

**EXHIBIT A**  
**SERVICE AUTHORIZATION**

SERVICE AUTHORIZATION NO. 7 UNDER  
MASTER SERVICES AGREEMENT DATED JULY 09, 2015

East Goshen Township (Client) hereby authorizes Gannett Fleming, Inc. to perform the following Services associated with preparing permit documents for reducing the hazard classification of Milltown Dam. Said services will be performed in accordance with the Master Services Agreement between Client and Gannett Fleming dated July 09, 2015:

**1. Scope of Services to be Performed:**

Gannett Fleming will develop permit documents for reducing the hazard classification of Milltown Dam (DEP ID No. D15-146) as described in Gannett Fleming's proposal to East Goshen Township dated August 12, 2016. Said proposal is attached and considered to be part of Service Authorization No. 7.

**2. Dates of Service:**

Work activities associated with reducing the hazard classification of Milltown Dam will be completed per the schedule contained within Gannett Fleming's proposal dated August 12, 2016 with the understanding that portions of the schedule are dependent upon variables that are outside of the control of Gannett Fleming (such as the pre-application meeting which will be dependent upon agency availability). In such event, Gannett Fleming shall inform the Client of pending changes in the schedule.

**3. Location for Performance of Services:**

The subject project (i.e., Milltown Dam and reservoir) is located near the intersection of Reservoir Road and Route 3 in East Goshen Township, Chester County, Pennsylvania. It is anticipated that all work will be confined to the existing reservoir and the area immediately surrounding the reservoir as needed for site access and staging areas.

**4. Compensation and Payment:**

Payment for services listed within Service Authorization No. 7 will be based on:

- a. A lump sum of \$123,400.00 (dollars) for work described in Gannett Fleming's proposal dated August 12, 2016.

Gannett Fleming billings will be on a monthly basis based on approximate percentage of effort completed. Total payment will not exceed one hundred twenty-three thousand, four hundred dollars (\$123,400.00), unless otherwise agreed to in writing by the parties.

**5. Project Manager(s) for Gannett Fleming is/are:**

Project Principal: Mr. Paul Schweiger, P.E.  
Project Manager: Mr. Eric Neast, P.E.  
Lead Environmental Scientist: Mr. Dave Graff

**6. Special Terms:**

No special terms. Refer to the Gannett Fleming proposal dated August 12, 2016 for a list of assumptions for which the fee is based.

Accepted:

**GANNETT FLEMING, INC.,**  
Environmental Resources Division

**CLIENT**

By:   
Name: Rodney E. Holderbaum, P.E.  
Title: Vice President  
Date: September 8, 2016

By:   
Name: Louis F. Smith, Jr.  
Title: Township Manager  
Date: Sept 8 2016

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**ATTACHMENT 6.1**  
**GANNETT FLEMING PROPOSAL DATED AUGUST 12, 2016**  
**DEVELOPMENT OF PERMIT DOCUMENTS FOR PARTIAL BREACH OF**  
**MILLTOWN DAM**

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*Excellence Delivered **As Promised***

August 12, 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  
Development of Permitting Documents for Partial Breach of Milltown Dam**

As requested by East Goshen Township (Township), we are pleased to provide the enclosed scope and fee proposal for professional engineering services needed to prepare and submit applicable permit application(s) for the reclassification of Milltown Dam (DEP ID No. D15-146) to a low-hazard structure. The following provides our understanding of the project and presents our detailed scope of work and assumptions for the project.

#### **UNDERSTANDING OF THE PROJECT**

East Goshen Township owns and operates Milltown Dam as a recreational facility. The dam is currently classified as a high hazard (C-1) structure and the Spillway Design Flood is currently established as the 1/2 Probable Maximum Flood (PMF). Under a cover letter from the Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering and Wetlands (DEP Division of Dam Safety) dated June 17, 2014, the Township was notified that Milltown Dam has inadequate spillway capacity to pass the Spillway Design Flood from the contributing 6.3 square mile drainage area. As a result of this notification, the Township performed a detailed study which evaluated numerous options for bringing the structure into compliance with current dam safety regulations as well as a decommissioning option and a "partial breach" option which involves reducing the height and storage capacity of the structure to a point where the structure can be reclassified as a low hazard dam which will in turn reduce the conveyance capacity requirements of the spillway.

During a public meeting on June 28, 2016, the Township chose to pursue the partial breach option and requested Gannett Fleming (GF) to prepare a scope and fee estimate to prepare permit documents for this activity.

Gannett Fleming, Inc.

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[www.gannettfleming.com](http://www.gannettfleming.com)

**SCOPE OF SERVICES**

The following provides our understanding of the scope of services and our proposed work plan for preparing permit documents associated with the reclassification of Milltown Dam to a low hazard structure. The approach provided herein was discussed with DEP Division of Dam Safety on August 11, 2016 to confirm the design and permitting requirements. The design concept involves lowering the top of dam elevation to the existing sediment levels within the reservoir. In doing so, the storage volume of the reservoir is eliminated and the remaining structure can be classified as a low hazard dam. The existing concrete spillway will also be lowered to a point at or near the existing sediment level and configured such that normal flows will be retained within the stream channel. However, larger storms will be allowed to flow over the lowered embankment portions of the dam. The design will document that the remaining embankment portions of the dam are stable to receive flows up to and including the 100-year event. DEP's preferred approach is to allow the stream to naturally form through the dewatered reservoir. To support this approach, the reservoir will be operated in a dewatered condition for approximately one year to allow the sediments within the reservoir to consolidate, dewater and become vegetated. Once the reservoir is stabilized, the lowering of the dam embankment may occur.

**Item 1. Hydrologic and Hydraulic Analyses:** Gannett Fleming will complete hydrologic and hydraulic analyses to size erosion protection for the partial breach of Milltown Dam and to evaluate floodplain management considerations. Engineering services under this item will include:

1. A site visit to gather relevant information on the downstream hydraulic controls and potential downstream hazard areas.
2. Use of the previously-developed HEC-1 model to evaluate discharges at the dam for the 100-year and other more frequent flood events. Comparisons will be made to peak discharges estimated using the USGS Regression Equations. Attenuation provided by the existing and proposed dam will be evaluated and documented.
3. Development of a hydraulic model (HEC-RAS) of the East Branch Chester Creek through Milltown Dam. Geometry for the model will be based on best available terrain data and measurements of downstream hydraulic structures obtained during the field visit. Ground or bathymetric survey is not expected to be needed for this task and is not included within this scope of services.
4. Hydraulic model runs to evaluate velocity over the modified embankment for the design of erosion protection. Hydraulic model runs for the 100-year peak discharge will also be performed to evaluate floodplain impacts
5. Documentation of analyses. A letter report will be prepared to document the hydrologic and hydraulic analyses.

6. Coordination and participation in meeting with PADEP. The purpose of the meeting will be present the results of the hydrologic and hydraulic analyses.

**Item 2. Environmental and Permitting Services:** It is anticipated that the proposed project will alter the normal pool elevation and involve modifications to the existing dam, both of which represent work within waters of the Commonwealth. As such, DEP Division of Dam Safety and the U.S. Army Corps of Engineers (USACE) will require East Goshen Township to obtain a permit to authorize the proposed project in accordance with Chapter 105 Dam Safety and Encroachment and Section 404 of the Clean Water Act. The following tasks are proposed based on the requirements of the state and federal laws to obtain a permit for the proposed project.

1. PNDI Search Request and Agency Coordination. GF will generate an on-line request through the Pennsylvania Natural Diversity Index (PNDI) Search Request to the PA Department of Conservation and Natural Resources (DCNR), Pennsylvania Fish & Boat Commission (PFBC), U.S. Fish & Wildlife Service (USFWS) and the Pennsylvania Game Commission (PGC) for information regarding the presence/absence of rare, threatened, or endangered state/federal species within the project area. Copies of the coordination efforts and agency responses are required to be submitted in the project permit application materials. The PNDI Search Request results are valid for two years.
2. Wetlands and Waterways Investigations. GF will investigate the proposed project area(s) and limits of disturbance for unmapped wetlands and waterways habitat. GF assumes that the proposed project study area(s) will total no more than 20 acres of surface area. GF will identify and delineate palustrine wetland boundaries in the field with uniquely labeled survey flagging using methods described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0, U.S. Army Corps of Engineers, April 2012. Wetland and waterway features will be mapped using GPS technology with sub-meter accuracy. Data points will be exported into a GIS or CADD file to present features on existing project drawings. Wetland habitats will be assigned a Cowardin classification (1977).

Wetland function and value assessments will be performed at each wetland location using the methods outlined in The Highway Methodology Workbook Supplement, Wetland Functions and Values A Descriptive Approach, USACE New England District (NEDEP-360-1-30a 1995).

The results of the wetlands and waterways field work will be presented in a report for use by the project planners and regulatory agencies. The Wetland Identification and Delineation Report will include a description of the project study area, background information, investigation methods used, wetland datasheets, photo logs, site mapping, tabularized coordinates of mapped features,

and function and value sheets. This report will be used to support future permitting efforts.

3. Phase I Bog Turtle Report. Chester County is within the known range of the bog turtle. Based on a preliminary review of aerial photography, wetlands are expected to occur within and immediately adjacent to the proposed project area. Wetlands and waterways identified within the proposed project area and within the 300-foot action area will be evaluated for potential bog turtle habitat according to the U.S. Fish and Wildlife Service (USFWS) field procedures (April 2006). GF will prepare a Phase I Bog Turtle Habitat Survey Report in anticipation that it will be submitted to the United States Fish & Wildlife Service (USFWS) and Pennsylvania Fish & Boat Commission (PFBC) when the project applies for permits and seeks regulatory agency authorization to implement the project. If a Phase II Bog Turtle Survey is needed, a separate scope and price would be generated.
4. Coordination with Pennsylvania Historic and Museum Commission. Coordination with the Pennsylvania Historic and Museum Commission (PHMC) will consist of a Cultural Resource Notice (CRN) to determine the presence/absence of historic structures and or archaeological resources within the project area. The CRN will include a project narrative, site location map, existing and proposed conditions drawings and site photographs. GF assumes that no historic or cultural resources of significance occur within the project area and no surveys are required. If PHMC determines that potential historic or cultural resources exist, GF will develop and submit a separate scope and cost estimate to complete the Historic Resources Survey Form (HRSF), if needed.
5. Pre-Application Meeting and Preliminary Jurisdictional Determination. GF will coordinate a pre-application meeting with the state and federal agencies to meet on-site and discuss the project before a permit application is submitted. The pre-application meeting allows for a discussion of concerns and requirements from the regulatory agencies before project plans and designs are advanced. This is an opportunity for East Goshen Township and GF to hear agency requirements and concerns in developing a permit application for their review. The main discussion topics include; the purpose and need for the project; its environmental impacts; efforts to avoid and minimize impacts, possible mitigation options; and long-term plans for the property

Prior to the pre-application meeting, GF will submit the Wetland and Waterways Identification and Delineation Report to the USACE and DEP to request a field visit at the time of the pre-application meeting to review the delineation boundaries in order to obtain a Preliminary Approved Jurisdictional Determination from the USACE. Any changes to the field boundaries will be re-located using a GPS unit with sub-meter accuracy.

6. Environmental Assessment. GF will complete an environmental assessment as part of the permit application process. This assessment will include an evaluation of streams and aquatic resources which may be impacted by the project. Our team's aquatic ecologists have taxonomic certifications for macroinvertebrate identification. The aquatic community analyses will define the assemblage of stream, pond, and lake life to serve as the baseline condition. A focus on water quality, substrate, and the macroinvertebrate community will indicate the potential for future utilization of the stream reach by fish and other aquatic life. The Gannett Fleming team will obtain scientific collector's permits and fishing licenses to conduct studies and surveys that require the collection of aquatic life.

Perennial streams will be evaluated and surveyed for benthic macroinvertebrates in accordance with the Rapid Bioassessment Protocols (RBP) for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish (2nd Edition) (Barbour et al, 1999). Two 100-meter (approximately 330-feet) sampling reaches will be identified, evaluated, and surveyed for macroinvertebrates along the downstream and upstream locations of Milltown Reservoir. The Rapid Bioassessment Physical Characterization/Water Quality and Habitat Assessment Field Data Sheets for low gradient and high gradient streams, as applicable, will be completed while at sampling reach locations (Barbour et al, 1999). Water quality measurements will be recorded using a YSI 556 water meter. Water quality samples will be collected during the field assessments to provide data for:

- Temperature
- Dissolved Oxygen (DO)
- Turbidity
- pH
- Hardness
- Specific Conductance, and
- Oxidation Reduction Potential (ORP)
- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)

A laboratory will be used to confirm TSS and TDS readings. Field meters will be calibrated prior to use and this effort will be recorded on field data logs.

Macroinvertebrates will be collected using a D-frame dip net and the kick-netting method for D-frame dip nets as described in the RBP for Single and Multi-Habitat Approaches for macro-invertebrate collection. The macroinvertebrate collection will consist of 20 kicks per sampling reach. For each sampling reach, the collections from all 20 kicks will be composited into one sample and stored in 95% denatured ethanol. Rapid Bioassessment Benthic Macroinvertebrate Field Data Sheet will be completed in the field following completion of macroinvertebrate collection (Barbour et al, 1999). For quality control, a duplicate

macroinvertebrate sample will be collected at a randomly selected sampling reach to represent 10% of the total sampling effort within the project area.

7. Mitigation Plan. Environmental impacts are unknown at this time and the required mitigation, if any, will not be defined until the pre-application meeting is held with the reviewing agencies. Once the required mitigation has been established by the reviewing agencies, a separate scope and fee to prepare a mitigation plan will be provided to the Township. It is assumed that all mitigation can be established onsite.
8. Permit Application Package (Dam Permit Application). GF will prepare and assemble the permit application package for East Goshen Township's review and signature. Since the project will alter the top of dam and normal pool elevations, a Dam Permit Application is anticipated thru DEP Division of Dam Safety to authorize this project.
9. In addition to the Dam Permit Application which will be submitted to DEP Division of Dam Safety, the project will require erosion control plan approval from the Chester County Conservation District. GF will prepare an erosion and sediment control plan for the project to control sediment-laden runoff from the project site. It is anticipated that the majority of the project site will be permitted under Chapter 105 by DEP Division of Dam Safety and the remaining area (if any) to be permitted under Chapter 102 will be less than one acre. Consequently, it is assumed that a NPDES Permit for Stormwater Discharges Associated with Construction Activities will not be required.

**Item 3. Preparation of Conceptual Layout for Reducing Hazard Classification:** A conceptual layout of the dam modifications will be prepared and shared with the Township (refer to Item 4) prior to advancing the plan into final design. The conceptual plan will be prepared to a level necessary to develop an estimate of construction costs.

**Item 4. Township Meeting:** The concept plan and the preliminary results of the environmental investigations and hydraulic analysis as well as preliminary construction costs will be compiled and shared with the Township. Comments from the Township will be considered before advancing the concept plan into final design and permitting. The scope and fee provided herein assumes GF will attend one public meeting to discuss progress completed to date.

**Item 5. Development of Permit Drawings:** GF will prepare drawings and technical specifications for the reclassification of Milltown Dam to a level needed to support the permit applications described within this proposal.

1. Drawings will be prepared of the partial breach. The following drawings are anticipated:

Cover Sheet  
Overall Existing Conditions Plan and General Notes  
Existing Conditions Plan of Milltown Dam  
Demolition Plan  
Project Alignment and Survey Control Plan  
Proposed Conditions Plan – Dam  
Profile and Cross Sections of Dam (Two Sheets)  
Miscellaneous Details (Four Sheets)  
Erosion and Sediment Control Plan (Five Sheets)  
Site Stabilization Plan (One Sheet)

This scope and fee assumes that the valve house will no longer be needed following the reduction in the dam height. Those portions of the valve house located above finished grade will be demolished and the remaining portions of the valve house shall be abandoned in place by backfilling with concrete. The enclosed scope and fee estimate assumes that stream restoration will not be required as part of this project.

2. Technical specifications will be prepared for the work described on the drawings. Specification will either be placed on the drawings or provided in CSI format.
3. It is assumed that one easement will be required from the downstream property owner to allow for construction access and/or to facilitate construction activities. The property boundary survey performed by GF in January 2016 coupled with property information from other sources is expected to be adequate for the preparation of said easement. GF will prepare an easement plat, including a description of the easement boundary, for the Township's use in securing said easement from the downstream property owner.

## **ASSUMPTIONS**

The following assumptions were made in the preparation of this scope and fee proposal:

1. The Township will coordinate and secure all approvals necessary to allow Gannett Fleming to access the Property.
2. GF assumes that any environmental surveys, beyond a Phase I bog turtle survey, for protected species would require a separate scope and price.
3. GF assumes that the wetland and stream fieldwork can be accomplished in five days and that Township authorization will allow field work to occur during the growing season.
4. GF assumes that any mitigation plan (i.e., wetlands, waterways, etc.) would require a separate scope and price.
5. This scope of services assumes that no suitable bog turtle habitat exists within or near the project area and a Phase 2 Bog Turtle Survey will not be necessary. If a Phase 2 Survey is required, GF will develop and submit a separate scope and cost of services for review and

approval. GF anticipates one field day to evaluate wetland areas for potential bog turtle habitat.

- 6. A stream mitigation plan will not be required.
- 7. GF assumes that permit application and impact fees would be waived for a municipality or will be paid by the Township and are not included within the fee estimate.
- 8. Gannett Fleming does not guarantee approval of permit applications.
- 9. It is anticipated that construction access to the work area will be from Reservoir Road (Township Highway) and not be from a State highway. Consequently, a PennDOT Highway Occupancy Permit will not be required.
- 10. This scope and fee estimate does not include preparation of bid documents or bidding and construction phase services.

**COMPENSATION**

Our proposed lump sum fee, as described within this proposal letter, is as follows:

Hydrologic and Hydraulic Analysis:	\$17,100
Environmental Investigations:	\$45,900
Pre-Application Meeting:	\$5,600
Development of Concept Plans and Township Meeting:	\$8,100
Development of Permit Documents:	\$46,700
<b>Total Lump Sum Fee:</b>	<b>\$123,400</b>

**SCHEDULE**

GF is prepared to begin work on this assignment as soon as notice to proceed is issued by the Township. Our anticipated schedule is as follows:

- The hydraulic analysis will begin immediately. The modeling will be taken to a point needed to confirm the conceptual design within three months from receiving notice to proceed.
- Environmental investigations will begin immediately. Field work and agency coordination (i.e., PNDI coordination, cultural resource notification and PFBC coordination) will be conducted within two months of receiving notice to proceed.
- A conceptual layout of the proposed dam modifications will be prepared in conjunction with the hydraulic analysis and will be shared with the reviewing agencies as part of the pre-application meeting. It is assumed that a pre-application meeting can be scheduled with the regulatory agencies within one month following the completion of the hydraulic analysis (pending the availability of the reviewing agencies)
- The conceptual plan and the results of the pre-application meeting will be shared with the Township following the pre-application meeting
- Permit applications will be prepared within two months following the Township meeting.

Task	Month	1				2				3				4				5				6				7			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Notice to Proceed																													
Hydraulic Analysis																													
Environmental Investigations																													
Pre-Application Meeting <sup>1)</sup>																													
Develop Concept Plan																													
Township Meeting																													
Develop Permit Documents																													

1. Pre-Application meeting will be dependent upon availability of the reviewing agencies.

These services can be provided under our current Master Services Agreement. Should the Township choose to secure our services to prepare permit application(s) for the partial breach of Milltown Dam as described within this proposal, we will provide you with a Service Authorization under a separate cover letter to amend our Master Services Agreement for this work activity. If you have any questions about the proposed services or need additional information, please do not hesitate to call me or Mr. Paul Schweiger of our office at 717-763-7212, extensions 2828 and 2504, respectively. We thank you for the opportunity to provide this proposal and look forward to continuing our relationship with the Township.

Sincerely,

GANNETT FLEMING, INC.  
 Environmental Resources Division

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