

COUNTY OF YORK

MEMORANDUM

DATE: May 24, 2024

TO: York County Board of Supervisors

FROM: Mark L. Bellamy, Jr., County Administrator 

SUBJECT: PRELIMINARY Queens Lake Restoration Evaluation

Over the last several years, the Department of Public Works has been working closely with the Queens Lake Community Association. The focus of this collaboration has been developing specifications and acquiring permits to repair the dam and spillway in accordance with changes in the Commonwealth's Dam and Safety Division Regulations. The work will also address the Queens Lake Drainage Basin, including the repair of eroded ravines that feed into Princess Pond and Queens Lake. These collaborative efforts ultimately resulted in a Memorandum of Agreement between the County of York and the Queens Lake Community Association.

The dredging and removal of silt from the Princess Pond area and Queens Lake has been a topic of concern for the greater Queens Lake community. This area was not included in the agreement. Recently, staff received a request from a member of the Board of Supervisors as well as the President of the Queens Lake Community Association for an evaluation. This preliminary evaluation includes: the area of the National Park Service located within the Queens Lake Watershed, a dredging estimate, permitting requirements, and program costs. Attached for your review is the Preliminary Evaluation performed by AH Engineering Consultants, as well as a copy of the Memorandum of Agreement.

Krieger/3824

Attachments:

- Second Agreement regarding Queens Lake Drainage Basin
- Preliminary Report - Queen's Lake Restoration Evaluation

**SECOND AGREEMENT BETWEEN THE COUNTY OF YORK, VIRGINIA AND
QUEENS LAKE COMMUNITY ASSOCIATION, INC. REGARDING STORMWATER
MANAGEMENT OF THE QUEENS LAKE DRAINAGE BASIN**

1. **PARTIES.** The Parties to this agreement are the County of York, Virginia and the Queens Lake Community Association.
 - a. **York County (the County)** is a political subdivision of the Commonwealth of Virginia.
 - b. **Queens Lake Community Association, Inc. (QLCA)** is a nonprofit Virginia corporation that serves as an association of homeowners in the community of Queens Lake, located in York County, Virginia. Membership is not compulsory. Approximately 70% of Queens Lake residents, including both “deeded” and “traditional” (non-deeded) members provide dues income for QLCA maintenance and operations.
2. **AGREEMENT REPLACES PRIOR MOU.** This agreement supersedes and replaces any previous agreement, in particular the previous MOU finalized on October 2, 2022 between the Parties.
3. **AUTHORITIES.** This agreement was authorized by QLCA at the annual meeting held on November 14, 2023. This agreement was approved by the York County Board of Supervisors on December 19, 2023.
4. **PURPOSE.** Located within the Queens Lake neighborhood are two lakes, one known as “Queens Lake,” with a dam and spillway on the lake, plus a smaller lake known as “Princess Pond”, all of which are owned by the QLCA. The lakes, the dam, and much of the residential community, were constructed beginning in the 1950s, long before contemporary site and subdivision rules were established to govern stormwater, utilities, and state recognized homeowners associations. The lake and its tributaries, including Princess Pond, serve as a drainage basin for most of the Queens Lake neighborhood, but also convey stormwater from other developed neighborhoods in the upper portion of the County, collectively known as the “Queens Lake Drainage Basin”. The County recognizes that while the lake is an amenity most specifically for the immediate residential neighborhood, it is also a benefit to the County more generally. An overview of the area is attached as Exhibit 1.

The Virginia Department of Conservation and Recreation (DCR) inspects and regulates dams within the Commonwealth of Virginia pursuant to, among other authorities, the Dam Safety Act, Virginia Code § 10.1-604 *et seq.*, and Virginia Administrative Code 4-50-20 *et seq.* DCR’s Dam Safety Division originally classified the QLCA dam as special low hazard, with virtually no maintenance requirements, but reclassified it in mid-2020 as a low hazard dam. As such DCR

asserts that it may require QLCA to upgrade the dam and its spillway per the reclassification. The parties agree that to the extent there exist DCR requirements for any upgrades to the dam and associated improvements, and absent the agreements set forth herein, such upgrades and improvements are the responsibility of the QLCA. The QLCA has approached York County government seeking advice and assistance in responding to DCR's asserted regulatory requirements. The County recognizes the County's interest in protecting the lake and the dam and that the Queens Lake neighborhood has responsibilities related thereto. The Parties also recognize that the lake basin conveys public stormwater and, therefore, that the larger community as shown on Exhibit 1 derives benefit from the existence of a healthy Queens Lake.

The County recognizes its broader interest in protecting the lake and the dam and wishes to be a collaborative participant in ensuring that the dam, spillway, and the lake are properly maintained while also recognizing that the immediate Queens Lake neighborhood has responsibilities related to the lake and the dam. QLCA acknowledges it has responsibilities in this regard but also requests the County's participation in protecting the lake and the dam, recognizing that the lake basin does convey public stormwater and that the larger community (Exhibit 1) derives benefit from the existence of a well maintained Queens Lake. The mutual long-term goal of this agreement is the preservation of a healthy, attractive and functional lake and drainage system.

To that end, the Parties have concluded that all future storm water, lake health, and dam protection initiatives are more efficiently managed as integrated phased projects. The County is prepared to take the lead in managing all design and construction work related to this Agreement, and to commit to pay for ongoing lake and dam maintenance. QLCA has invested a considerable portion of its capital resources already to design an appropriate dam repair project and has purchased wetlands credits, and will make one time and future payments to defray the County's costs as provided herein.

5. MUTUAL COMMITMENTS

- a. The QLCA and the County will coordinate and collaborate as provided herein regarding the remediation and maintenance of the QLCA facilities serving the Queens Lake Drainage Basin contemplated under this Agreement.
- b. One project management point of contact will be appointed by the County Administrator and by QLCA with the responsibility of sharing information and maximizing coordination. A larger project management team will be designated by the County Administrator and QLCA to advise and assist the project point persons throughout project implementation. The project management team may be expanded to include consultants, VDOT, DCR and others as needed. Each party shall notify the other in writing of any change to the project management point person.

- i. **The County's project management point of contact is:**

**Joseph Brogan, Chief Stormwater Engineer
Travis Rhodes (Alternate)
Robert Krieger (Alternate)**

- ii. **QLCA's project management points of contact will be assigned by the QLCA Board to include:**

**Current QLCA President or Board designee
Current QLCA Lake Committee Director or Board designee
Current QLCA Community Affairs Committee Director or Board designee**

The County and the QLCA pledge to work cooperatively in accordance with the obligations set forth in this Agreement to complete the work that DCR asserts is required as described below, based on the regulations, and other matters addressed in this Agreement. The County and the QLCA agree to work together in good faith to coordinate together and cooperate in good faith to accomplish the work set forth in this agreement.

- c. **The parties recognize that optimal performance of the mutual obligations requires performance by the other party of their obligations under this Agreement.**

6. OBLIGATIONS OF THE PARTIES.

a. The County

- i. **The County will and hereby does assume responsibility for project management and financial responsibility for upgrading and maintaining the stormwater management flow of the Queens Lake Drainage Basin (including any existing ravines within York County drainage easements), the health and ongoing maintenance of the lake, the upgrade and ongoing maintenance of the spillway; and for the upgrade and ongoing maintenance of the dam as required by the Commonwealth's and DCR's regulations, all in accordance with the Standards (as defined below). The location of the stormwater management flow, spillway, lake and dam are depicted in the attached Exhibit 2. The County's maintenance responsibilities shall commence in the year that QLCA is first obligated to make an Annual Facilities Maintenance Contribution (as defined below). Without limiting the generality of the foregoing, the County shall, at its expense, complete all of the following in accordance with the Standards:**

- (A) Rehabilitation and upgrade of the earthen dam supporting Queen's Lake to meet current state certification, followed by ongoing maintenance and repair consistent therewith.
 - (B) Rehabilitation and upgrade of the concrete spillway to meet state standards, followed by ongoing maintenance and repair consistent therewith.
 - (C) Rehabilitation and upgrade of stormwater ravines within existing York County drainage easements within the Queens Lake Drainage Basin, followed by ongoing maintenance and repair.
 - (D) Propose funding in York County's Capital Improvement Program (CIP) to study the relationship between Princess Pond and Queens lake as well as drainage ravine 10 as identified in the AH Study.
- ii. The parties agree to share information, cooperate and negotiate in good faith in an effort to reach mutual agreement on the Standards. To the extent not already in existence, the County bear all expenses of developing proposed Standards and providing them to QLCA for review and consultation. In any event, the Standards shall include or account for all of the following:
 - (A) All conditions set forth in the DCR Dam Safety Division Alteration Permit dated August 9, 2022 shall be met.
 - (B) The Queens Lake Dam Rehabilitation design and drawings (sheets C0.0 through C5.0 (9 plan sheets)) as designed by A. Morton Thomas and Associates, Inc. with PE stamp by David S Krisnitski dated 11/23/2021 shall be implemented.
 - (C) Queens Lake Spillway Rehabilitation design and drawings by AH Environmental Consultants, Inc. shall be completed and implemented.
 - (D) Design and construction elements of Identified Sites per the Technical Memorandum – Queens Lake Stream Improvements; York County, VA developed by AH Environmental Consultants, Inc. for York County Department of Public Works, dated November 2022, shall be implemented.
 - (E) Dam and spillway rehabilitation and upgrades to meet current state certification.

(F) All work shall be completed in accordance with all applicable laws, codes, and regulations.

b. The QLCA

- i. Subject to QLCA membership approval, QLCA will convey, at no cost to the County, all easements upon property owned or controlled by QLCA that are reasonably necessary for the County's obligations under this agreement, including, but not limited to, for construction and maintenance of the lake, spillway and dam system (the "Easements"). The Easements are set forth and described generally in the attached Exhibit 2, though the parties acknowledge that the specific locations and terms of the Easements are to be established by mutual agreement of the parties. The parties agree to share information, cooperate and negotiate in good faith in an effort to reach mutual agreement on the Easements.
- ii. The QLCA pledges its best efforts to assist the County in obtaining easements upon property that is not controlled or owned by QLCA. The required easements are described in Exhibit 2.
- iii. The QLCA will provide the County a one-time initial capital contribution to the project of \$110,000. This amount is due at the time that the first contract is awarded for dam and spillway construction.
- iv. For the primary term of this Agreement, the QLCA will also make an "Annual Facilities Maintenance Contribution" of \$20,000 commencing in the calendar year that the QLCA makes the initial capital contribution, as set forth in the preceding paragraph. The Annual Facilities Maintenance Contribution will adjust annually for inflation (based on the Balt-Wash CPI), but shall in no case be increased by more than 3%. The Annual Facilities Maintenance Contribution shall be spent and applied by the County exclusively for maintenance, repair and improvements within the Queen's Lake Drainage Basin.
- v. The annual obligation of the QLCA to pay the Annual Facilities Maintenance Contribution shall cease if the County implements a storm water management fee program throughout the County or a special tax district for properties located within the Queens Lake Drainage Basin.

7. OTHER PROVISIONS

- a. Nothing in this agreement is intended to conflict with current law or regulation or the directives of the United States Government, the Commonwealth of

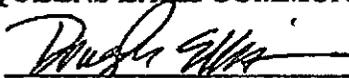
Virginia, or York County. If a term of this agreement is inconsistent with such authority, then that term shall be invalid, but the remaining terms and conditions of this agreement shall remain in full force and effect.

- b. Nothing in this agreement is intended to modify the sovereign or other legal immunities of the County of York, or its officers, agents and employees.
- c. This Agreement shall be governed in all respects by the laws of the Commonwealth of Virginia and the Code of the County of York, Virginia. Venue for any dispute arising out of this agreement shall be exclusively in the Circuit Court for the County of York and City of Poquoson.
- d. This Agreement may be executed in one or more counterparts, and each such counterpart shall be deemed an original, and the parties may become a party hereto by executing any such counterpart, so long as the counterpart contains an original signature of both parties.
- e. All notices pursuant to this agreement shall be sent to the contact listed as a point of contact, above. The parties may change the point of contact by providing written notice to the other party.
- f. Other than reasonable safety restrictions associated with physical construction and the terms of the Easements, nothing in this Agreement shall limit or restrict QLCA's rights to use the lake, pond or other facilities. Nothing in this Agreement shall restrict or prohibit QLCA from conducting maintenance or repairs to the lake, pond or other facilities in excess of or in addition to the maintenance and repairs that the County is obligated to provide, except to the extent that said maintenance or repairs is contrary to or damages the County's efforts pursuant to this agreement.
- g. The County shall cause all contracts for the rehabilitation, restoration, upgrade, repair and maintenance contemplated under this Agreement or otherwise owned by QLCA to include provisions obligating the contractor to: (i) include QLCA as an additional insured on the contractor's commercial general liability insurance policies (which shall have minimum limits of at least \$1,000,000.00 per occurrence) and any other insurance policies that contractor is required to include the County as an additional insured upon; and the contractor to (ii) indemnify, defend and hold QLCA harmless of, from and against any and all suits, actions, damages, liabilities, costs and expenses (including, without limitation, reasonable attorney's fees) in connection with (A) loss of life, personal injury or property damage arising from or related to the acts or omissions of contractor or any of its agents, subcontractors, employees, or representatives at the property, and/or (B) contractor's breach of its obligations under the contract.

8. **ENTIRE AGREEMENT.** This agreement and the exhibits hereto constitute the entire understanding between the parties, and it supersedes all prior or contemporaneous understandings or representations (whether written or oral) of the parties regarding the subject matter hereof.
9. **EFFECTIVE DATE.** The terms of this agreement will become effective upon signature of both parties.
10. **MODIFICATION.** This agreement may be modified only upon the mutual written consent of both parties.
11. **TERMINATION.** The terms of this Agreement, as modified with the consent of both parties, will remain in effect for 20 years from the date of signature (effective date). Following the initial 20 year period, this Agreement shall automatically renew for additional one (1) year terms, unless either party gives the other at least ninety (90) days written notice of termination prior to expiration of the then-current term. The term of this Agreement may also be further extended by mutual written agreement of the parties.

APPROVED BY:

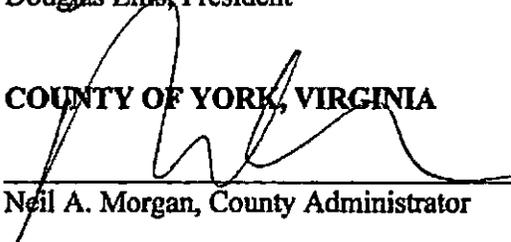
QUEENS LAKE COMMUNITY ASSOCIATION, INC.



Douglas Ellis, President

Date: 12/4/23

COUNTY OF YORK, VIRGINIA



Neil A. Morgan, County Administrator

Date 12/20/23

Approved as to form:



County Attorney



TO: County of York, Virginia
Public Works Department (PWD)
Joe Brogan, PE - Chief of Stormwater Programs

FROM: AH Engineering Consultants

SUBJECT: **PRELIMINARY Queen's Lake Restoration Evaluation**

DATE: 20 May 2024

1. BACKGROUND

Queens Lake (Lake) and Princess Pond (Pond) in York County were originally constructed around 1965 with the development of the Queens Lake neighborhood. Queen's Lake is a water body that is impounded by the Queen's Lake dam and was constructed around 1928. Water from the lake discharges to Queen's Creek through the dam's spillway. Princess Pond, which was constructed around 1965, is located within the Queen's Lake watershed and discharges into the upper end of the Lake. The primary functions of the lake and pond were to:

- Serve as stormwater control measures for local drainage and stream runoff for adjacent portions of the Queen's Lake neighborhood, sections of the Colonial National Historical Park, and Interstate 64.
- Be used by homeowners for recreational activities (e.g., self-powered watercrafts, fishing, etc.) and aesthetics.

Over the years, surface runoff from contributing stormwater streams has eroded embankments and conveyance channels for both the Lake and the Pond. In addition, sedimentation associated with I-64 and Colonial Parkway improvements have resulted in sediment build-up. As reported by residents, this has resulted in significantly reduced water surface area and depth for both the Lake and the Pond.

The purpose of this preliminary desktop analysis is to prepare a preliminary estimate of dredging that would be required to restore the Lake depth to its original condition. Options and costs for dredging the Pond were previously evaluated by AH Engineering in a December 2022 technical memorandum and are summarized as well. In addition, the drainage area associated with the Colonial National Historic Park will be estimated as a percentage of the overall watershed for the Lake.

Following this preliminary desktop analysis, a more detailed scope of services to perform field investigations and confirm original and current Lake depths will be required to better estimate quantities for dredging.

2. COLONIAL NATIONAL HISTORIC PARK

As seen in **Figure 1**, the Queen's Lake watershed area encompasses the residential neighborhood, Colonial National Historic Park property, and VDOT I-64 right of way.



Figure 1: Queen’s Lake Watershed Area

The total Queen’s Lake watershed consists of approximately 985 acres. Of that watershed, the Colonial National Historic Park property represents approximately **69 acres**, or **14%** of the total watershed area.

3. QUEEN’S LAKE PRELIMINARY DREDGING ESTIMATE

Accurate estimates of dredging volumes to restore the Lake are not available due to the lack of information on original Lake depths and a survey of the current conditions. This evaluation provides an estimate based on a desktop analysis using County GIS information and aerial photography showing changes in Lake condition. Therefore, it will be necessary to conduct a thorough analysis to accurately quantify sedimentation volumes, which will include a current bathymetric analysis and probing of the Lake bottom (sub-bottom profiling) to estimate historic lake depths.

For this desktop analysis, computer aided design (CAD) software was used to develop a preliminary, high-level estimate of the volume of sediment that would need to be removed to restore the Lake to near-original condition. AH developed three-dimensional CAD models of historic and current lake bathymetry and the dredge volume was estimated as the difference between the two models.

Both models were developed in a similar fashion. First, two-dimensional boundaries were created for the lake surfaces (historic and current) using County-generated LIDAR data in combination with current and historic (circa 1993) aerial photography. The lake surface elevation was set to the spillway elevation of the dam (approximately 8.6 feet). Then, vertical profiles of the lake bottom were created along an assumed “centerline” running from the dam spillway to the upstream end of the lake. AH assigned estimates of ground elevations to the upstream and downstream ends of the profiles.

The downstream elevations were based on bathymetric survey data collected in support of dam restoration efforts. The downstream elevation for the “historic” profile was assumed to be approximately -0.5 feet based on 2020 survey data (i.e., prior to the I-64 widening project impacts). The current downstream elevation (approximately 1.5 feet) was set based on survey data from the Queen’s Lake Spillway Improvements project (September 2023), which were collected in support of the ongoing spillway restoration. The upstream elevation for each model was set as the lake’s water surface elevation (i.e., 8.5 feet – the spillway elevation); however, the location of the upstream end of the profile for the current scenario occurs hundreds of feet downstream relative to the historic scenario due to the sedimentation that has necessitated this dredging effort. The elevations along the profiles were generally linearly interpolated. Segments of the profiles at the upstream end of the lake were adjusted based on basic sedimentation principles (i.e., greater sedimentation occurs in the upper reaches of the lake, then more evenly as lake depth increases).

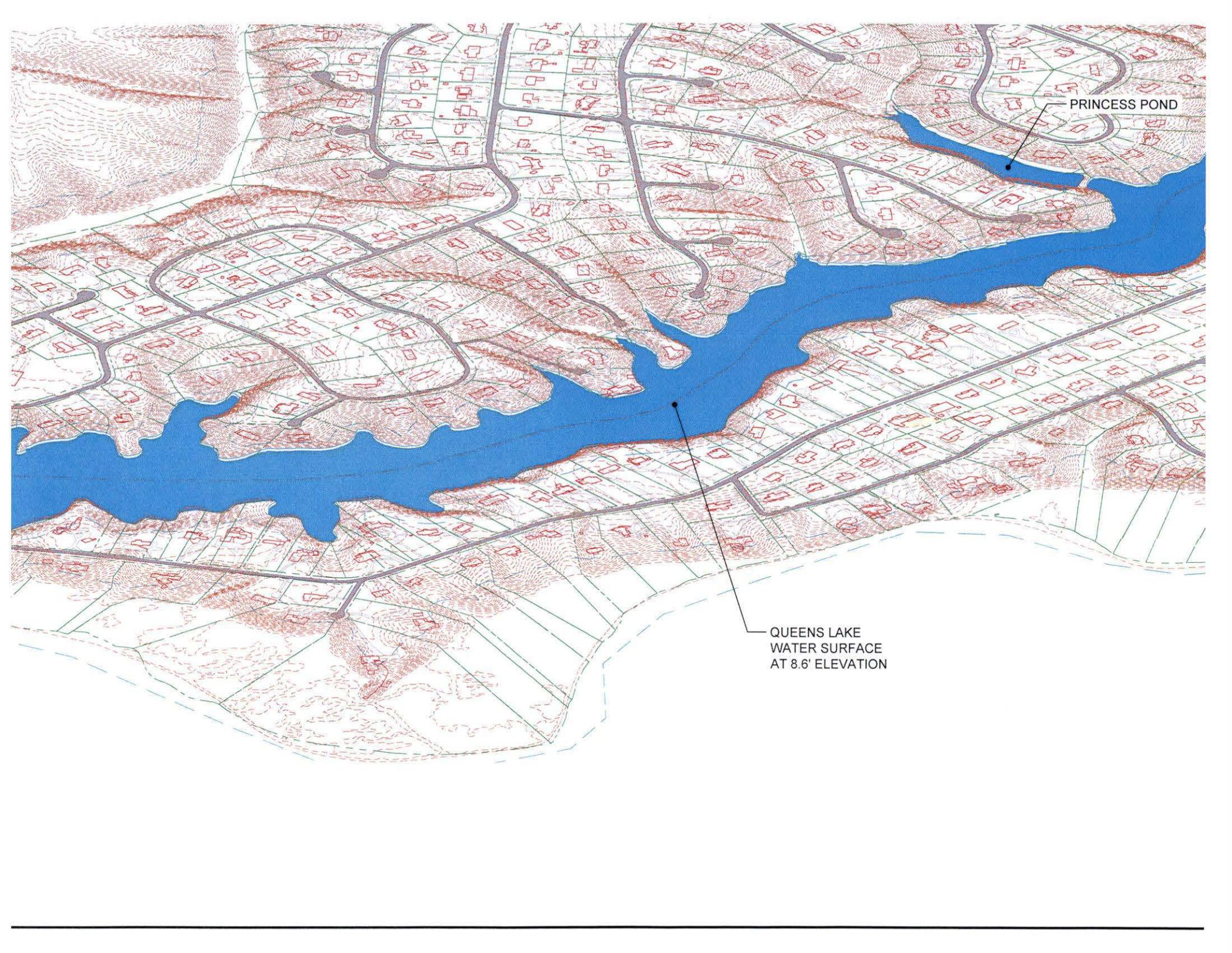
Using the lake surface boundaries and the assumed lake “centerline” profiles, AH generated 3D models of the volumes of water below the lake’s surface. Lacking bathymetric survey for the lake (except in the immediate vicinity of the dam), AH created an estimate of the topography under the water surface using an adjacent, undeveloped watershed as an example. County GIS elevation data for the stream segment downstream of the Jones Millpond dam, which also flows into Queens Creek, were considered representative of the

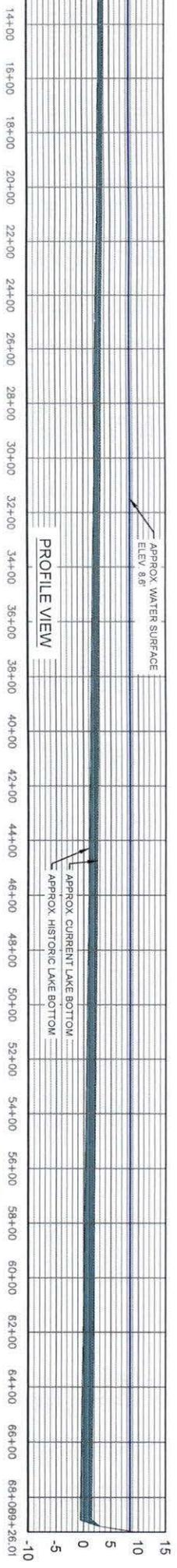
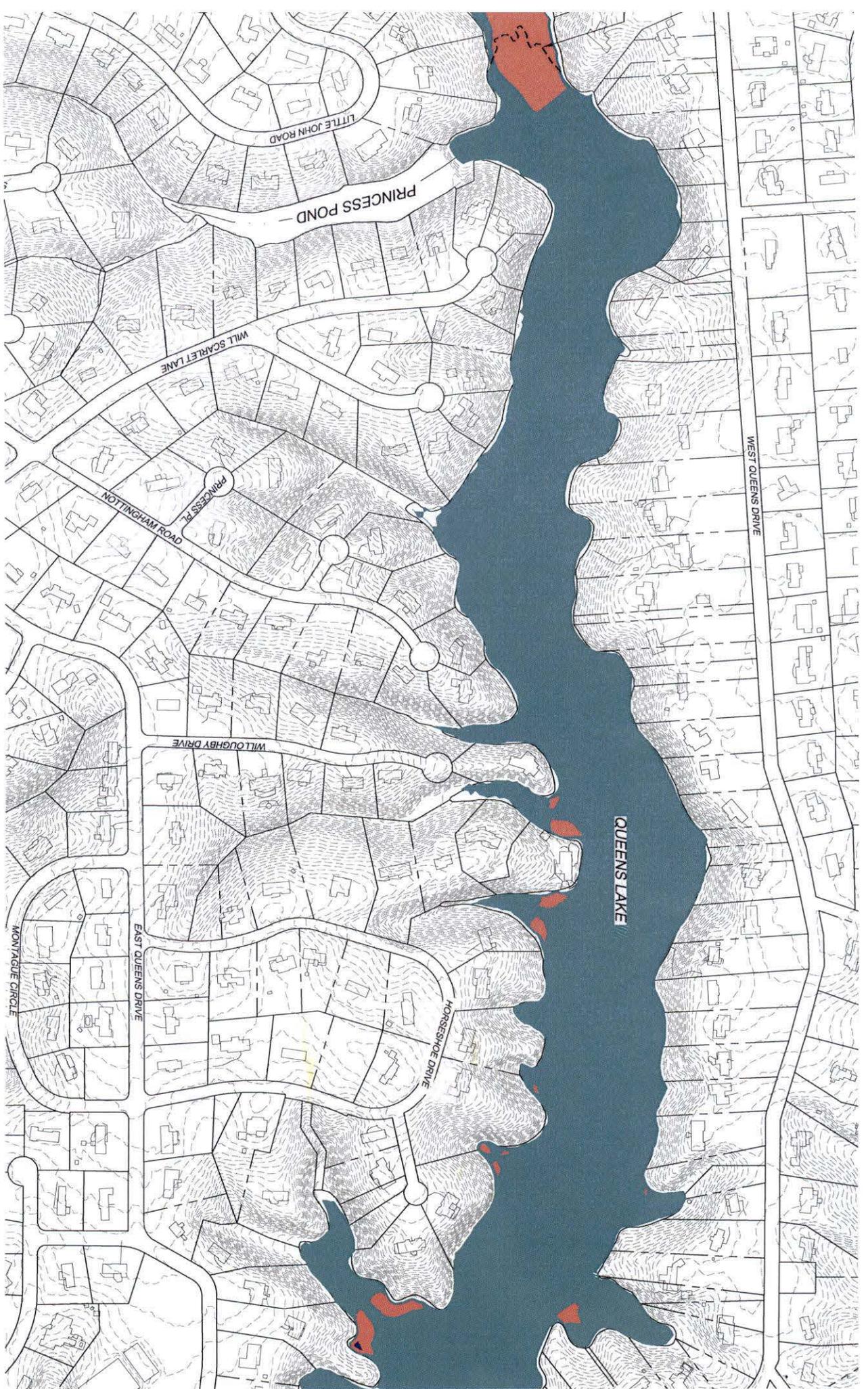
natural topography of the historic stream that existed prior to the construction of the Queens Lake dam. The underwater topography of Queens Lake was estimated by mimicking the topography of the adjacent stream.

Finally, the estimated dredge volume was calculated as the difference between the historic lake water volume and the current lake water volume. Based on this comparison, the estimated dredging required to restore the Lake is 76,600 cubic yards (CY). **Figure 2** shows the estimated original condition of the Lake. **Figure 3** provides the estimated dredging depths and a profile of the sediment along the Lake centerline from this analysis.

PRINCESS POND

QUEENS LAKE
WATER SURFACE
AT 8.6' ELEVATION





APPROX. WATER SURFACE
ELEV 88

PROFILE VIEW

APPROX. CURRENT LAKE BOTTOM
APPROX. HISTORIC LAKE BOTTOM

14+00 16+00 18+00 20+00 22+00 24+00 26+00 28+00 30+00 32+00 34+00 36+00 38+00 40+00 42+00 44+00 46+00 48+00 50+00 52+00 54+00 56+00 58+00 60+00 62+00 64+00 66+00 68+00 68+009+26.01

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4. PERMITTING

In addition to York County and Virginia Department of Transportation requirements, the following three regulatory agencies would likely assert regulatory review and permitting for maintenance dredging operations, transportation, and disposal of dredged materials: the US Army Corps of Engineers, the VA Dept. of Environmental Quality and the Virginia Marine Resources Commission. Each agency possesses a number of permitting pathways to approve proposed work. Pathways include the use of Individual permits, Regional and General permits, and the Corps Nationwide Permit Program. However, each agency has separate and different evaluation criteria and permitting standards. Those criteria and standards do not always coincide completely between all agency permitting vehicles.

1. Selection of permitting pathways is specifically dependent upon the level (quantification) of impact, proposed methodologies to accomplish the proposed work, history of any previously permitted work, and the potential impact on specific aquatic resources. It is anticipated that the Queen's Lake Restoration effort would require an individual permit due to the quantities of dredge material. However, before the preparation of an application can be completed, the following information is required:
 - a. Discussion of the proposed project need and an evaluation of potential alternatives
 - b. Identification and discussion of work methodologies (hydraulic vs. mechanical dredging, material handling, transportation and disposal site identification)
 - c. Construction access and staging areas
 - d. Quantification of anticipated dredge volume
 - e. Discussion of dewatering methods if hydraulic dredging is pursued
 - f. Potential for water quality testing
2. Once sufficient information is obtained on the items identified above, a pre-application meeting with agencies would be scheduled to decide on a permitting vehicle that is acceptable to all agencies.
3. Each of the permitting vehicles has specific requirements relative to information that would need to be collected and submitted.

5. PRELIMINARY COST ESTIMATE

Table 1 provides a preliminary conceptual estimate of dredging costs to restore Queen's Lake and Princess Pond to near original conditions. The estimated costs for Queen's Lake should be considered order of magnitude high level planning costs that will require further refinement based on further field investigations. Costs will be significantly impacted by several factors, including:

- Actual dredging volumes to be confirmed by a bathymetric survey and probing of sediment depths in Queen's Lake.
- Mobilization costs due to challenging access locations and topography adjacent to the Lake.

- Sediment dewatering and removal associated with hauling given challenging access locations and topography.
- Construction cost market conditions at the time of bidding.

Table 1: Conceptual Order of Magnitude Cost Estimate

Description	Quantity	Unit Cost	Units	Extended Total
Dredging - Queen's Lake	76,600	\$ 100.00	BCY	\$ 7,660,000
Dredging - Princess Pond	11,500	\$ 100.00	BCY	\$ 1,150,000
Project Subtotal (May 2024)				\$ 8,900,000
Bonds & Insurance (3% of Contract)				\$ 270,000
Mobilization/Demobilization (10% of Contract)				\$ 890,000
Supervision, Inspection, and Overhead (8% of Contract)				\$ 720,000
Construction Contingency (30% of Contract)				\$ 2,670,000
Construction Total				\$ 13,450,000
Engineering (15% of Contract)				\$ 2,020,000
Permitting (4% of Contract)				\$ 540,000
Total Program Cost				\$ 16,010,000

Note: Dredging unit cost includes site restoration, hauling, and other associated construction costs.