

COUNTY OF YORK

MEMORANDUM

DATE: April 9, 2025

TO: York County Board of Supervisors

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

SUBJECT: Queens Lake Dam and Spillway Restoration

History:

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. An overview of the area is attached as **Exhibit 1**.

Regulations:

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 **Exhibit 2**. As such DCR is requiring the QLCA to upgrade the dam and its spillway per the reclassification. Under current law the responsibility for any upgrades to the dam and associated improvements are the responsibility of the QLCA.

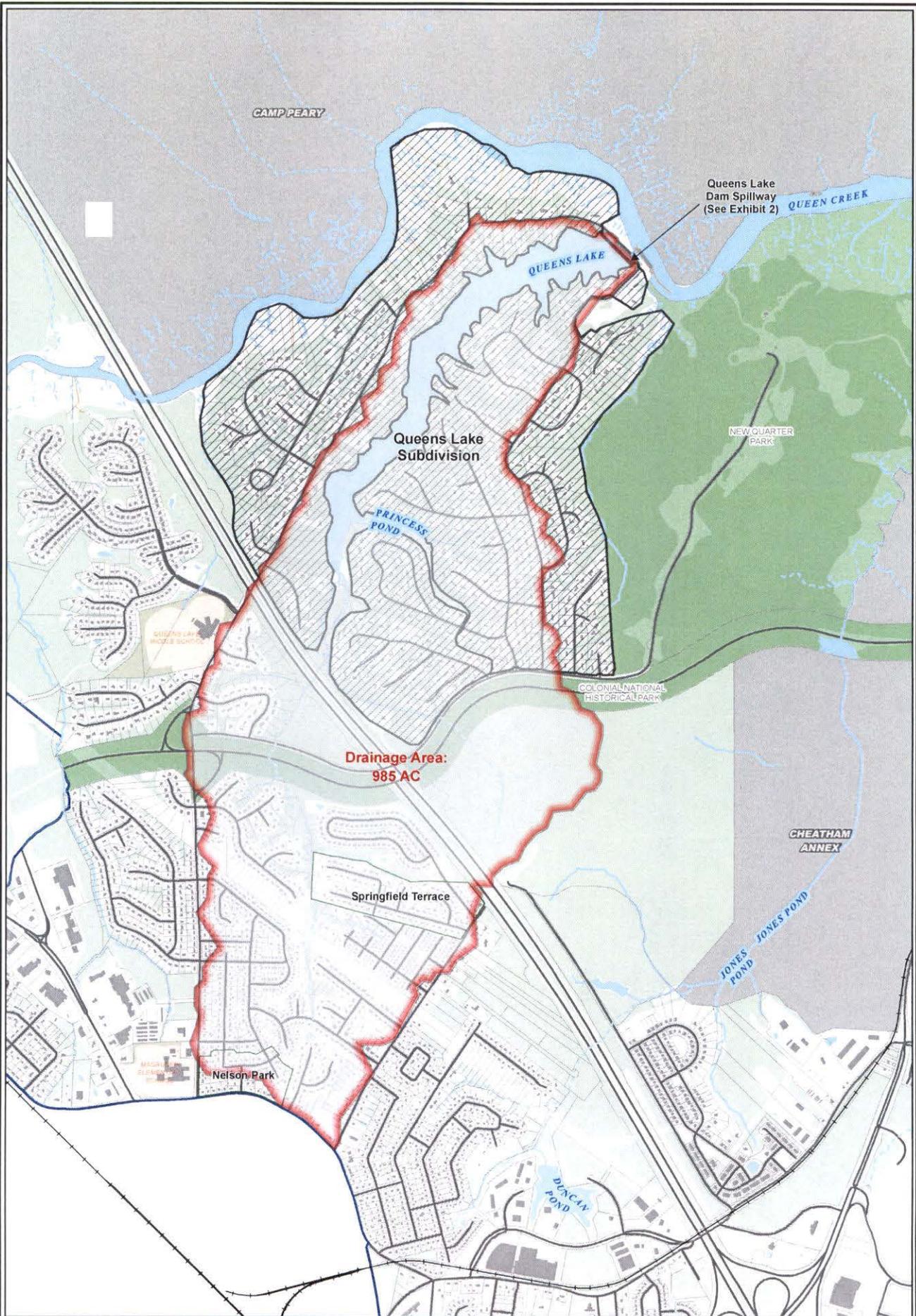
During the spring of 2022 the QLCA approached York County government seeking advice and assistance in responding to the Commonwealth’s new regulatory requirements. County staff and the Queens Lake Community Association developed a Memorandum of Understanding and the Board of Supervisors were briefed during the August 2, 2022 work session. The BOS ultimately approved resolution R22-137 on September 6, 2022 and agreed to enter into a Memorandum of Understanding between the County of York and the Queens Lake Community Association as **Exhibit 3**. The mutual long-term goal of this agreement is the preservation of a healthy, attractive and functional lake and drainage system. The final agreement was signed and December 2023 as **Exhibit 4**

Moving Forward:

The County has begun design work for the areas of concern that align with County interest per the Memorandum of Understanding to include the restoration of various ravines as well as the Dam and spillway within the Queens Lake Community.

The County and QLCA also began looking at other areas of concern. Most notably sediment accumulation at the head of both Queens Lake and Princess Pond. The County has received cost estimates for Dredging work within Princess Pond and Queens Lake shown in **Exhibit 5**, costs for this work will likely exceed 15 million dollars and is not included in the agreement between The County and QLCA. Both the County and QLCA continue to search for support of this work through grant opportunities. The County will share the latest updates to this project at a future work session.

- Exhibit 1 QL Drainage Basin Map
- Exhibit 2 QL Dam Map
- Exhibit 3 R22137 and R23170
- Exhibit 4 QL Memorandum of Understanding
- Exhibit 5 AH Engineering Cost Estimate



**Drainage Area:
985 AC**



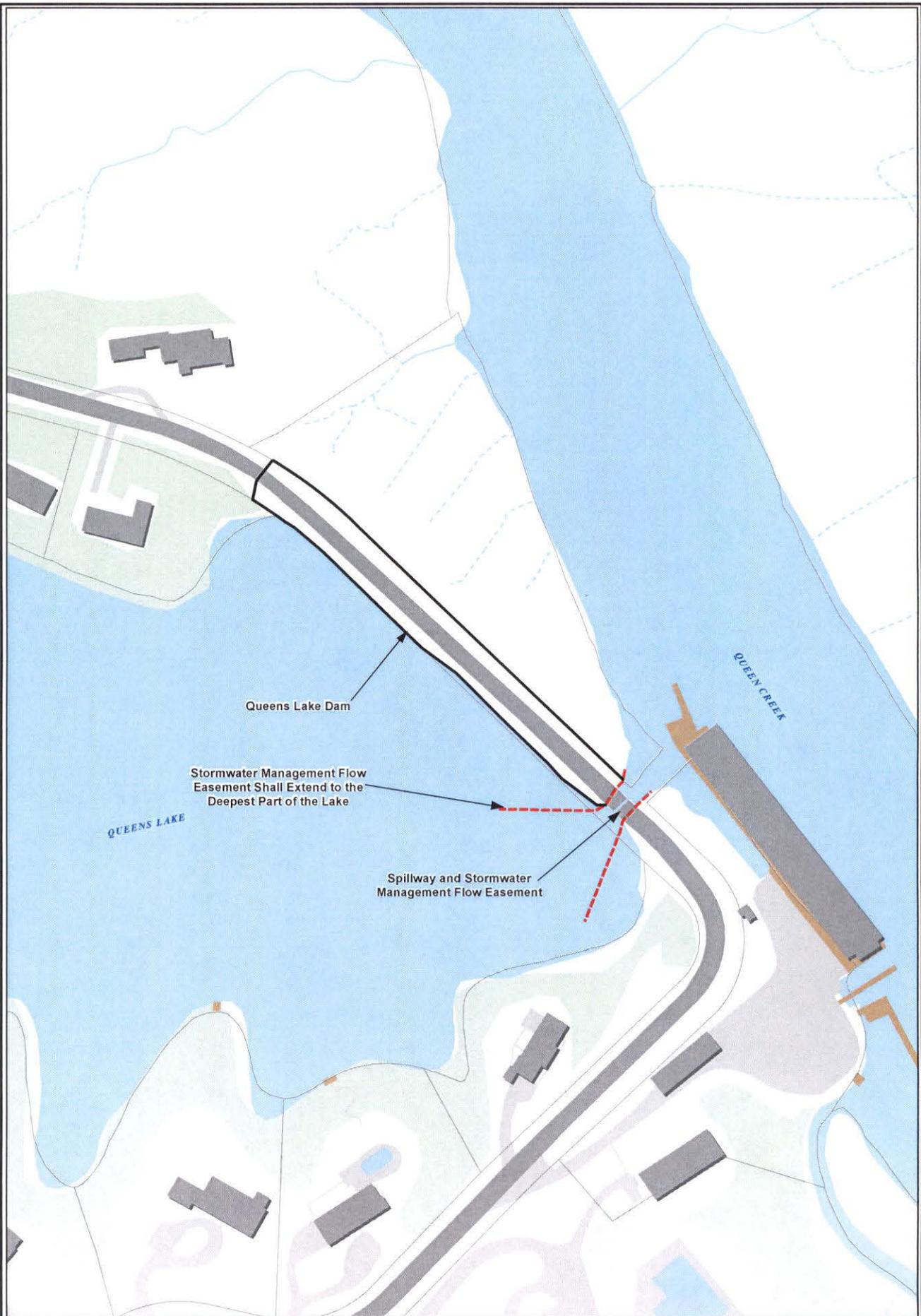
This map should NOT be used for engineering or other design purposes without full verification having been undertaken by a qualified surveyor.
The County of York, Virginia assumes no responsibility for the accuracy of this map or the information contained herein or derived herefrom. The buyer and/or user assumes all risks and liabilities whatsoever resulting from, or arising out of the use of this map.
There are no oral agreements or warranties relating to the sale and/or use of this map.

*Exhibit 1
Queens Lake
Drainage Basin*



THIS IS NOT A LEGAL PLAT.
This map should be used for information purposes. It is not suitable for detailed site planning.

Published on June 03, 2022



This map should NOT be used for engineering or other design purposes without full verification having been undertaken by a qualified surveyor.

The County of York, Virginia assumes no responsibility for the accuracy of this map or the information contained herein or derived here from. The buyer and/or user assumes all risks and liabilities whatsoever resulting from, or arising out of the use of this map.

There are no oral agreements or warranties relating to the sale and/or use of this map.

Exhibit 2
Queens Lake Dam



THIS IS NOT A LEGAL PLAT.
 This map should be used for information purposes. It is not suitable for detailed site planning.

Published on June 03, 2022

BOARD OF SUPERVISORS
COUNTY OF YORK
YORKTOWN, VIRGINIA

Resolution

At a regular meeting of the York County Board of Supervisors held in York Hall,
Yorktown, Virginia, on the 6th day of September, 2022:

<u>Present</u>	<u>Vote</u>
Sheila S. Noll, Chairman	Yea
Thomas G. Shepperd, Jr., Vice Chairman	Yea
Walter C. Zaremba	Yea
W. Chad Green	Yea
G. Stephen Roane, Jr.	Yea

On motion of Mr. Shepperd, which carried 5:0, the following resolution was adopted:

A RESOLUTION AUTHORIZING THE COUNTY ADMINISTRATOR TO EXECUTE A MEMORANDUM OF UNDERSTANDING BETWEEN THE COUNTY AND QUEENS LAKE COMMUNITY ASSOCIATION (QLCA), RELATING TO CERTAIN IMPROVEMENTS TO THE QUEENS LAKE DAM AND THE QUEENS LAKE DRAINAGE BASIN

WHEREAS, the Virginia Department of Conservation and Recreation (DCR) recently downgraded the status of the Queens Lake dam from “special low hazard” to “low hazard”, and as a result is requiring the QLCA to upgrade both the dam and the spillway; and

WHEREAS, the County has an interest in the continued maintenance of the dam and the spillway by virtue of the dams receipt of storm flow from a drainage basin which extends beyond the boundaries of Queens Lake subdivision; and

WHEREAS the County and QLCA have agreed upon the scope of mutual cooperation in the maintenance of the dam, the spillway, and the drainage channel in the lake which is essential for the control and containment of storm flows from a significant portion of York County.

NOW, THEREFORE BE IT RESOLVED by the York County Board of Supervisors this 6th day of September, 2022, that the Board approves the Memorandum of Understanding between the County and QLCA, finding such to be in the public

interest, and authorizes the County Administrator, subject to the approval of the County Attorney, to execute the proposed Memorandum of Understanding.

A Copy Teste:

A handwritten signature in black ink that reads "Heather L. Schott". The signature is written in a cursive style with a horizontal line underneath the name.

Heather L. Schott, MMC
Deputy Clerk

BOARD OF SUPERVISORS
COUNTY OF YORK
YORKTOWN, VIRGINIA

Resolution

At a regular meeting of the York County Board of Supervisors held in York Hall,
Yorktown, Virginia, on the 19th day of December, 2023:

<u>Present</u>	<u>Vote</u>
Thomas G. Shepperd, Jr., Chairman	Yea
G. Stephen Roane, Jr. Vice Chairman	Yea
Walter C. Zaremba	Yea
Sheila S. Noll	Yea
W. Chad Green	Yea

On motion of Mr. Zaremba, which carried 5:0; the following resolution was adopted:

A RESOLUTION AUTHORIZING THE COUNTY ADMINISTRATOR
TO EXECUTE THE SECOND AGREEMENT BETWEEN THE
COUNTY OF YORK, VIRGINIA AND QUEENS LAKE COMMUNITY
ASSOCIATION, INC. REGARDING STORMWATER MANAGEMENT
OF THE QUEENS LAKE DRAINAGE BASIN

WHEREAS, pursuant to Board of Supervisors Resolution 22-137, York County and The Queens Lake Community Association, Inc. ("QLCA") entered into a Memorandum of Understanding relating to certain improvements to the Queens Lake Dam and the Queens Lake drainage basin; and

WHEREAS, York County and QLCA have negotiated terms for a new agreement that will supersede the prior agreement, said agreement being attached hereto; and

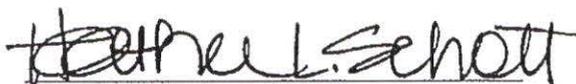
WHEREAS, under the new agreement the County will assume responsibility for project management and financial responsibility for upgrading and maintaining the stormwater management for the Queens Lake Drainage Basin, the health and ongoing maintenance of the lake, the upgrade and ongoing maintenance of the spillway, and for the upgrade and ongoing maintenance of the dam; and

WHEREAS, that in exchange for York County's commitments, the QLCA agrees to certain financial commitments to York County, including a one-time initial capital contribution of \$110,000 and annual contributions of \$20,000;

WHEREAS, QLCA approved the agreement at its annual meeting on November 14, 2023.

NOW, THEREFORE BE IT RESOLVED by the York County Board of Supervisors this 19th day of December, 2023, that the Board approves the Second agreement between the County of York, Virginia and QLCA regarding stormwater management of the Queens Lake drainage basin, finding such to be in the public interest, and authorizes the County Administrator, subject to the approval of the County Attorney, to execute the agreement on behalf of the County.

A Copy Teste:

A handwritten signature in black ink that reads "Heather L. Schott". The signature is written in a cursive style with a horizontal line underneath the name.

Heather L. Schott, MMC
Deputy Clerk

**MEMORANDUM OF UNDERSTANDING BETWEEN THE COUNTY OF YORK,
VIRGINIA AND THE QUEENS LAKE COMMUNITY ASSOCIATION REGARDING
STORMWATER MANAGEMENT OF THE QUEENS LAKE DRAINAGE BASIN**

1. **PARTIES.** The Parties to this Understanding 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. The **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. **AUTHORITIES.** This Understanding was authorized by the Queens Lake Community Association, Inc. at a special meeting held on **June 14, 2022**. This Agreement was approved by the York County Board of Supervisors on *September 6, 2022*.

3. **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 is requiring the QLCA to upgrade the dam and its spillway per the reclassification. The parties agree that under current law the responsibility for any upgrades to the dam and associated improvements are the responsibility of the QLCA. The QLCA

has approached York County government seeking advice and assistance in responding to the Commonwealth's new regulatory requirements. 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 special responsibilities related to the lake and the dam. The QLCA acknowledges its special 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 healthy Queens Lake. The mutual long-term goal of this agreement is the preservation of a healthy, attractive and functional lake and drainage system.

4. MUTUAL COMMITMENTS

- a. The QLCA and the County will coordinate and collaborate regarding the remediation and maintenance of the Queens Lake Drainage Basin.
- b. One project management point of contact will be appointed by the County Administrator and by the QLCA with the responsibility of sharing information and maximizing coordination. A larger project management team will be designated by the County Administrator and the 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 point of contact is:

Jack Dooley, Special Committee Chairperson
Doug Ellis (Alternate)
Mark Frankel (Alternate)
Adrienne McKinney (Alternate)

- c. The County and the QLCA pledge to work cooperatively to complete the required work, based on the regulations. The goal would be to complete all work within a thirty-six month time-frame.
 - d. The parties recognize that optimal performance of the mutual obligations requires performance by the other party of their obligations under this MOU.

To that end, the parties contemplate that additional agreements may be necessary to effectuate the long-term goals and purpose of this agreement and to properly coordinate the work.

5. OBLIGATIONS OF THE PARTIES.

a. The County

- i. The County will take the lead in project management and financial responsibility for upgrading and maintaining the stormwater management flow of the Queens Lake drainage basin, through the lake, including, but not limited to, the upgrade and ongoing maintenance of the spillway. The location of the stormwater management flow and spillway are depicted in the attached Exhibit 2.
- ii. Any financial requirements are subject to appropriation by the County Board of Supervisors.

b. The QLCA

- i. The QLCA will convey, at no cost to the County, all QLCA easements necessary for any stormwater related work, subject to QLCA membership approval. The required easements are set forth and described in the attached Exhibit 2.
- ii. The QLCA pledges its best efforts to assist the County in obtaining easements that are not controlled or owned by QLCA. The required easements are described in Exhibit 2.
- iii. The QLCA will take the lead in project management and financial responsibility for the dam as required by the Commonwealth's regulations. The dam is described and shown more particularly in the attached Exhibit 2.

6. OTHER PROVISIONS

- a. Nothing in this understanding 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 understanding is intended to modify the sovereign or other legal immunities of the County of York, or their officers, agents and employees.

- c. This understanding 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 understanding 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 understanding 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.
7. **ENTIRE AGREEMENT.** This understanding 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.
8. **EFFECTIVE DATE.** The terms of this understanding will become effective upon signature of both parties.
9. **MODIFICATION.** This understanding may be modified only upon the mutual written consent of both parties.
10. **TERMINATION.** The terms of this understanding, as modified with the consent of both parties, will remain in effect for five years from the date of signature (effective date). The understanding may be extended by mutual written agreement of the parties.

APPROVED BY:

QUEENS LAKE COMMUNITY ASSOCIATION, INC.

Rebecca Cho
Rebecca Cho, President

Date: 8/18/2022

COUNTY OF YORK, VIRGINIA

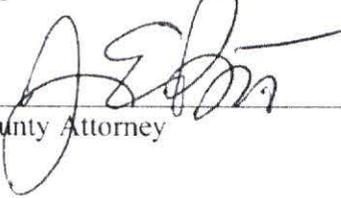
[Signature]

Date

10/2/22

Neil A. Morgan, County Administrator

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, revised 27 June 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. Table 1 provides a summary of the watershed components.

Table 1: Queen’s Lake Watershed Summary

Description	Area (acres)	% of Total Watershed Area
Watershed Downstream of Colonial Parkway	526	53%
Colonial Parkway Right-of-Way	69	7%
Watershed Upstream of Colonial Parkway	390	40%
Queen’s Lake – Total Watershed Area	985	100%

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.

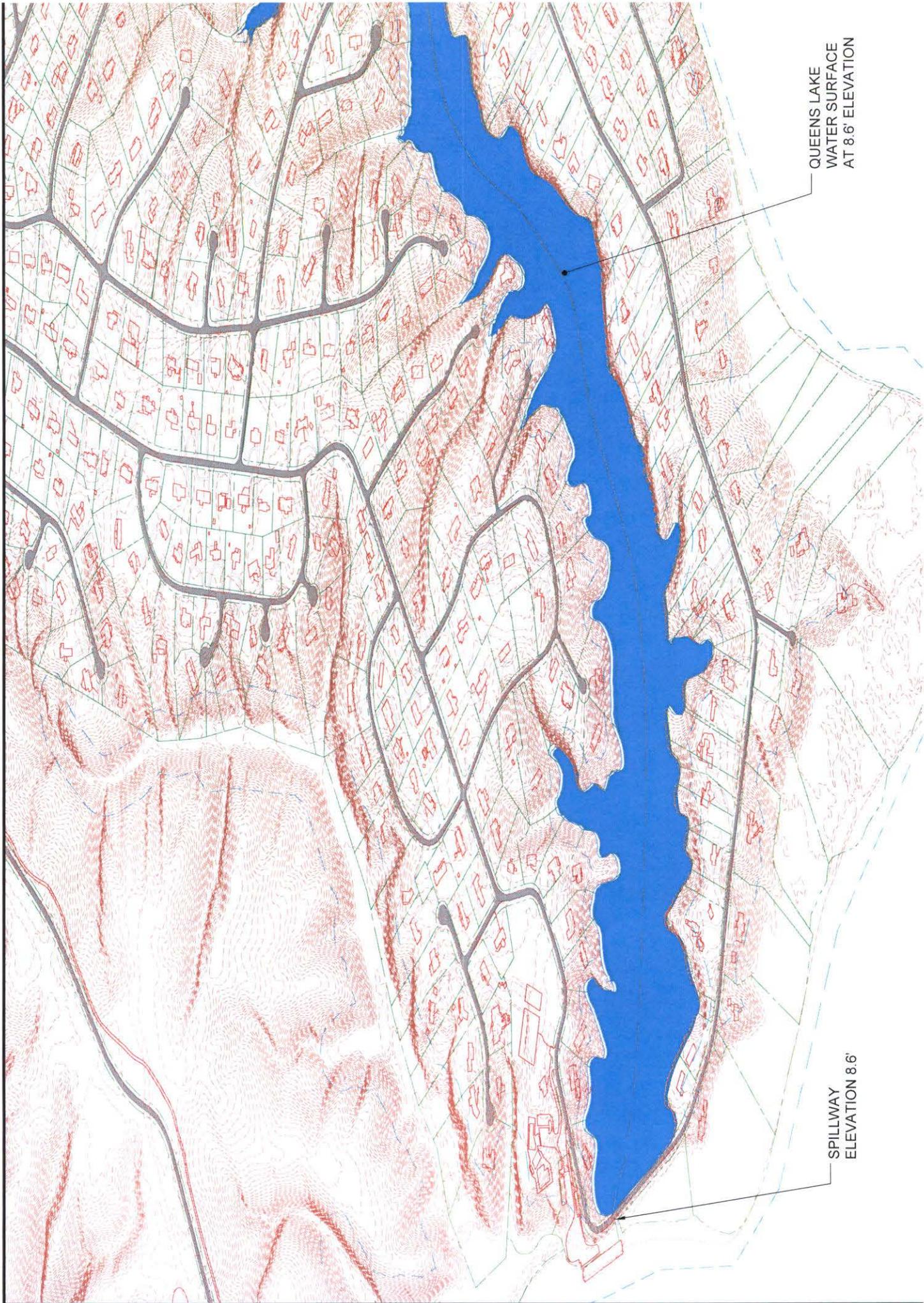
Both models were developed in a similar fashion. First, two-dimensional boundaries were created for the lake surfaces (historic and current) using County-generated LIDAR data in combination with current and historic (circa 1993) aerial photography. The lake surface elevation was set to the spillway elevation 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).

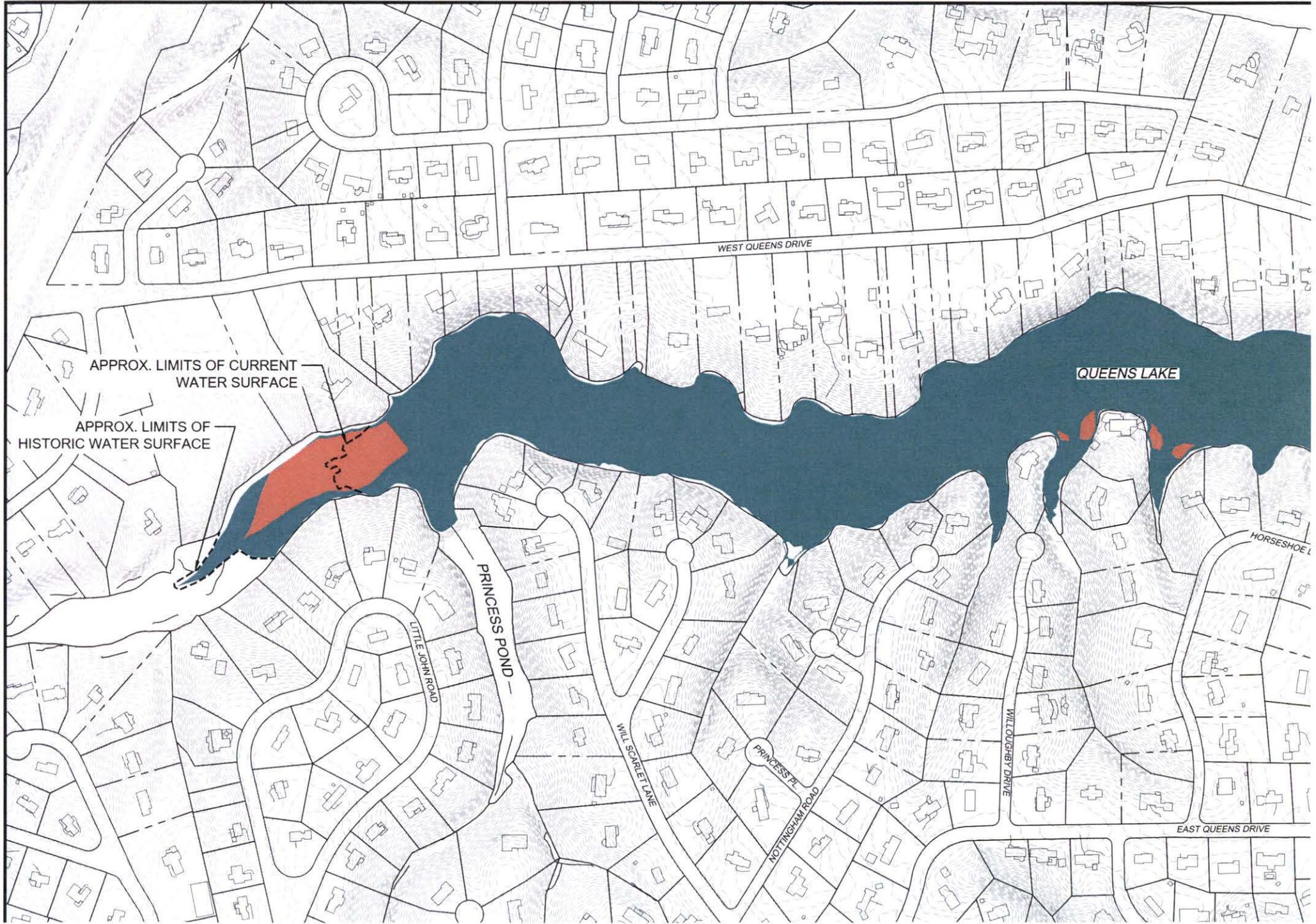
Using the lake surface boundaries and the assumed lake “centerline” profiles, AH generated 3D models of the volumes of water below the lake’s surface. Lacking bathymetric survey for the lake (except in the immediate vicinity of the dam), AH created an estimate of the topography under the water surface 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.



QUEENS LAKE
WATER SURFACE
AT 8.6' ELEVATION

SPILLWAY
ELEVATION 8.6'



APPROX. LIMITS OF CURRENT WATER SURFACE

APPROX. LIMITS OF HISTORIC WATER SURFACE

QUEENS LAKE

PRINCESS POND

HORSESHOE

WEST QUEENS DRIVE

EAST QUEENS DRIVE

LITTLE JOHN ROAD

WILL SCARLET LANE

PRINCESS PL

NOTTINGHAM ROAD

WILLOUGHBY DRIVE



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.

