrete gravity dam of an approximate length of 340 feet is planned to extend along elevation 448 and be situated behind the existing stone wall/dam.
2. The concrete dam is estimated to be 15 feet in height plus 3 foot height of foundation for a total height of 18 feet. Dam is estimated to be 3 feet in width and wider at the bottom, actual shape to be determined by load calculations and concrete form considerations.
3. Pilings or other stabilization methods will not be required unless specifically identified.
4. Cross sectional area of the concrete wall will be constant across the length, built to withstand the greater of the soil or water pressures.
5. The land elevation downstream of the existing dam is approximately 438. The concrete dam will be designed to withstand interior forces on a freestanding basis using that downstream elevation should the dam and earthen embankment become compromised or be removed at a later date.
6. Overtopping will occur at/above 448 and along the entire length of the concrete structure.
7. No environmental hazards or soil contamination is found.
8. All excavated silt and bulk material can be readily disposed.