Memo

SUBJECT
Desktop Assessment Technical Memorandum
Lake Accotink Preservation Feasibility Study

TO
Turgay Dabak, PhD, PE Fairfax County DPWES SWPD

DATE
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OUR REF
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1 Introduction

Arcadis U.S., Inc. (Arcadis) has prepared this Desktop Assessment Technical Memorandum for Fairfax County Department of Public Works and Environmental Services (DPWES) in support of the Smaller Lake Accotink Preservation Feasibility Study being led by DPWES. The Fairfax County Board of Supervisors directed the Fairfax County DPWES to conduct this preservation feasibility study based on the reported findings by the Lake Accotink Task Force (2023). In this context, the term "preservation" refers to maintaining a smaller lake that would preserve much of the aesthetic and recreational value of Lake Accotink and would continue to benefit park visitors.

Based on the direction of Fairfax County Board of Supervisors, the Task Force findings that provide the boundaries of this project and desktop assessment include:

- The dredged lake alternatives will include a smaller 20- to 40-acre lake.
- The dredged lake alternatives will include a 4- to 8-foot-deep lake.

Additionally, the following Task Force findings will be incorporated to the extent feasible:

- Dredged material should remain on site (i.e., in Lake Accotink Park) to the extent feasible and can be used to construct managed wetlands and/or grasslands.
- Kayak trails and other recreation options could be incorporated into a smaller lake with managed wetland/grassland.

Documents considered in the assessment included the Task Force Findings Report (Lake Accotink Task Force 2023); the Lake Accotink Discovery Report (WSP and LimnoTech 2023); as well as the June 5, 2025 Lake Accotink preservation workshop held with DPWES, Fairfax County Park Authority (FCPA), and the sedimentation study team (WSP/LimnoTech). The desktop assessment also builds on information developed during the 2021 and 2022 alternatives analysis phase (before the initiation of the smaller Lake Accotink Preservation Feasibility Study). The remainder of this technical memorandum is organized as follows:

- **Section 2 – Sediment Management Opportunities**. This section summarizes sediment management opportunities that may be considered as part of the sediment management program for long-term sustainability of the smaller lake.
- **Section 3 – Preliminary Smaller Lake Configurations**. This section identifies the preliminary lake configurations being considered for further evaluation during the full preservation feasibility study based on input from the public, DPWES, and FCPA.
- **Section 4 – Habitat Features**. This section identifies potential locations of habitat features for the smaller lake within the existing lake boundary. Habitat features discussed include open water areas, wetlands, islands, and grasslands.

- **Section 5 – Dredged Material Handling**. This section identifies potential locations for managing dredged material including in-park reuse, processing on location (i.e., within lake or at the marina and parking areas) for off-site disposal, or processing at a secondary location for off-site disposal. Table 1 (Summary of Preliminary Estimates for Lake Layouts Incorporating Habitat Features) is provided in this section.
- **Section 6 – Lake Accotink Dam**. This section summarizes considerations for the dam that creates Lake Accotink, particularly related to the lake volume for permitting purposes and dredging upstream of the dam. This section also discusses dam modifications that may help create a smaller 20- to 40-acre, 4- to 8-foot-deep lake.
- **Section 7 – Considerations for Preservation Feasibility Study**. This section summarizes the assumptions necessary to complete the preservation feasibility study.
- **Section 8 – References**. This section lists the references for the documents cited in this technical memorandum.
- **Figures.** Full-size figures are included at the end of this technical memorandum to show visual examples of the information discussed:
  - Figure 1 – Lake Accotink Site Map
  - Figure 2 – Reservoir Sediment Management Options
  - Figure 3A – Existing Open Water Area (40-acre) with Constructed Wetlands
  - Figure 3B – Existing Open Water Area (40-acre) with Established Grasslands
  - Figure 4 – 27-Acre Deep Area with Wetland Islands
  - Figure 5 – 20-Acre Deep Area with Shoreline and Island Wetlands
  - Figure 6 – Large Pseudo-Offline Lake
  - Figure 7 – Small Pseudo-Offline Lake (Minimize Dredging)
  - Figure 8 – Small Pseudo-Offline Lake (Maximize Placement)
  - Figure 9 – Offline Lake
  - Figure 10 – Dam Relocation
- **Attachments.** The following attachments are included in this technical memorandum to provide additional details on the information considered in the desktop assessment:
  - Attachment A – Stream and Outfall Restoration Locations in Lake Accotink Watershed (provided by DPWES)
  - Attachment B – Desktop Mapping of Existing Wetlands and Vegetative Cover (prepared by WSSI)
  - Attachment C – Preliminary List of Potential Threatened and Endangered Species in Project Area

2 Sediment Management Opportunities

Fairfax County provided the information incorporated into this section of the memorandum, unless otherwise cited. Lake Accotink (Exhibit 1; Figure 1) functions as a regional stormwater best management practice (BMP) for the Accotink Creek Watershed with suspended sediment in Accotink Creek being deposited in Lake Accotink as the water slows down entering the lake (HDR Engineering, Inc. [HDR] 2002).

Exhibit 1. Lake Accotink Site Map. See Figure 1 in the Figures Section for legend and additional details.

Lake Accotink has a drainage basin of approximately 30 square miles that was mostly developed before 1990, before implementation of the Virginia stormwater regulations. When compared to other lakes in Fairfax County, the ratio of Lake Accotink's drainage basin to its size (surface area) is significantly larger than that for other lakes at a drainage area to surface area ratio of about 350 (Exhibit 2). In comparison, the ratio of drainage area to surface area for Lake Mercer, which is closest in surface area to Lake Accotink and has the second largest drainage basin to lake size ratio in the county, is about 92. The ratio of drainage area to surface area for Barcroft Lake, which has the second largest drainage basin at 14.2 square miles but has a surface area about 2.5 times Lake Accotink's, is about 67. This high drainage area to surface area ratio is a significant reason why Lake Accotink fills in with sediment much quicker than other lakes in the county.

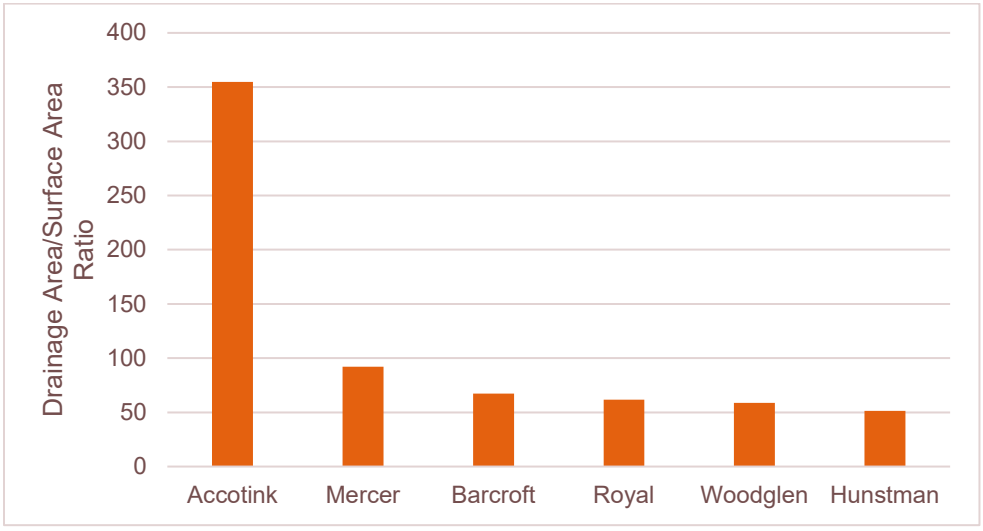

Exhibit 2. Comparison of Drainage Area to Lake Surface Area - Lakes in Fairfax County (Provided by DPWES)

As the lake fills in with sediment, the water depth is reduced. The lake was dredged in 1985 and 2008 to restore water depth for recreational and habitat use (Fairfax County 2025).

In July 2024, as directed by the Board of Supervisors to support the preservation feasibility study, Fairfax County initiated a sedimentation study for Lake Accotink and its watershed to better understand streambank erosion rates along Long Branch and Accotink Creek and sediment inflow into the lake under various rainfall events.

In order to address streambank erosion, Fairfax County has been implementing projects to stabilize areas where streambank and outfall erosion is prevalent along Long Branch, Accotink Creek, and their tributaries. Similarly, the City of Fairfax and Town of Vienna are also implementing stream and outfall restoration in their jurisdictions in the upper portions of the Accotink Creek watershed. These restoration efforts are aimed at addressing streambank and outfall erosion and decreasing sediment contribution to Lake Accotink. To date, approximately 24 percent (%) of the stream miles in the Lake Accotink drainage basin (including the City of Fairfax) has been restored, is currently under construction, or is in design to be restored. Additionally, approximately 11% of the stream miles are anticipated to be in design by 2035. Attachment A shows locations of stream and outfall restoration efforts.

In addition to stream and outfall restoration in the watershed, additional approaches are necessary to address sediment inflow into Lake Accotink to preserve a smaller lake that would be sustainable and provide recreational and environmental benefits to its users for the foreseeable future. A long-term lake maintenance program will be developed as part of the preservation feasibility study that considers stream and outfall restoration projects as well as other potential sediment management approaches. Some of the sediment management approaches for dam reservoir lakes (Kondolf et al. 2014) being considered are discussed below and illustrated on Figure 2:

- **Reduce sediment yield from the watershed**:
  - The amount of sediment produced in the watershed can be reduced by streambank restoration as discussed above.
  - The amount of sediment produced in the watershed can be reduced by capturing the sediment upstream of the lake.
    - Weirs could be installed in the creeks upstream of the lake that direct surface water during high-flow events to the floodplain, where sediment would deposit (HDR 2002, WSP and LimnoTech 2023). This option was evaluated in the Sediment Management Program Study (HDR 2002)
    - Forebays could be installed upstream of the lake that reduce the flow of the water and cause sediment to settle before entering lake (HDR 2002). This option was evaluated in the Sediment Management Program Study (HDR 2002).
    - Sediment collectors could be installed. A sediment collector is an engineered device placed at the bottom of the creek to trap sediment and transport the sediment to land, where the sediment is dewatered and transported via truck for disposal (e.g., Thomas et al. 2017, MH WaterZaken 2013).
- **Minimize sediment settling in the lake**:
  - Sediment Bypass - During high flows, a pipe could be routed around the lake to convey the sediment-laden water from upstream of the lake to downstream of the dam (HDR 2002). This option was evaluated in the Sediment Management Program Study (HDR 2002).
  - Sediment Pass Through - A second gate could be added to the dam. During high flows, the gate could be opened to allow sediment-laden water and sediment accumulated behind the gate (and possibly sediment in adjacent areas) to go through the gate opening and be carried downstream of the dam.
  - The amount of sediment deposited in the lake could be reduced by lowering the dam elevation and increasing the creek slope (LimnoTech June 5, 2025 Workshop).

- The amount of sediment deposited in the lake could be reduced by creating an offline lake that receives either no flow or a fraction of the flow from Accotink Creek (smaller tributaries will continue to drain into the lake). The offline lake option with no flow from Accotink Creek was preliminarily evaluated in the Offline Lake Evaluation Technical Memorandum (Arcadis 2022). The offline lake option that receives a fraction of the flow from Accotink Creek is discussed in Section 6.3.2.

3 Preliminary Smaller Lake Configurations

To preserve a smaller lake, several preliminary lake configurations were developed considering the habitat features that could be constructed as discussed in Section 4 and/or dam modification discussed in Section 6. These smaller lake configurations would still receive an amount of sediment similar to that which is currently flowing into Lake Accotink. This approach could be complimented with sediment management strategies discussed above to manage the incoming sediment for long-term sustainability of Lake Accotink. With these targets in mind, various preliminary lake configurations were developed. Three are options described below. Within each option, multiple potential lake configurations are identified.

It is anticipated that each of these preliminary lake configurations will pose advantages and disadvantages. For example, it is anticipated that each smaller lake configuration will require permitting; however, for some of the configurations, permitting may be more difficult and/or time-consuming, while for others, permitting could be easier and less cumbersome. The preservation feasibility study will evaluate and present the necessary technical details of each option evaluated to support the county's determination of the advantages or disadvantages for the options and selection of a preferred option.

3.1 Smaller Lake Option 1

This lake would use much of the existing lake footprint and is proposed to have a 40-acre surface area as shown on Exhibit 3 and Figures 3A and 3B. This option includes creating managed wetlands and/or grassland areas north of the lake using dredged material. Preliminary dredged sediment volume estimates are provided in Table 1 (see Section 5) for dredging depths of 4 to 8 feet. The estimated volume of dredged material would be greater than the estimated volume of material that can be reused in habitat creation (Table 1). This option would include dewatering dredged material and transporting dredged material for disposal outside of the park. Dredged material dewatering is described in Section 5.

Sediment management could include a flow bypass pipe adjacent to the lake to convey sediment-laden water from the upstream end of the lake to the downstream of the dam. This bypass pipe would allow some volume of water in Accotink Creek to flow into the pipe during severe storm events. The pipe invert would be placed at a higher elevation to capture flows above a certain level. Another sediment management option could be to install sediment collectors on Accotink Creek at the upstream entrance to the lake. These sediment collectors would require direct access for sediment removal or connection to the bypass pipe for conveyance of the captured sediment to a discharge point downstream of the dam.

Exhibit 3. Smaller Lake Option 1 with wetland creation (upper image) and grassland creation (lower image). See Figures 3A and 3B, respectively, in the Figures Section for legend and additional details on these images.

3.2 Smaller Lake Option 2

This lake option is proposed to have an approximate 30-acre surface area and could include an open-water lake with islands or a pseudo-offline lake by constructing islands to partially isolate the lake from Accotink Creek as described in Section 4 (Exhibit 4; Figures 4 and 6) or an offline lake that is mostly isolated from Accotink Creek by

a berm as described in Section 6.3.2 (Exhibit 5; Figure 9). The offline lake option includes an inlet from Accotink Creek and an outlet to maintain the lake normal pool level and address potential water stagnation. Preliminary dredged sediment volume estimates for creating new habitats are provided in Table 1, and dredge volumes for the offline lake option are presented in Section 6.3.2. If the lake depth is 4 feet deep, the estimated volume of dredged material can be used in the park to create islands, managed wetlands, and/or grasslands north of and within the lake. If the lake depth is 6 or 8 feet, the estimated volume of dredged material would be greater than the volume of material that can be reused in the park. This option would include dewatering dredged material and transporting dredged material for disposal outside of the park. Dredged material dewatering is described in Section 5.

The pseudo-offline lake option would direct the primary flow of Accotink Creek, including its sediment load, along the southern portion of the lake to the dam similar to the offline lake option. A key consideration for this approach is the potential for stagnant areas to develop within the pseudo-offline lake, which could lead to algal blooms and other detrimental conditions. Flow modeling would be necessary to evaluate water movement around the preliminary island layouts. If stagnant areas are identified, the design may require modifications, such as changing island configurations or incorporating engineering controls (e.g., aerators) to promote water circulation.

For the open-water lake and the pseudo-offline lake, sediment management could include a flow bypass pipe adjacent to the lake to convey sediment-laden water from the upstream end of the lake to a discharge location downstream of the dam. This bypass pipe will allow some volume of water in Accotink Creek to flow into the pipe during severe storm events. The pipe invert will be placed at a higher elevation to capture flows above a certain level. Another sediment management option for the open-water lake and the pseudo-offline lake could be to install sediment collectors on Accotink Creek at the upstream entrance to the lake. These sediment collectors would require direct access for sediment removal or connection to the bypass pipe for conveyance of the captured sediment to the downstream of the dam.

The offline lake option would involve constructing a new berm to mostly isolate the existing lake and creating a new channel (Figure 9) as discussed in Section 6.3.2. Similar to the pseudo-offline lake, the potential for stagnant water to develop in the offline lake is a concern. To address this concern, an inlet at the upstream end is proposed to divert a portion of the Accotink Creek flow into the smaller lake in addition to the proposed outlet at the downstream end that maintains the water elevation in the offline lake.

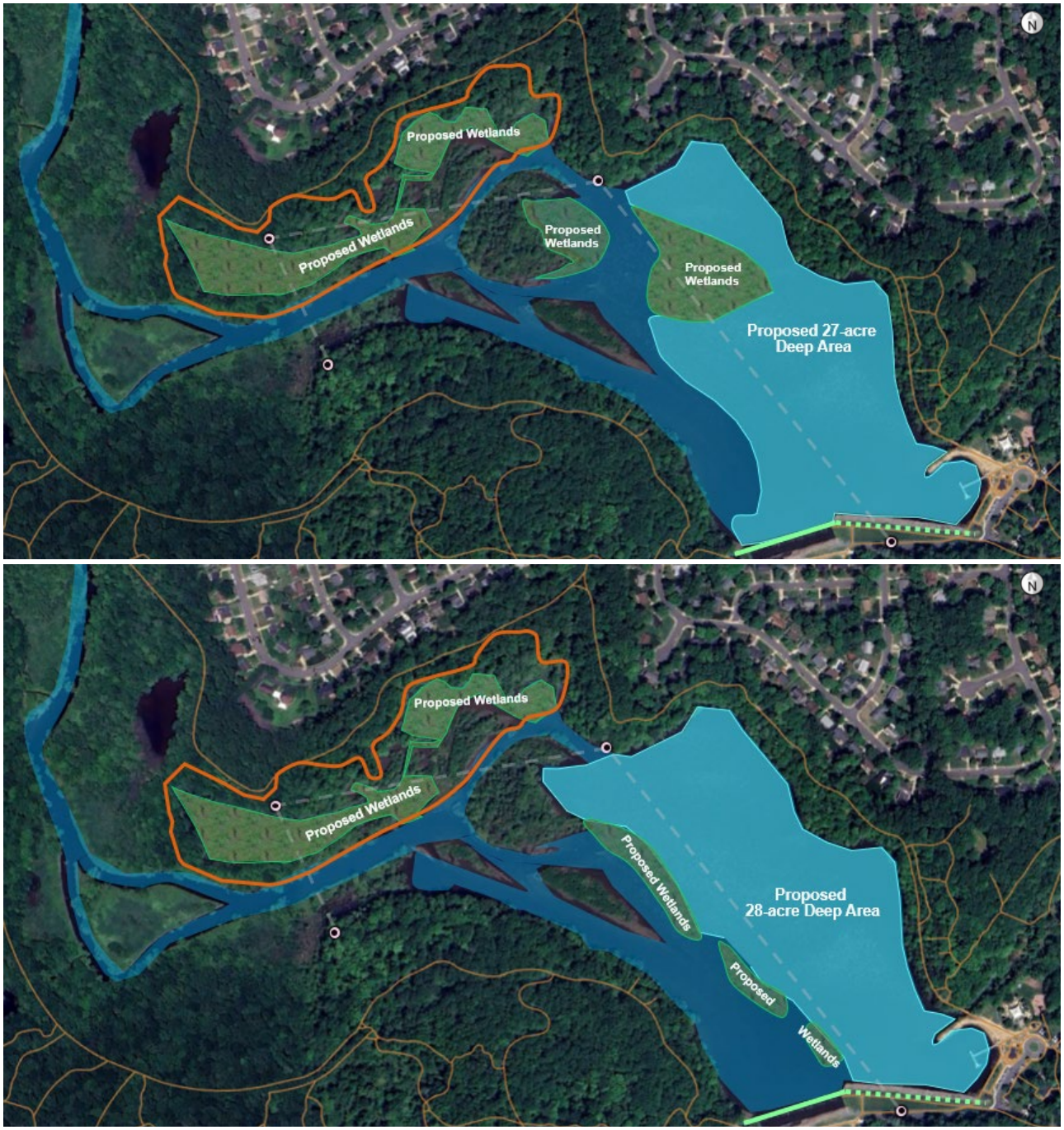

Exhibit 4. Smaller Lake Option 2 with wetland islands constructed to create an open water lake with wetland islands (upper image) or create a pseudo-offline lake (lower image). See Figures 4 and 6, respectively, in the Figures Section for legend and additional details.

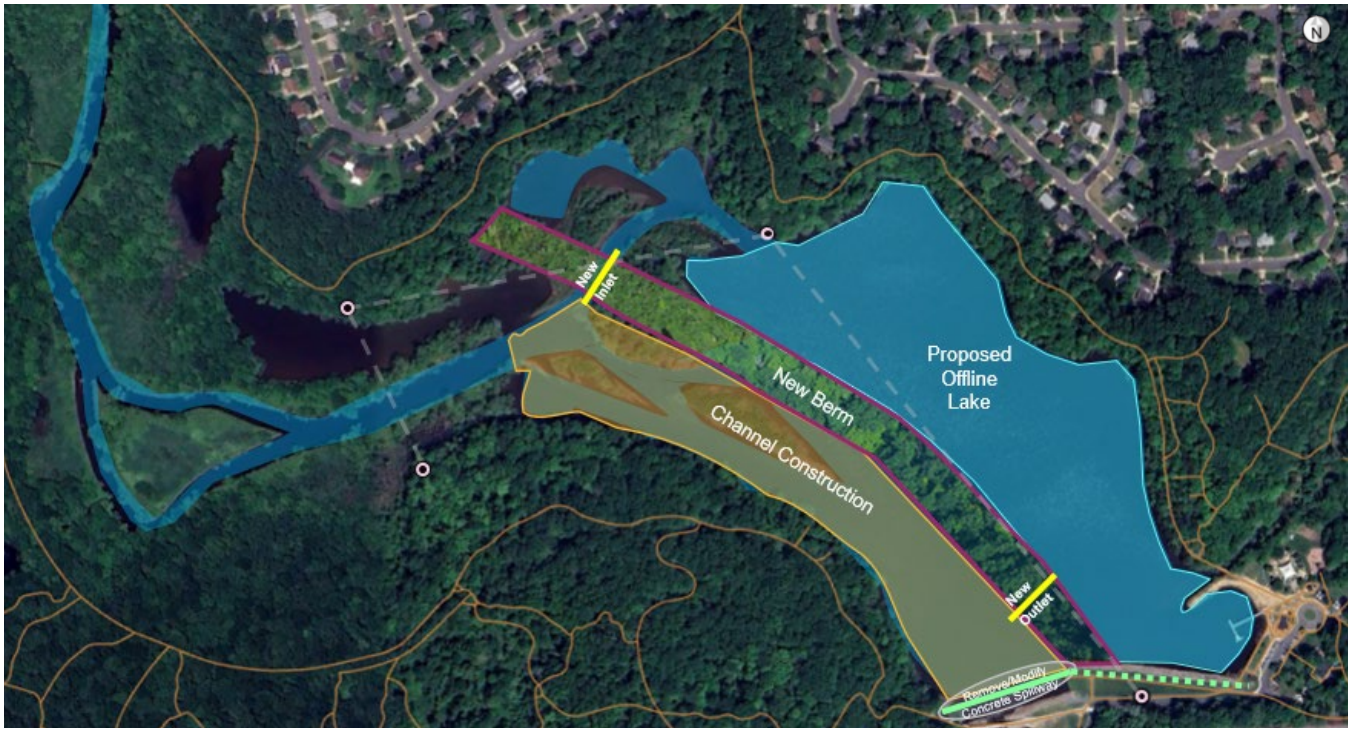

Exhibit 5. Smaller Lake Option 2 as offline lake. See Figure 9 in the Figures Section for legend and additional details.

3.3 Smaller Lake Option 3

This lake option is proposed to have an approximately 18- to 20-acre open water area with a depth of 4 to 8 feet as shown on Exhibit 6; Exhibit 7; and Figures 5, 7, and 8. Lake options could include an open-water lake or a pseudo-offline lake by constructing islands to partially isolate the lake from Accotink Creek as further described in Section 4. For either option, a variety of potential lake configurations was proposed with different island formations to limit sediment input from Accotink Creek and/or to provide trails for kayak enthusiasts. Islands could be connected to the shoreline and to each other via elevated walking paths to supplement the existing hiking trails. Preliminary dredged sediment volume estimates are provided in Table 1 for dredging depths of 4 to 8 feet. If the lake depth is 4 feet, the estimated volume of dredged material can be used in the park to create islands, managed wetlands, and/or grasslands north of and within the lake. If the lake depth is 6 or 8 feet, the estimated volume of dredged material would be greater than the volume of material that can be reused in the park. This option would include dewatering dredged material and transporting dredged material for disposal outside of the park. Dredged material dewatering is described in Section 5.

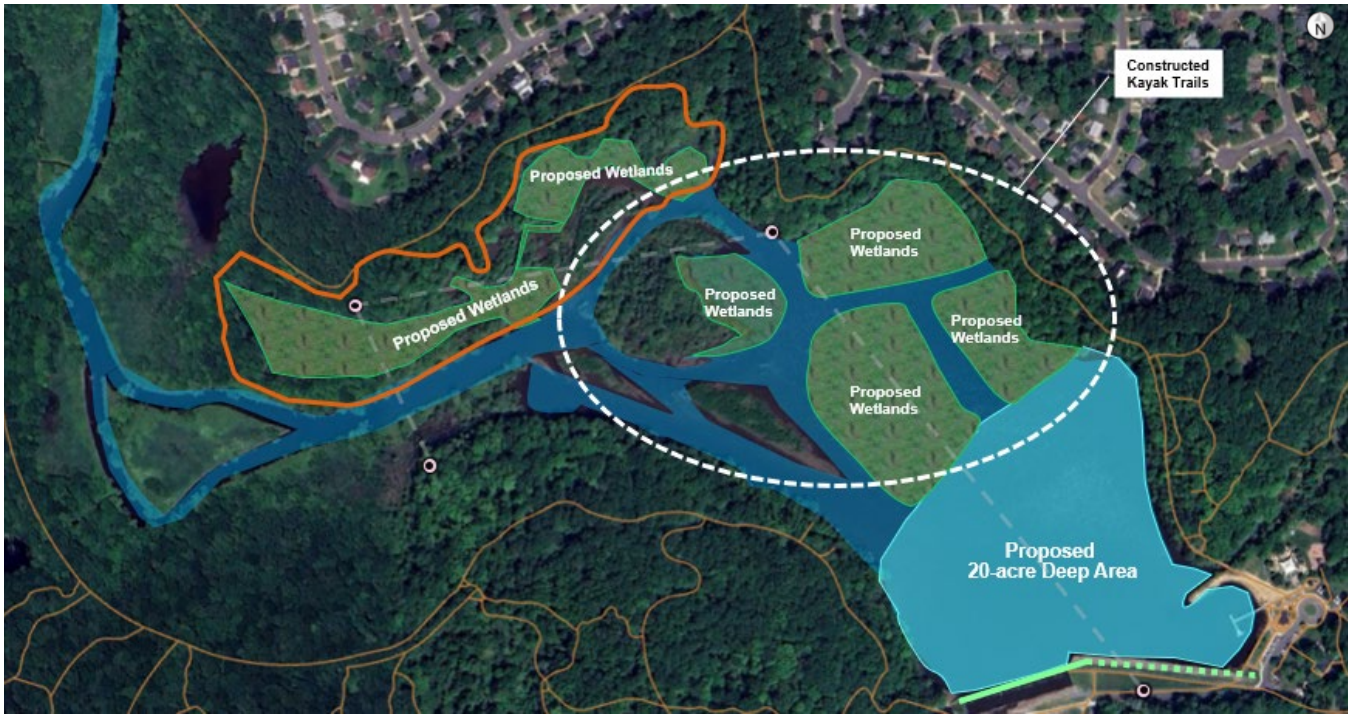

Exhibit 6. Offline Lake Option 3 as Open-Water Lake. See Figure 5 in the Figures Section for legend and additional details.

The pseudo-offline lake option would direct the primary flow of Accotink Creek, including its sediment load, along the southern portion of the lake to the dam similar to the offline lake option. A key consideration for this approach is the potential for stagnant areas to develop within the pseudo-offline lake, which could lead to algal blooms and other detrimental conditions. Flow modeling would be necessary to evaluate water movement around the conceptual island layouts. If stagnant areas are identified, the design may require modifications, such as changing island configurations or incorporating engineering controls (e.g., aerators) to promote water circulation.

Sediment management could include a flow bypass pipe adjacent to the lake and sediment collectors on Accotink Creek at the upstream entrance to the lake to convey sediment-laden water from the upstream end of the lake to a discharge location downstream of the dam. This bypass pipe would allow some volume of water in Accotink Creek to flow into the pipe during severe storm events. The pipe invert would be placed at a higher elevation to capture flows above a certain level. Another sediment management option could be to install sediment collectors on Accotink Creek at the upstream entrance to the lake. These sediment collectors would require direct access for sediment removal or connection to the bypass pipe for conveyance of the captured sediment to a discharge location downstream of the dam.

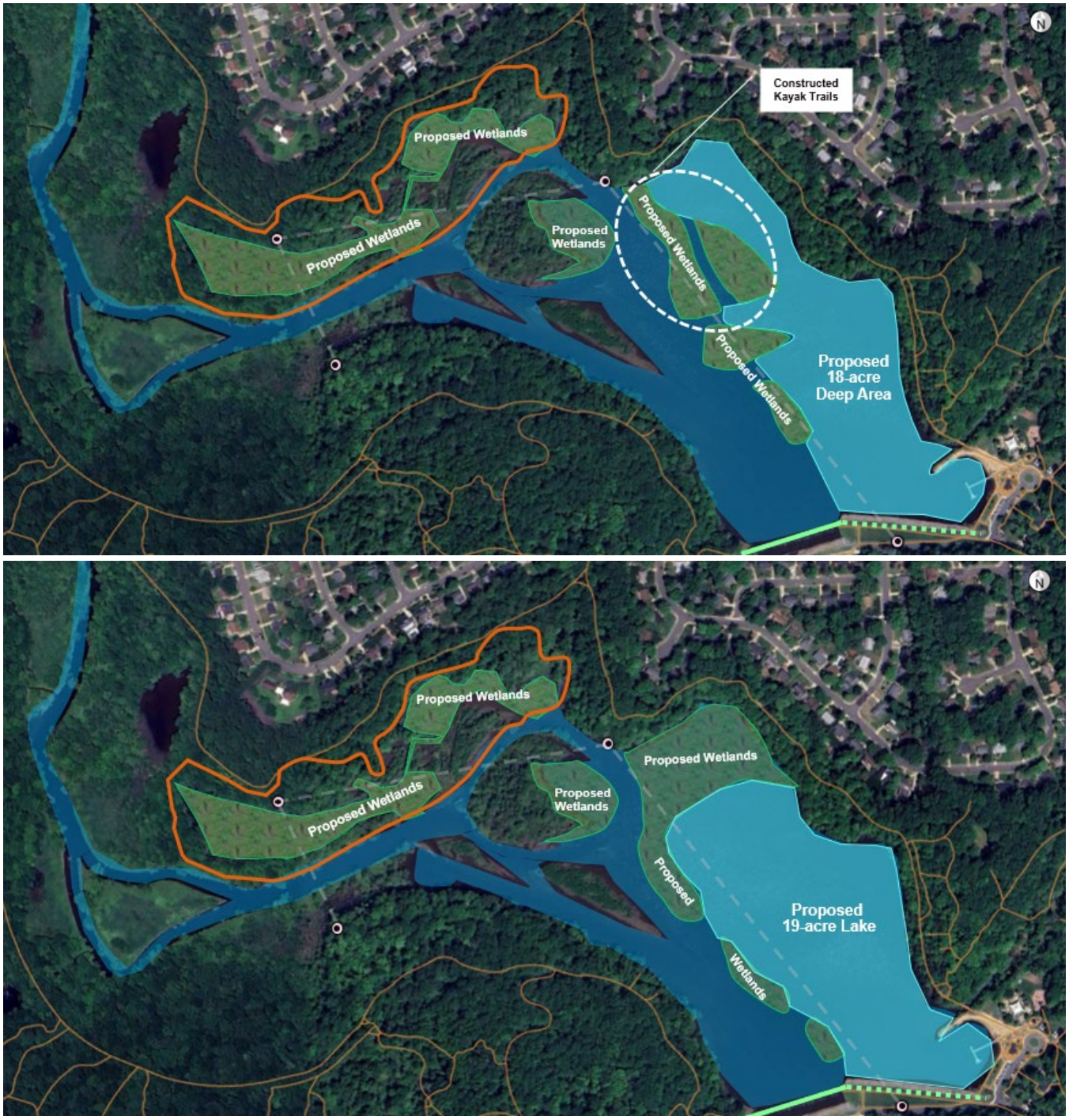

Exhibit 7.Offline Lake Option 3 as Pseudo-Offline Lake with water area that maximizes existing deep areas of the lake (upper image) or creation of wetlands to maximize dredged material placement (lower image). See Figures 7 and 8, respectively, in the Figures Section for legend and additional details.

4 Habitat Features

The existing habitat area around the lake is primarily Piedmont/Mountain Floodplain Forests, with portions classified as marsh woodlands that contain marshes and ephemeral wetlands. Mesic Mixed Hardwood Forests are found along the sloped areas of the park. The woodlands range in slope from steep in the southern portion of the park to more gentle in the floodplain portions of Accotink Creek to the north (FCPA 2017). Preliminary mapping of the wetlands and tree cover in the park is provided in Attachment B. These maps were initially prepared by WSSI as part of the 2021 and 2022 alternatives analysis phase (before initiation of the smaller Lake Accotink Preservation Feasibility Study) and cover an area similar to that of the Lake Accotink Preservation Feasibility Study. WSSI has reviewed and updated these maps to incorporate any newly identified information as part of this technical memorandum.

The lake and surrounding area provide habitat for multiple species of wildlife including a large and varied bird population, mammals, and fish and benthic invertebrate communities within the lake itself. A preliminary threatened and endangered species resource list, prepared using the United States Fish and Wildlife Service's (USFWS') Information for Planning and Consultation website, is provided in Attachment C. Species identified using this website that may be affected by activities in Lake Accotink include the tricolor bat (*Perimyotis subflavus*; proposed endangered status) and monarch butterfly (*Danaus plexippus*; proposed threatened status). Because both species carry proposed statuses at the federal level, there are no federal regulatory implications at this time. WSSI is preparing a request for an official species list from USFWS as part of the Endangered Species Act review process. As part of the official request, any state-protected species that may be affected by activities in Lake Accotink will also be identified. For federally protected or state protected species identified during the formal review process, a more detailed evaluation would be conducted as part of the preservation feasibility study to determine the effects of the project on the specific species identified and to identify appropriate controls needed to minimize impacts on the species (e.g., limiting tree clearing to certain periods of the year).

When evaluating smaller lake options for Lake Accotink, attention will be given to the construction of various habitat features both within the lake and in the associated backwater area at its upstream end (Figure 1). The desktop assessment considers habitat features such as open water, managed wetlands, established grasslands, and islands. Each feature is discussed below along with potential impacts to existing habitat features. Preliminary lake layouts that include one or more of these habitat features are illustrated on Figures 3A through 8.

4.1 Open Water

An open-water area is critical to maintaining the aesthetic and recreational value of Lake Accotink, and dredging is a required component of this project. For the purposes of the desktop assessment, and to develop potential smaller lake layouts, the following two types of open water are considered:

- Deep (Dredged) Areas – These areas are where existing water depth is 4 to 8 feet deep and/or where dredging will be performed to create water depths of 4 to 8 feet. Dredging will be required to create these areas, and a long-term sediment management program would be needed to maintain the desired depths. The long-term sediment management program may include periodic dredging and may be supplemented with other sediment management techniques described in Section 2. A conceptual long-term lake maintenance program will be developed as part of the preservation feasibility study and will discuss the potential frequency and size of maintenance dredging events based on results of hydraulic and sedimentation modeling as well as other sediment management techniques that may be implemented.

- Natural Depth Areas – These areas are existing areas of water that will not be dredged. Depths in these areas may change over time based on natural processes of sediment movement and will be evaluated as part of the hydraulic modeling performed during the preservation feasibility study.

Based on the project goal of a 20- to 40-acre lake, the existing contiguous open-water area within Lake Accotink (Figure 3A) was reviewed and found to be approximately 40 acres. As this layout avoids the dredging and removal of the existing wetland and island features in the lake, this area is proposed to be used as the maximum deep (dredged) area footprint to be evaluated in the preservation feasibility study.

Smaller lake options with open-water areas occupying less than 40 acres are anticipated to include both natural depth areas and deep (dredged) areas with the open-water layout dependent on the layout of the other habitat features of managed wetlands, established grasslands, and islands (described in Sections 4.2 to 4.4). When developing the layout of deep (dredged) areas in smaller lake options less than 40 acres, the existing bathymetry of the lake will be considered. Placing the smaller lake footprint on existing deeper portions of the lake would minimize the volume of sediment that needs to be dredged. This would reduce the amount of sediment that requires disposal, either in the park or outside the park, improving the sustainability and cost-effectiveness of the smaller lake option.

While permitting will be required for dredging, obtaining permits to dredge within the existing open-water area of the lake is anticipated to be relatively straightforward because dredging itself does not increase flood concerns, and dredging within the existing open-water area will minimize impacts on wetlands.

4.2 Managed Wetlands

Construction of new wetland areas would include placement of dredged material to raise the existing sediment surface to elevations that would support wetland vegetation. Construction of new wetland areas may include extension of existing wetland areas and/or construction of new shoreline wetland areas as discussed below. Construction of new wetland islands is discussed in Section 4.4. The existing sediment surface where dredged material would be placed to create wetlands is below water so that impacts to existing trees are expected to be minimal. These wetland areas would support habitat and provide recreational opportunities for park users. Recreational opportunities may include kayak water trails and elevated walking trails.

Based on the drawings for the 2008 dredging project (HDR 2005), the project used select dredged material (e.g., low sand content material) within the lake footprint to create the main island currently in Lake Accotink. The dredged materials were amended as necessary (e.g., adjusting organic content and pH) and subsequently planted with wetland vegetation, demonstrating the technical feasibility of creating wetlands from dredged material in Lake Accotink. Future designs incorporating managed wetlands will need to include criteria for acceptable dredged material properties (e.g., sand content), amendment requirements (e.g., compost addition for organic enhancement), and specific planting requirements. Additionally, maintenance (e.g., watering, replanting) may be required during establishment of the vegetation, which is typically the first full growing season after planting. An ongoing invasive species control program would also need to be considered and may be required as part of the permitting process.

A critical factor in wetland construction and management is maintaining connectivity with the lake hydrology. The wetland area constructed in 2008 had an average elevation of 186.75 feet, slightly below the normal pool elevation of 186.9 feet (HDR 2005). According to the 2025 LiDAR survey data from DPWES, current island elevations within Lake Accotink range from 187 to 188 feet, with isolated spots exceeding 188 feet. To maintain connection with the lake hydrology and support wetland vegetation, the surface of dredged material placed to construct the wetlands would be relatively close to the water surface elevation of the lake. The elevation above the water surface where material can be placed and still support wetland creation will depend on the dredged

material properties (e.g., sand content, organic content, ability to retain water). This would need further evaluation and refinement during the feasibility evaluation and design process. For the purposes of the desktop evaluation, it was assumed that material placed within 1 foot of water surface (i.e., approximately elevation 188 feet) would sustain wetland vegetation.

From a permitting perspective, conversion of open water to wetlands is generally considered to be favorable to Virginia Department of Environmental Quality and U.S. Army Corps of Engineers. However, a thorough evaluation of potential water quality impacts and changes in ecosystem functions and values would still be required. In addition, it would be crucial to identify (i.e., delineate) existing wetlands within the proposed work areas, consider potential impacts on existing wetlands during construction, and plan to minimize or mitigate any adverse effects during the creation of new managed wetlands.

As placement of material within the floodplain impacts water flow and flooding potential, evaluation of flooding and waterflow within the system associated with the preliminary lake configurations will be critical in evaluating the feasibility of each layout. The modeling needed to assess these effects will be conducted by the sedimentation study team, and this modeling would also evaluate sediment erosion and deposition patterns to identify sustainable wetland feature layouts. Preliminary locations identified for wetland construction as part of the desktop assessment include:

- The backwater area and area behind the islands forming at the upstream end of the lake as shown on Exhibit 8 and Figure 3A;
- Expansion of the wetland island constructed during the 2008 dredging event (see Section 4.4); and
- Construction of new wetland shoreline areas along the northern shore of Lake Accotink (discussed in conjunction with wetland islands in Section 4.4).

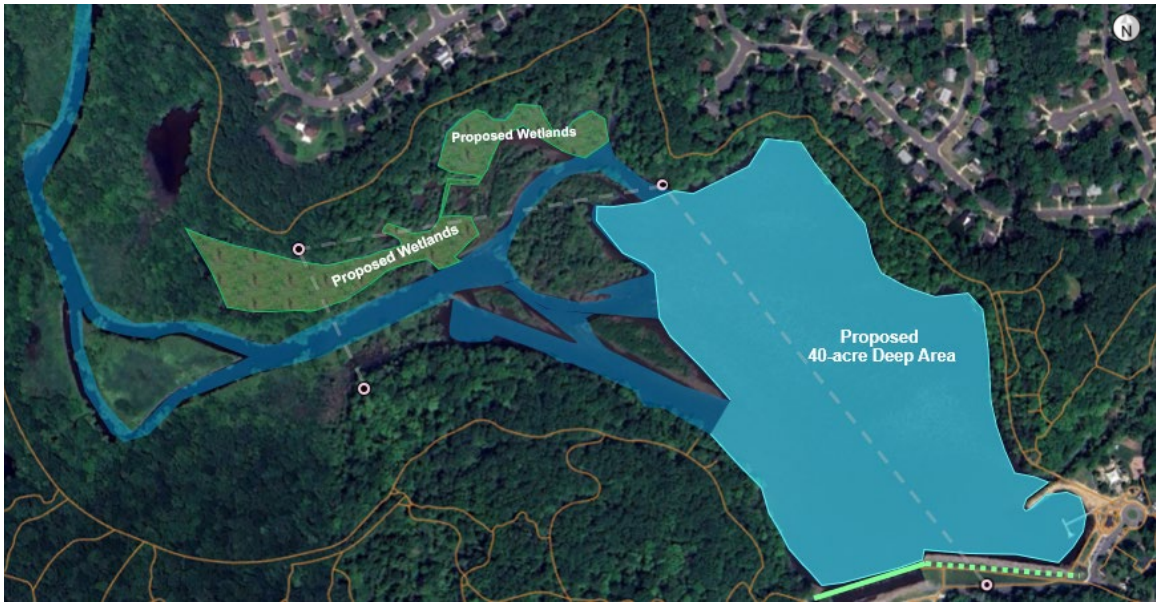

Exhibit 8. Wetland Construction in Backwater Area. See Figure 3A in the Figures Section for legend and additional details.

4.3 Established Grasslands

As noted in the Task Force Findings Report, there is interest in placing dredged material to create new upland areas around the lake and establish grasslands in those areas. Construction of grasslands would include placement of dredged material to raise the existing sediment or soil surface to elevations that would support grassland vegetation. As with wetland creation, only select dredged material may be appropriate for placement to

create grasslands, and the material may require amendment to produce a suitable growing medium for vegetation. Criteria for acceptable dredged material properties (e.g., sand content, clay content), amendment requirements (e.g., compost addition for organic enhancement), and specific planting requirements would be developed during future design of the project. As with wetlands, maintenance (e.g., watering, replanting) during the vegetation establishment period and ongoing invasive species control programs would also need to be considered and developed as part of the design. Additionally, community expectations will need to be evaluated to determine if the grasslands should be maintained in perpetuity or if the eventual conversion of the grasslands to forest (based on surrounding habitat) is acceptable.

Similar to the wetlands, construction of grasslands would require placement of material within the floodplain. Because material would be placed to higher elevations, the impact on water flow and flooding potential are expected to be greater with grasslands than with wetlands. As such, evaluation of flooding associated with the construction of grasslands in any preliminary lake configurations will be critical to evaluating the feasibility of such layouts. As discussed above, the modeling needed to assess these effects will be conducted by the sedimentation study team, and this modeling would also evaluate sediment erosion and deposition patterns to identify sustainable grassland layouts.

The northwest area of Lake Accotink and backwater area hold the most promise for establishing grassland (Exhibit 9, Figure 3B). Based on the existing topography and park trails in this area, material could be placed up to an elevation of approximately 190 feet (approximately 3 feet above water surface elevation). Placement of material to this elevation within this area (Exhibit 9, Figure 3B) would require clearing approximately 9 acres of trees. This area is also predominately wetlands based on the desktop evaluation and mapping provided in Attachment B; therefore, a similar level of wetlands impacts would be expected.

Exhibit 9. Grassland Construction in Backwater Area. See Figure 3B in the Figures Section for legend and additional details.

Due to the potential wetland impacts and filling in of waters of the United States, permitting of an alternative that includes grassland construction is expected to be more complicated, would require individual permits, and would require wetland mitigation likely through purchase of mitigation credits. The permitting process will require that the project demonstrates that impacts to resources, including wetlands, have been minimized and that increases in flooding are avoided. Because the grassland option would likely impact a larger area of wetlands and is more

likely to impact flooding, it is anticipated that agencies would be less amenable to construction of grasslands in existing wetland areas. However, this option will be discussed with the agencies during a pre-application meeting and included in the preservation feasibility study if agencies respond favorably to grasslands.

4.4 Islands

Construction of new islands and addition to the existing island would include placement of dredged material to raise the existing sediment surface to elevations that would support terrestrial vegetation. The existing sediment surface where dredged material would be placed to create wetlands is below water; therefore, impacts to existing trees are expected to be minimal. The islands would support habitat and provide recreational opportunities for park users. Recreational opportunities may include kayak water trails and hiking trails with bridge access to the islands.

As discussed in Section 4.2, construction of wetland island(s) within Lake Accotink is technically feasible as demonstrated by the 2008 dredging project. The concerns for constructing wetland islands, which necessitate placing fill within the floodplain are similar to those for constructing wetlands, and those concerns are discussed in Section 4.2.

Construction of grassland island(s) within Lake Accotink is assumed to be technically feasible, as construction methods would be similar to wetland island construction. However, the additional material placed to create the higher elevations needed for grassland island construction is more likely to result in flood impacts and may create visual barriers that affect the aesthetic value of the lake. Additional concerns related to grassland construction described in Section 4.3 would also apply to the grassland islands.

Based on the consistency with existing islands in Lake Accotink, aesthetic considerations, and general favorability of converting open water to wetlands, any island constructed as part of this project is assumed to be a wetland (i.e., within 1 foot of water surface). The considerations for wetland construction discussed in Section 4.2 also apply to the wetland island construction. The existing sediment surface where dredged material would be placed to create wetlands is below water; therefore, impacts to existing trees are expected to be minimal.

Two general approaches for island creation were identified during the desktop assessment:

1. **Mimicking Natural Deposition Patterns (Exhibit 10)**: This approach involves designing islands that align with the expected natural sediment deposition patterns within the lake as outlined in the Discovery Report (WSP and LimnoTech 2023). Two preliminary layouts were developed under this approach:
    a. Maximizing Open-Water Area: The first layout (Figure 4) focuses on creating a single new island to maximize open water. This design minimizes dredging by targeting deeper portions of the lake for material placement while preserving open-water areas.
    b. Smaller Open-Water Area with Multiple Wetland Features: The second layout (Figure 5) emphasizes creating a smaller open-water area in the downstream portion of the lake while maximizing dredged material placement along the northern area of the lake. This layout allows for the construction of multiple wetland areas (e.g., shoreline, islands), which would support features like kayak trails. While the layout shown on Figure 5 is simplified for volume estimating purposes, this option offers flexibility for creating diverse wetland and island features that would be evaluated in consultation with a landscape architect as part of the preservation feasibility study.

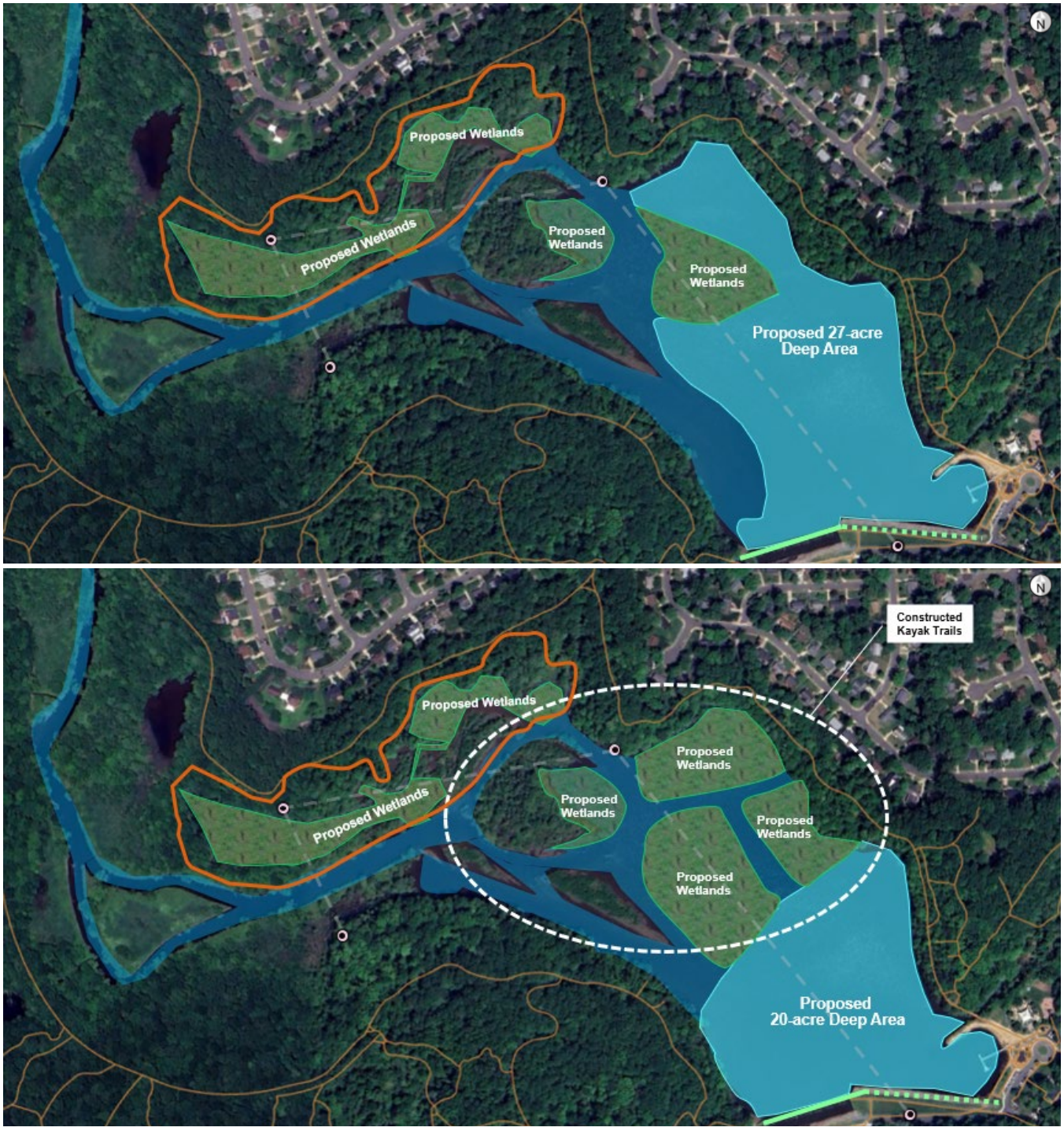

Exhibit 10. Mimicking Natural Deposition Patterns in Wetland Island Construction Over Smaller Area (upper image) or Larger Area (lower image). See Figures 4 and 5, respectively, in the Figures Section for legend and additional details.

2. **Creating a Pseudo-Offline Lake (Exhibit 11)**: This approach involves constructing islands along the berm alignment proposed in the offline lake option from the Offline Lake Evaluation Technical Memorandum (Arcadis 2022) and discussed in Section 6.3.2. The goal of this approach is to direct the primary flow of Accotink Creek, including its sediment load, along the southern portion of the lake to the dam. A key consideration for this approach is the potential for stagnant areas to develop within the pseudo-offline lake,

which could lead to algal blooms and other unfavorable conditions. Flow modeling would be necessary to evaluate water movement around the island layouts and within the pseudo-offline lake. If stagnant areas are identified, the design may require modifications, such as reconfiguring the islands or incorporating engineering controls (e.g., aerators) to promote water circulation. Three preliminary layouts were developed under this approach:

a. Maximizing Open-Water Area: This layout (Figure 6) reduces the footprints of the islands to preserve as much open water as possible.
b. Minimizing Dredging Requirements: This layout (Figure 7) minimizes dredging by strategically placing islands where minimal excavation is needed.
c. Maximizing Placement Opportunities: This layout (Figure 8) focuses on maximizing the placement of dredged material by placing material within an existing deep area of the lake.

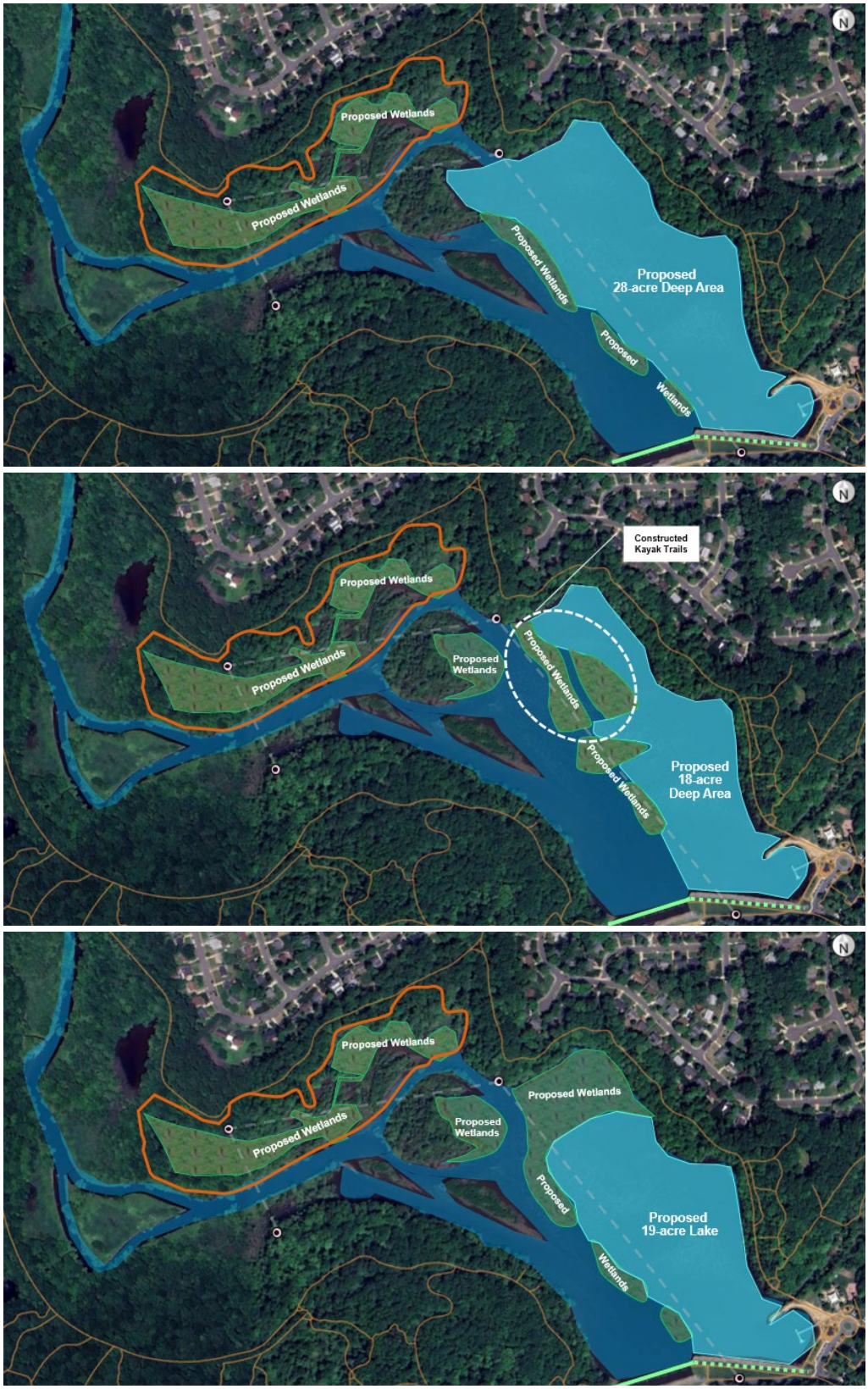

Exhibit 11. Creating a pseudo-offline lake that maximizes open-water area (upper image), minimizes dredging (middle image), or maximizes placement (lower image). See Figures 6, 7, and 8, respectively, in the Figures Section for legend and additional details.

5 Dredged Material Handling

Proper identification and management of dredged material handling areas are crucial for long-term preservation and maintenance of the smaller Lake Accotink. The Task Force Findings Report indicates the preservation study must consider how to use the dredged material on site (i.e., for construction of habitat features discussed above). In order to provide insight into how and where dredged material would be managed, preliminary volume estimates were developed as part of the desktop assessment for the following preliminary lake layouts incorporating habitat features discussed in Section 4:

- Layout A (Figure 3A) maximizes the existing open-water limits of Lake Accotink and focuses on reuse of dredged material within the existing backwater area of the lake.
- Layout B (Figure 4) uses a portion of the existing open-water limits to create a new wetland island (constructed from dredged material) that mimics the existing island formation occurring in the lake.
- Layout C (Figure 5) maximizes the creation of new wetland shoreline and islands (constructed from dredged material) to mimic the natural sedimentation processes while maintaining a 20-acre deep area.
- Layout D (Figure 6) creates new wetland islands to create a pseudo-offline lake while maximizing the footprint of the existing open-water feature.
- Layout E (Figure 7) is a smaller pseudo-offline lake created by new wetland areas (islands and peninsula) located to avoid the existing deeper areas of the lake to minimize short-term dredging requirements.
- Layout F (Figure 8) is a smaller pseudo-offline lake created by new wetland areas (islands, shoreline, and peninsula) located to take advantage of the existing deeper areas of the lake to maximize the amount of dredged material that can be placed within the lake.

A summary of these preliminary volume estimates for each of these layouts is provided in Table 1. Handling of the dredged material is discussed in the sections below.

Table 1. Summary of Preliminary Estimates for Lake Layouts Incorporating Habitat Features

Layout [a]	Reuse Placement Volumes, CY [b], [c]	Existing Open Water Placement, acres [b]	Open Water Area, acres [b], [d]	Deep (Dredge) Area, acres [b]	Deep Area Depth, feet	Dredge Volume, CY [b]	Off-site Disposal Volume, CY[b]
A (Figure 3A)	20,000	0	40	40	4 feet	90,000	70,000
					6 feet	210,000	190,000
					8 feet	330,000	310,000
B (Figure 4)	60,000	6	34	27	4 feet	40,000	0
					6 feet	110,000	50,000
					8 feet	190,000	130,000
C (Figure 5)	110,000	15	25	20	4 feet	40,000	0
					6 feet	90,000	0
					8 feet	150,000	40,000
D (Figure 6)	40,000	2	38	28	4 feet	60,000	20,000
					6 feet	150,000	110,000
					8 feet	250,000	210,000

Layout [a]	Reuse Placement Volumes, CY [b], [c]	Existing Open Water Placement, acres [b]	Open Water Area, acres [b], [d]	Deep (Dredge) Area, acres [b]	Deep Area Depth, feet	Dredge Volume, CY [b]	Off-site Disposal Volume, CY[b]
E (Figure 7)	70,000	8	32	18	4 feet	30,000	0
					6 feet	90,000	20,000
					8 feet	150,000	80,000
F (Figure 8)	80,000	8	32	19	4 feet	40,000	0
					6 feet	100,000	20,000
					8 feet	160,000	80,000

Notes:

[a] Quantities associated with the offline lake option (Figure 9) are provided in Section 6.3.2.

[b] All areas and volumes are approximate based on preliminary take-off measurements. Layouts, areas, and volumes of options included in the full preservation feasibility study will be refined based on modeling and input from a landscape architect. Results are reported to the nearest 1 acre or 10,000 CY, respectively.

[c] Assumes all reuse of dredged material used in wetland creation as shown on the referenced figures. If the area at the upstream portion of the lake were cleared and grasslands created as shown on Figure 3B, an additional 42,000 CY of capacity for reuse would be available.

[d] Open-water area includes both the deep areas and natural depth areas and is calculated by taking the existing contiguous open-water area in Lake Accotink (40 acres) and subtracting the area of newly constructed habitat features where dredged material will be placed for reuse.

CY = cubic yards

5.1 In-Park Reuse

This option is the preferred option for handling dredged material for the study, and each layout offers the capacity to reuse material as summarized in Table 1. The specific mechanisms for processing and handling the dredged material for reuse will vary depending on the dredging method and placement location but may include the following:

- Direct placement of dredged sediment via mechanical methods. This option would remove existing sediment at near in-situ water content to minimize water management requirements at the placement location. Any amendment of material would occur in the placement area. This approach can be accomplished by:
  - Dredging and placement with mechanical dredges; barges would be used to move the material as needed within the lake.
  - Excavation and placement of material under dewatered conditions with standard heavy equipment; off-road dump trucks (Exhibit 12) may be used to move material within the footprint of the dewatered lake. This option would require design and construction of a flow diversion system to allow the work to be performed “in the dry.”

Exhibit 12. Off-road truck being loaded by excavator.

- Direct discharge of sediment slurry from the hydraulic dredge(s) to the placement area for dewatering. This option would require consideration of containing the slurry within the placement area and separating the water fraction of the slurry from the sediment.
- Hydraulic dredging of material from the lake, pumping sediment slurry to a support area near the lake for dewatering, then transporting (via truck and/or barge) dewatered sediment to placement areas within the lake. This option includes multiple handling steps but would allow for better control of sediment material selection and amendment for reuse.

This list is not all-inclusive. Each potential approach has its own advantages and disadvantages, but no high-level concerns were identified that would prevent implementation of these options. Additional considerations would be included and identified during the feasibility evaluation. Additionally, contractors may have innovative approaches for implementation of the work, and it is recommended to allow for maximum flexibility to the contractor for executing the work.

For most of the lake configurations identified, some off-site disposal would be required regardless of the lake depth selected. Those options are discussed below.

5.2 Processing On Location for Off-site Disposal

For configurations that require a less significant amount of material to go off site for disposal (e.g., less than 50,000 CY), dredged material may be processed within or adjacent to the lake (i.e., “on location”). The specific quantity of material that would be processed and the area needed to perform the processing will depend on the volume dredged, dredging schedule, dredging method, dewatering methods used, and any limits on truck traffic to transport material off site. The details of this option would be evaluated further during the feasibility analysis. Preliminary locations where processing could be performed include:

- Within the lake if the work would be performed under dewatered conditions: this option would require design and construction of a flow diversion system to allow the work to be performed “in the dry.”
- Within the lake on floating barges.
- In parking areas adjacent to the lake: this option would require closure and/or limiting access to certain portions of the park to the public.

The list above is not all-inclusive, and contractors may have innovative approaches to implementing the work. Each potential approach has its own advantages and disadvantages, and additional considerations would be included and identified during the feasibility evaluation. Although not a concern that would prevent implementation

of the option, one major consideration for the use of the park for processing sediment for off-site disposal is the community impact. Specifically, existing access to the park is via roads that go through residential areas.

The Alternatives Analysis Report (AAR; Arcadis 2021b) identified truck traffic through residential areas as a key concern and issue with the Southern Drive processing area; this concern was reinforced by community input and feedback received since the proposal of this location. The Southern Drive processing area is accessible from the same road as the main entrance of the park. Additional access points could be considered to disperse the truck traffic, but other potential access points (e.g., Heming Avenue parking lot access point, previous construction access point from Hatteras Lane) also go through a residential neighborhood. Although the overall number of trucks would be lower than that presented in the AAR, community impacts could still be a concern and need to be considered in the evaluation. Identification of an “acceptable” amount of truck traffic will be essential when evaluating the smaller lake options.

5.3 Processing at Secondary Location for Offsite Disposal

For configurations that require more material to go off site for disposal than can be processed on location (discussed above), processing of dredged material at a secondary location would be required. This approach is technically feasible, as documented in the AAR (Arcadis 2021b), and generally includes preparation of a sediment dewatering processing area and construction of a pipeline to transport (via slurry) sediment dredged from the lake.

The area required for sediment dewatering would vary depending on dredge volume, dredge schedule, dredging method, dewatering method(s), and any limits on truck traffic to transport material from the processing area to the ultimate disposal location. To facilitate the feasibility study, the evaluation of the secondary locations would be based on what was prepared during the AAR for the 950 CY per day production rate with adjustments to account for a lower production rate (e.g., 475 CY per day) assuming lower dredge volume and similar 2-year dredge schedule.

Similar to the AAR, it is assumed that transport of dredged material from the lake to the secondary processing area would be via pipeline, similar to the alignments described in the AAR. As part of the small lake evaluation, both temporary pipeline and permanent pipeline options would be evaluated considering the frequency and duration of ongoing maintenance dredging requirements and costs (e.g., initial construction costs, maintenance costs).

For the desktop assessment, the following potential secondary processing locations were considered:

- **Wakefield Maintenance Facility Area**: This option was developed and evaluated in the AAR (see Sections 6.1.2, 6.2.1, 7.1.1, and 7.2.4; Arcadis 2021b) and was one of the two locations identified by DPWES as a potential viable option for the full dredging program.
  - Key drawbacks to this location include the extent of clearing required and work within the floodplain. If a lower production rate can be used, then a smaller area would be required, and these issues may be minimized or avoided. This would be evaluated further during the feasibility study.
  - Additional considerations for this location included access to the site specifically considering planned improvements to Braddock Road and potential impacts to Wakefield Park traffic.
- **Southern Drive**: This option was developed and evaluated in the AAR (see Sections 6.1.10, 6.2.8, 6.2.10, 6.2.11, 7.1.2, and 7.2.1 through 7.2.3; Arcadis 2021b) and was one of the two locations identified by DPWES as a potential viable option for the full dredging program.

- The main disadvantage associated with this location was the truck traffic through residential areas. This issue is likely to be of continued concern, but the overall impact may be reduced if production rates can be lowered to:
  - Reduce the overall number and/or frequency of trucks traveling through residential areas.
  - Allow area for re-development of rail spur facilities and possible use of rail for off-site disposal. Note that use of rail includes several significant considerations that need to be overcome (e.g., rail access, availability of rail cars) and would be evaluated further in the feasibility study.
- The following additional considerations and unknowns associated with this location would impact its viability for use:
  - Property purchase and/or leasing agreement terms. This would need to be evaluated further in coordination with the county during the feasibility study.
  - Rail spur and utility offset requirements or related restrictions on use.
  - Clearing and grading material handling requirements.

- **Dominion Right of Way**: This option was developed and evaluated in the AAR (see Sections 6.1.4, 6.2.1, 6.2.3, 6.2.4, 7.1.3, 7.2.5, 7.2.8, and 7.2.10; Arcadis 2021b) but was eliminated by DPWES due to limited sediment processing capacity based on infrastructure access and offset requirements from Dominion, infrastructures upgrades that were being planned by Dominion that may prevent use of the area by the project, and potential impacts to Wakefield Park operations due to truck traffic.
  - The potential concern that may prevent implementation of the option with this location is the status of Dominion's infrastructure improvement projects that may prevent use of the area for sediment processing. As part of the feasibility evaluation, Dominion will be contacted to determine if the area may be available and what restrictions would be in place.
    - Restrictions from Dominion, including space(s) available for use and access requirements, will be key in determining the feasibility of this location as a sediment processing area.
    - Truck traffic is likely to be of continued concern, but the overall impact may be reduced if production rates are lowered. Lower production rates could also address the sediment processing capacity concern.
- **Upper Settling Basin**: This option was developed and evaluated in the AAR (see Sections 6.1.5, 6.2.5, 7.1.4, and 7.2.6; Arcadis 2021b) but was eliminated by DPWES due to limited site access, limited sediment processing capacity, potential infrastructure limitations (i.e., the 1850 railroad embankment condition and potential stability concerns [HDR 2002]), and wetland impacts.
  - The sediment processing capacity may be addressed if a lower production rate is needed and/or if material from the 1985 dredging event is removed for off-site disposal and replaced with newly dredged material.
  - If the 1985 dredged material is to be removed and disposed of off site, waste characterization testing would need to be considered in order to evaluate possible disposal options for this material.
  - Site access, infrastructure limitation, and wetland impacts would continue to be issues of concern, even for a smaller lake project, that would need to be further evaluated and considered as part of the feasibility evaluation.

- **Concrete Plant**: This location was developed and evaluated in the AAR (see Sections 6.1.8 and 6.2.7; Arcadis 2021b) but was eliminated from consideration at the request of the property owner, Vulcan Materials. Based on information provided by the county, it is understood that the property owner may reconsider allowing use of this location depending on the project scope and subject to removal of the 2008 dredged material from the property.
  - Key considerations that need to be resolved to facilitate evaluation of this location include:
    - Leasing and use agreement terms including area(s) available for use.

  - Quantity and extent of 2008 dredged material to be removed. Waste characterization testing would also need to be considered in order to evaluate possible disposal options for this material.
  - Temporary or permanent pipeline and crossings. The 2008 dredging design used temporary pipelines and crossings that were removed at the completion of dredging operations in fall 2008 (HDR 2005, Fairfax County 2009).
  - Sequencing and/or area use restrictions. Improvements to prepare the dewatering site would depend on the area available, any trucking/access restrictions, and sequencing related to removal of 2008 dredged material.

- **Robinson Terminal**: This location was identified in the Task Force Findings Report but was eliminated from consideration by DPWES unless new favorable information becomes available. The potential concerns that would prevent implementation of this option include obtaining access from the property owner and having sufficient available processing area for dewatering the sediment slurry dredged from the lake. If new favorable information becomes available, this site may be reconsidered, and a dewatering site plan would need to be developed to verify feasibility of this location. A pipeline route similar to that shown in the AAR for the Concrete Plant (see Section 6.2.6; Arcadis 2021b) would be assumed in consideration of this location if new favorable information becomes available.

6 Lake Accotink Dam

Lake Accotink was created after a dam was constructed, first in 1918 and then rebuilt in 1943, to provide a source of drinking water for Camp Henderson (now Fort Belvoir). Because the presence of Lake Accotink depends on a dam structure, the dam that must be considered as part of the Lake Accotink Preservation Feasibility Study, particularly related to the lake volume for permitting purposes, dredging upstream of the dam, and potential changes that can be made related to the dam structure(s) to meet the direction of the Board of Supervisors (i.e., create a 20- to 40-acre, 4- to 8-foot-deep lake).

6.1 Lake Volume Determination

In 2022, Arcadis evaluated the permitting and regulatory requirements associated with potential modifications to the existing spillway on Lake Accotink Dam as part of the offline lake assessment. This evaluation aimed to determine whether the modified Lake Accotink Dam would remain a regulated structure under the Virginia Department of Conservation and Recreation (DCR) Dam Safety regulations. Based on a review of these regulations, it is likely that the modified dam will continue to be regulated as an impounding structure due to its capacity.

On December 1, 2022, Arcadis, Fairfax County, and DCR discussed the following related issues via telephone:

- Sediment in Lake Capacity Calculations: One of the primary topics discussed was the regulatory implications if Lake Accotink fills with sediment. DCR considers sediment a liquefiable material, meaning it would count toward the dam's impounding capacity.
- Dam Deregulation: Dam deregulation is a consideration for offline lake and pseudo-offline lake options. Partially or completely isolating the lake from the concrete dam may affect the classification of the concrete dam. The offline lake and pseudo-offline lake options also have dam permitting components that are unique to these two options. Dam deregulation was evaluated during the 2021 and 2022 alternatives analysis. The dam regulations were reviewed and discussed with DCR. Two potential pathways to deregulate the dam were identified. The first involves removing the dam under the supervision of a Professional Engineer (PE), which would require an alteration permit. The second method involves reducing the impounding capacity by

lowering the dam crest so that the total volume, including water and sediment, does not exceed 50 acre-feet, and the dam height is lower than 25 feet. This would also necessitate an alteration permit. For DCR to consider this option, hydraulic and hydrodynamic models would be essential, and identification of case studies of similar projects would be needed.

- No Change in Dam: If the dam is maintained, it will remain subject to all inspection, maintenance, and tabletop analysis requirements as well as the renewal of conditional certificates. A PE would determine the necessary actions to maintain the dam, and dredging would not be required unless the dam engineer identified it as necessary to prevent potential failure modes or in response to periodic inspections. For instance, dredging might be needed if sediment blocks or fills the low-level outlet during inspections. Additionally, any maintenance or modification to the dam, including dredging near the dam, would require an alteration permit.

As noted above, the dam's impounding capacity includes both the water volume and sediment volume within the impoundment. Based on the 2020 bathymetric survey, the water volume within the approximately 57-acre lake (including the island area) was approximately 167 acre-feet. Based on the March 2021 and February 2022 geotechnical investigations conducted in the lake for the offline lake evaluation, the sediment thickness within the lake generally was generally between 5 and 6 feet, with deeper sediment (up to approximately 17 feet) closer to the existing spillway (ECS Mid-Atlantic, LLC 2022). Assuming an average sediment thickness of 5 feet over the entire 57-acre lake gives an approximate sediment volume of 285 acre-feet. This results in an estimated impounding volume within the current lake footprint of approximately 452 acre-feet.

Additional conversations with DCR are currently being planned. However, based on the constraints of the project, even the smallest lake (20-acre lake dredged to 4 feet) would be 80 acre-feet and would exceed the 50 acre-feet criterion for dam deregulation.

6.2 Dredge Upstream of Dam

Dredging upstream of the dam would provide access for the inspection of the upstream face of the dam. Additionally, debris in this area regularly blocks the sluice gate intake, which needs to be cleared by divers. Dredging in this area will help safely maintain and operate the dam.

FCPA requested dredging immediately upstream of the existing dam spillway to allow for inspection of the entire face of the concrete structure to support the existing dam condition assessment being performed by the dam study team. Currently, the top 2 to 3 feet of the concrete spillway are visible on the upstream side, while the total structure height is believed to be 18 feet. Dredging upstream of the dam is technically feasible, and the permitting of this option would be similar to that for other lake dredging options. Additional information is needed to assess the appropriate approach(es) for dredging upstream of the dam to maintain the integrity and stability of the dam during dredging. The additional information needed includes the design and construction of the dam (including the spillway foundation design and construction), geotechnical characteristics of the sediment and surrounding soils, and existing dam structure conditions. In addition to the dam itself, the layout and construction of any new features for the smaller lake project must allow for future dredging to facilitate spillway inspections.

6.3 Potential Dam Modifications to Achieve Target Smaller Lake Size

Some smaller lake configurations may include dam modifications, which may include changes to the existing dam's concrete spillway or earthen embankment and/or construction of new impounding structure(s) to retain water. The smaller lake configurations with dam modifications may also include changes to the normal pool

elevations of the lake (i.e., the water level in the lake). Dam modifications that would result in the lowering of the normal pool elevation of the lake (e.g., certain spillway modifications, dam removal) or that do not directly impact lake size (e.g., fish passages) would not address the Board of Supervisors' directive and are not included in the desktop assessment. The following dam modifications may be able to achieve a 20- to 40-acre lake that is 4 to 8 feet deep:

- Modifying the existing spillway;
- Creating an offline lake;
- Building a new dam with a spillway upstream of the existing dam and removing the existing concrete spillway;
- Moving the outlet for the dam; and
- Adding a sluice gate to the concrete dam spillway.

Some of these options could be combined with the habitat features described in Section 4 to provide habitat and recreational opportunities for park users. Whether the dam is modified or not, permitting considerations for the dam will be addressed during the Lake Accotink Preservation Feasibility Study, particularly related to the lake volume discussed above. However, any changes to the existing dam would require significant permitting and design efforts and would increase the complexity of the project.

6.3.1 Existing Spillway Modifications to Raise Pool Elevation

Spillway modifications are changes to the spillway elevation that result in corresponding change in the normal pool elevation of the lake (i.e., the water level in the lake). Modifications to the existing spillway that could help create the 20- to 40-acre lake that is 4 to 8 feet deep would need to increase the total height of the spillway in order to raise the normal pool elevation behind the dam.

To raise the normal pool level, the modifications may include adding flashboards to the spillway or reconstructing the existing spillway to a higher elevation. In the short term, this option would reduce the required sediment removal depths within the lake footprint to meet the target lake size. However, future sediment management, including potential sediment removal, would likely still be needed to preserve the lake.

An important consideration in this option is the potential increased likelihood of flooding around and upstream of the lake. Hydraulic and hydrodynamic modeling would be performed to evaluate flood potential. Additionally, the increased water elevation would impact existing wetlands by submerging the wetlands underwater. An evaluation would be needed to understand the extent of wetland impacts and if new wetlands may form due to the increased water elevation. This option would increase the permitting complexity because of wetland impacts, the flood evaluation, and modifications to the dam, which would require permitting with DCR. Flooding may impact trees near the shore of the lake.

Given the age of the dam, it is unknown if modifications to the spillway would affect the structural integrity of the dam. The design of this option would need to evaluate the structural considerations for modifying the dam. The height of the modified flashboards to maintain the defined raised normal pool level would be determined. The strength of flashboard needed to withhold the water would be defined as well as materials that could meet the strength requirement. The dam would be evaluated to determine if the current flashboard slots have the structural strength to hold larger flashboards. The operation and maintenance requirements for the flashboards would be determined including the equipment needed to place and remove the flashboards. The spillway would be evaluated to assess if the increased distance of water falling over the higher flashboards would damage the spillway.

6.3.2 Offline Lake

An offline lake (Exhibit 13, Figure 9) includes constructing a new berm to mostly isolate the existing lake from the main Accotink Creek channel; constructing a new creek channel including modifying or removing the existing concrete spillway; and constructing structures from the creek to the lake (inlet structure) and from the lake to the creek (outlet structure) to control flows from Accotink Creek and maintain water levels within the offline lake (Figure 9). An offline lake option without the inlet structure was most recently evaluated in 2022 (Arcadis 2022). In 2022, the offline lake concept was considered feasible from a constructability perspective but was not selected because of other challenges including, but not limited to, permitting and regulatory considerations, concern with water stagnation and algae blooms in the offline lake, increased dredging with associated material processing and disposal consideration, and the need to import material to create a structurally sound berm. Incorporation of the inlet structure to allow some flow into the offline lake from Accotink Creek may address the water stagnation concerns and would be evaluated as part of the flow modeling.

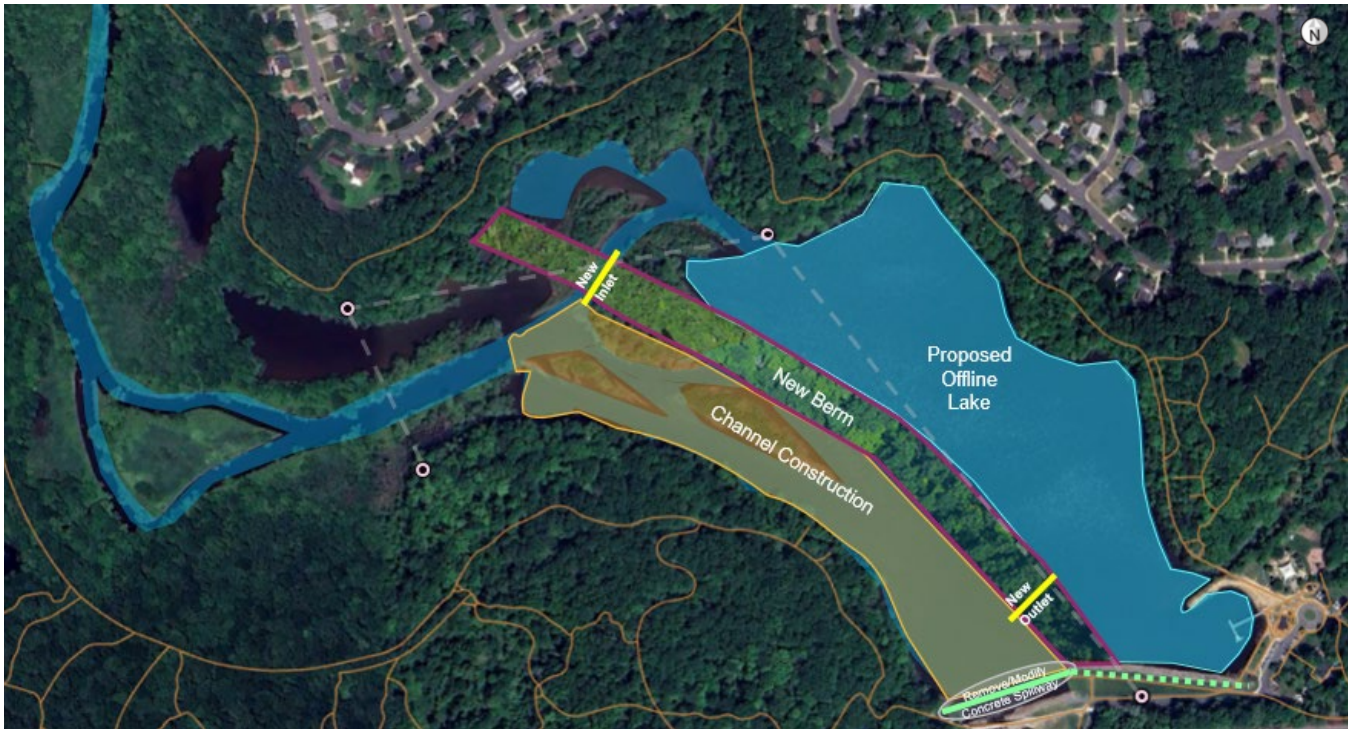

Exhibit 13. Offline Lake. See Figure 9 in the Figures Section for legend and additional details.

For the offline lake option shown on Figure 9, sediment removal would still be needed to create the offline lake, with additional removal needed to reach a suitable subgrade for construction of the new berm; the dredge volume estimated in the 2022 evaluation was approximately 825,000 CY of sediment. Based on the sediment characteristics (silty, fine material), a limited amount of the dredged material is likely to be suitable for reuse in construction of the new dam (berm to separate the smaller lake from Accotink Creek). Based on the 2022 evaluation, the berm was assumed to be constructed using approximately 60,000 CY of dredged material and 350,000 CY of imported material. Multiple permits would be required, and permitting an offline lake option is expected to be more complicated than an option that does not create an offline lake or require construction of an impounding structure. Ongoing periodic sediment removal would also be required.

6.3.3 Dam Relocation

The dam relocation option (Exhibit 14, Figure 10) is a variation of the offline lake option. The lake could be mostly isolated with a new dam embankment. A new dam spillway could be constructed to direct a majority of Accotink Creek's flow downstream away from the new smaller lake. An outlet for the water flowing into the lake could be constructed at the southern end of the lake to help maintain the smaller lake's water level. The outlet could discharge into Accotink Creek downstream of the new dam. Sediment removal would still be needed to preserve the lake. Ongoing periodic sediment removal would also be required. The dam relocation option is anticipated to impose issues similar to those associated with the offline lake option evaluated in 2022 (Arcadis 2022). The dam relocation option could address the water stagnation concern by directing some of the Accotink Creek flow into the smaller offline lake, but some water flow and stagnation issues may still remain. Multiple permits would likely be required including dam deregulation to remove the existing concrete dam spillway and dam authorization to build a new dam. The permitting of a dam relocation is expected to be more complicated than an option that does not involve moving the dam.

Exhibit 14. Dam Relocation. See Figure 10 in the Figures Section for legend and additional details.

6.3.4 Add Sluice Gate to Dam

Sediment sluicing involves discharging high flows through the dam to prevent the sediment carried in the high flow from depositing in the lake. Drawdown flushing involves focusing flow on sediment deposits in the lake to suspend the sediment into the water for transport downstream of the dam. For Lake Accotink sediment management, either of these sediment management options would potentially involve a dam modification to add a sluice gate to the dam to control discharge from the dam. An engineering evaluation would be required to determine if adding a gate would affect the structural stability of the dam. Hydrodynamic modeling would be required to design and operate the gate. Permitting would be required to modify the dam.

7 Considerations for Preservation Feasibility Study

Based on the results of the desktop assessment and the scope of work for the preservation feasibility study, key assumptions necessary to complete the preservation feasibility study include:

- The normal pool elevation of the lake will depend on the selected option and dam configuration.
- Dredging may be performed immediately upstream of the existing dam spillway to allow for inspection of the entire upstream face of the concrete structure; if so, the layout and construction of features must account for stability of the features in the area of this dredging.
- The community impact of truck traffic through residential areas must be balanced with the community's goals for lake size and depth, project constructability, and project schedule. An "acceptable" level of truck traffic (as either percentage increase and/or absolute number) will need to be determined in consultation with the county as part of the community outreach.
- For dredged material that requires processing at a secondary site for off-site disposal, it was assumed that hydraulic dredging will be performed with sediment slurry transported by pipeline to the secondary processing locations. The secondary processing locations to be evaluated for dewatering dredged sediments will include the two previously identified locations (i.e., the Wakefield Maintenance Facility Area and Southern Drive) as well as the Concrete Plant based on additional information to be provided by the county and Vulcan Materials. Robinson Terminal may also be considered if this option becomes available following coordination with the property owner by others.

The final conceptual configurations to be evaluated in the preservation study will be determined in consultation with the county and feedback received from the public. Arcadis will meet with the County to discuss the results of the desktop assessment, discuss community feedback on the assessment, finalize parameters for the selection of the three initial preliminary designs, and finalize the assumptions to be incorporated into the preservation study.

8 References

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Figures

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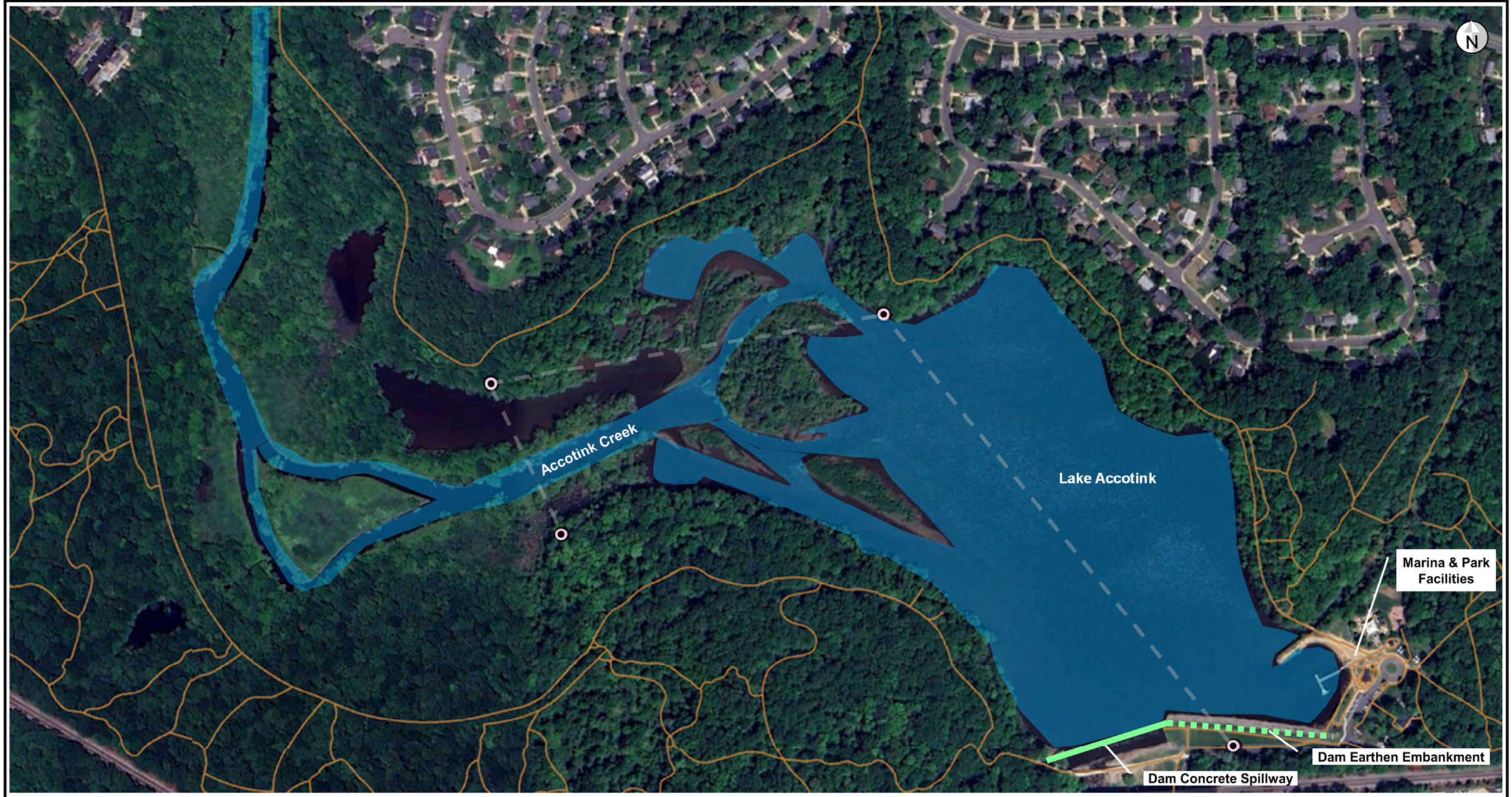
For Discussion Purposes Only



NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

LAKE ACCOTINK SITE MAP

ARCADIS

FIGURE 1

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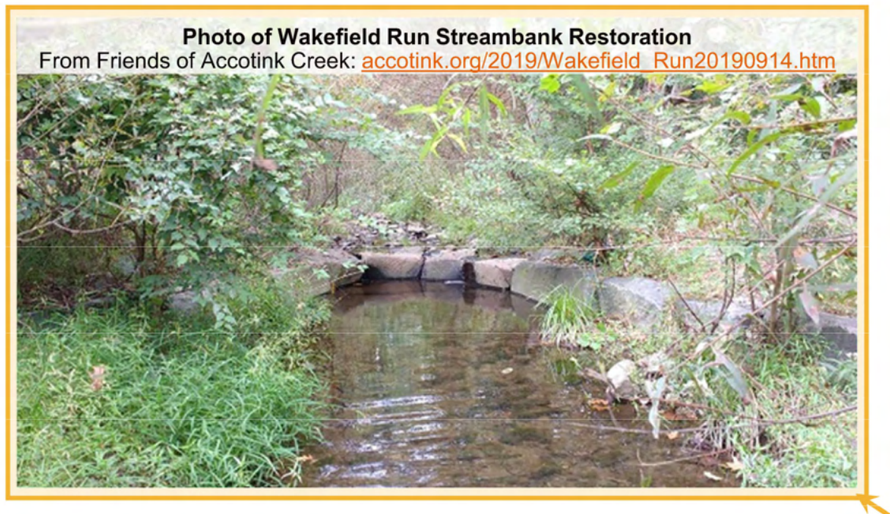

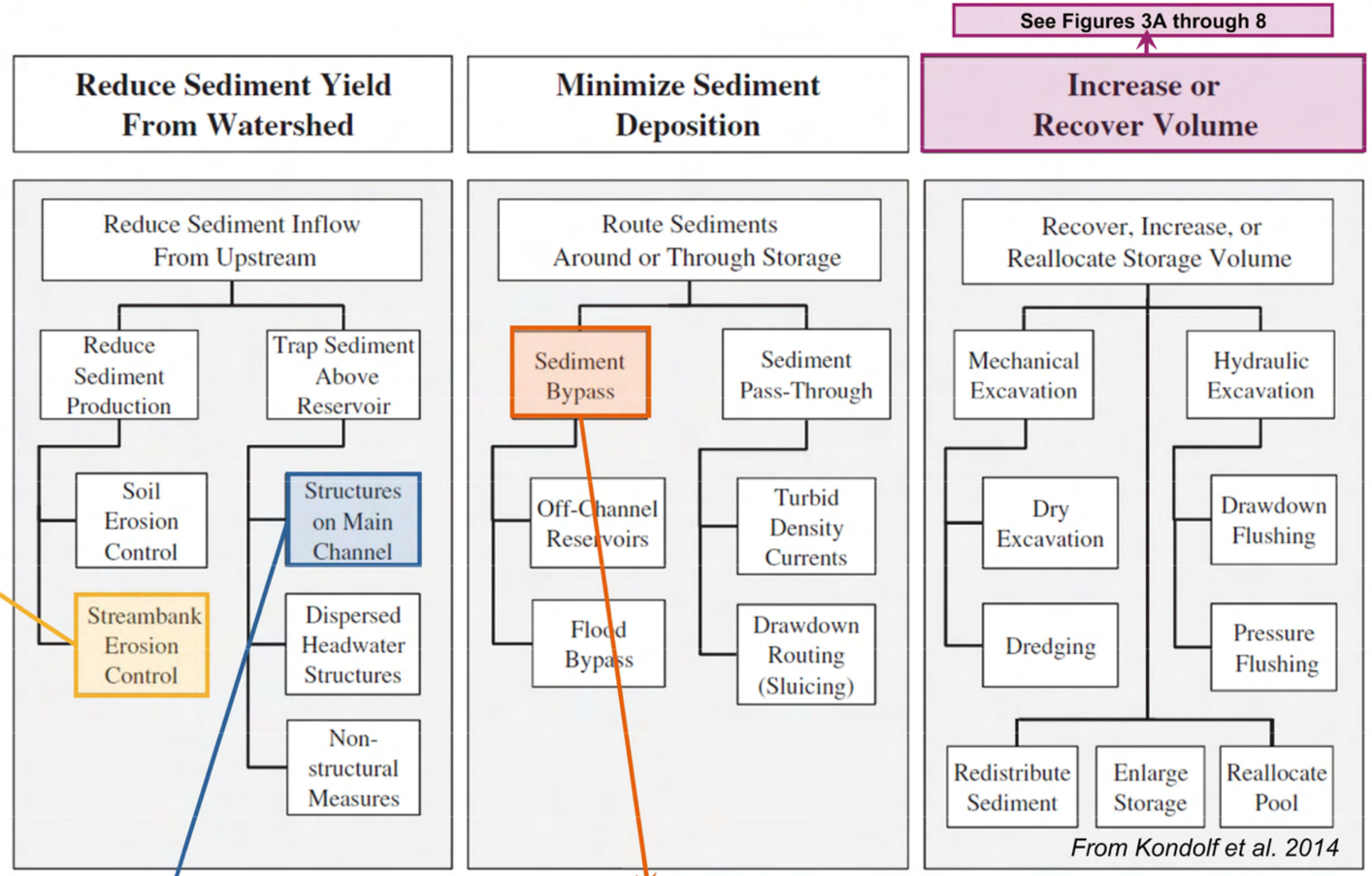

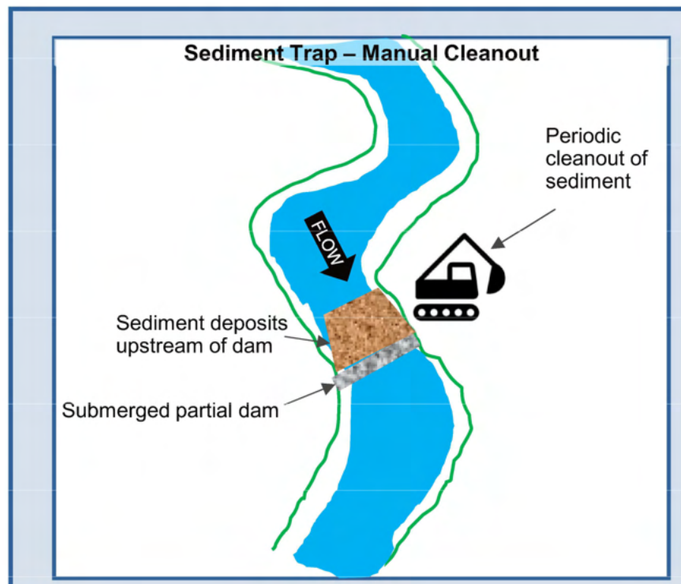

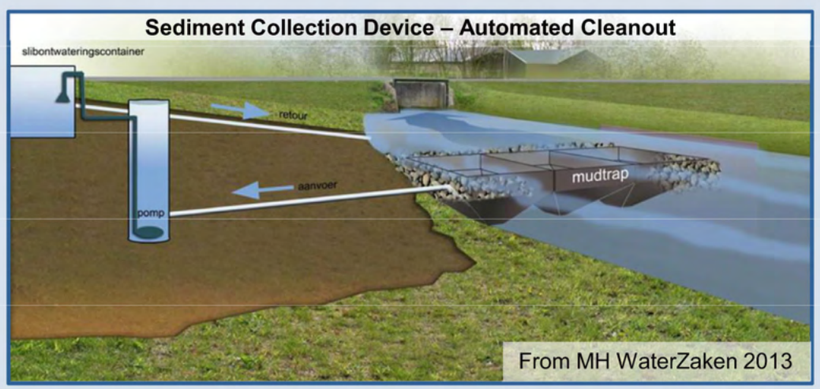

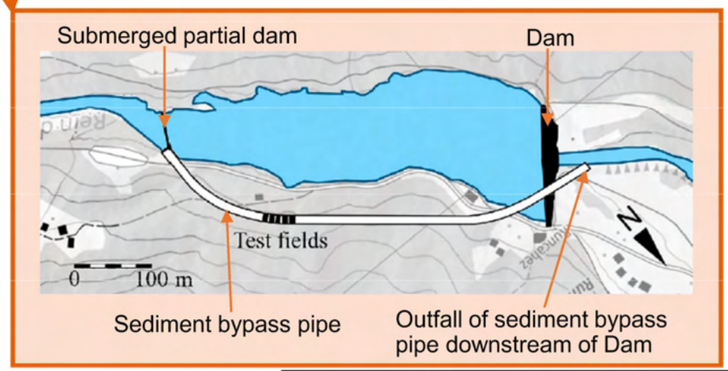

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

RESERVOIR SEDIMENT MANAGEMENT OPTIONS

ARCADIS

FIGURE **2**

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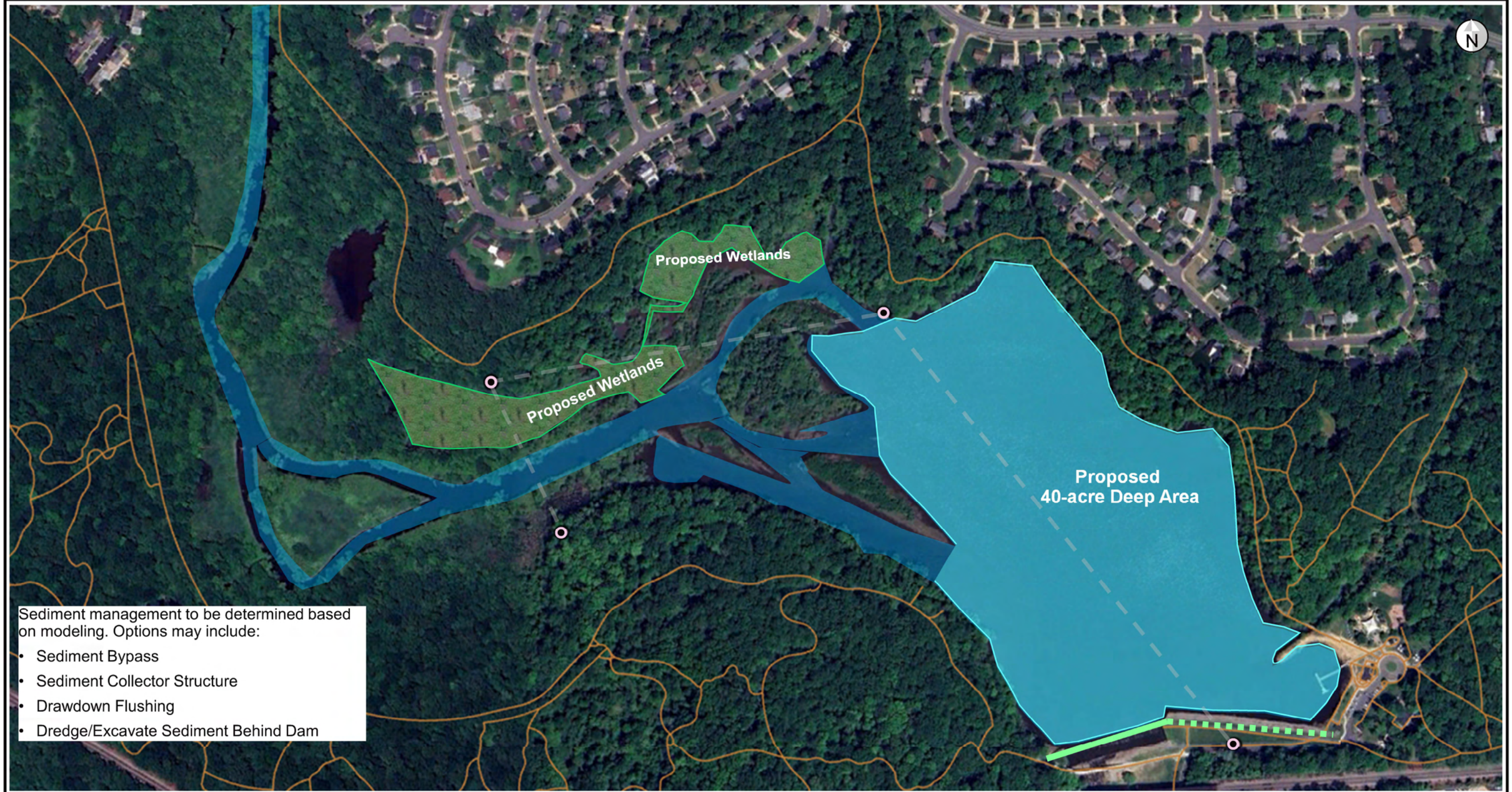

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the deep (dredge) area to create a 4- to 8-feet deep open water feature. Footprint shown take advantage of existing open water area.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Dam (Concrete Spillway / Earthen Embankment

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

EXISTING OPEN WATER AREA (40-ACRE) WITH CONSTRUCTED WETLANDS

ARCADIS

FIGURE **3A**

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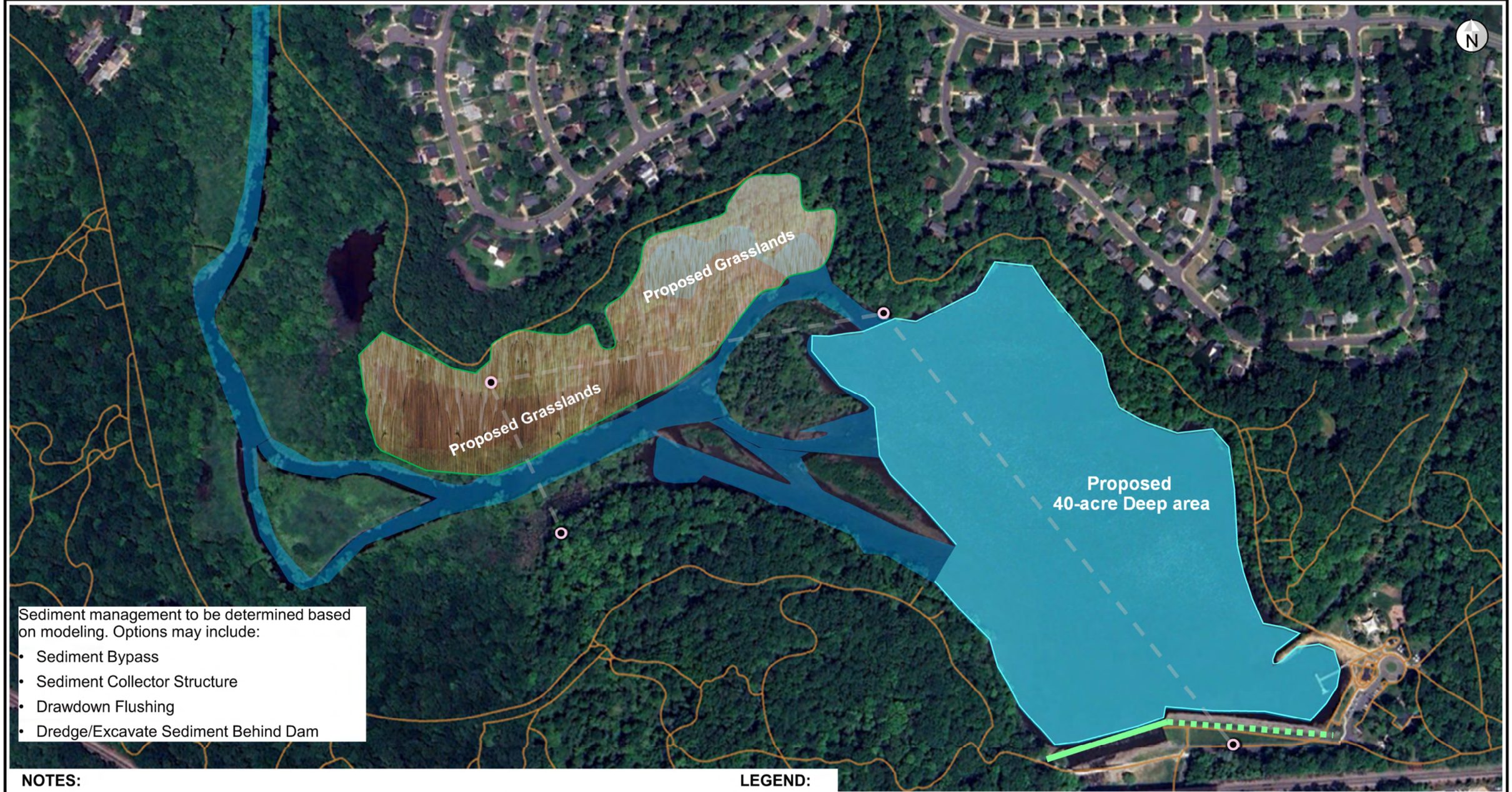

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Creation of a grassland area will allow for more dredge sediment to remain onsite. This option would require clearing of the existing trees to allow placement of sediment to upland elevations.
4. Sediment collectors would require direct access for sediment removal or pipeline to transport collected sediment downstream of the dam. Flow bypass systems that capture storm flows would require pipeline to transport flow with suspended sediment downstream of the dam.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Grassland/Upland Creation (see Note 3)
- Proposed Deep (Dredged) Area
- Potential Sediment/Flow Bypass Pipe (See Note 4)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

EXISTING OPEN WATER AREA (40-ACRE) WITH ESTABLISHED GRASSLANDS

ARCADIS

FIGURE **3B**

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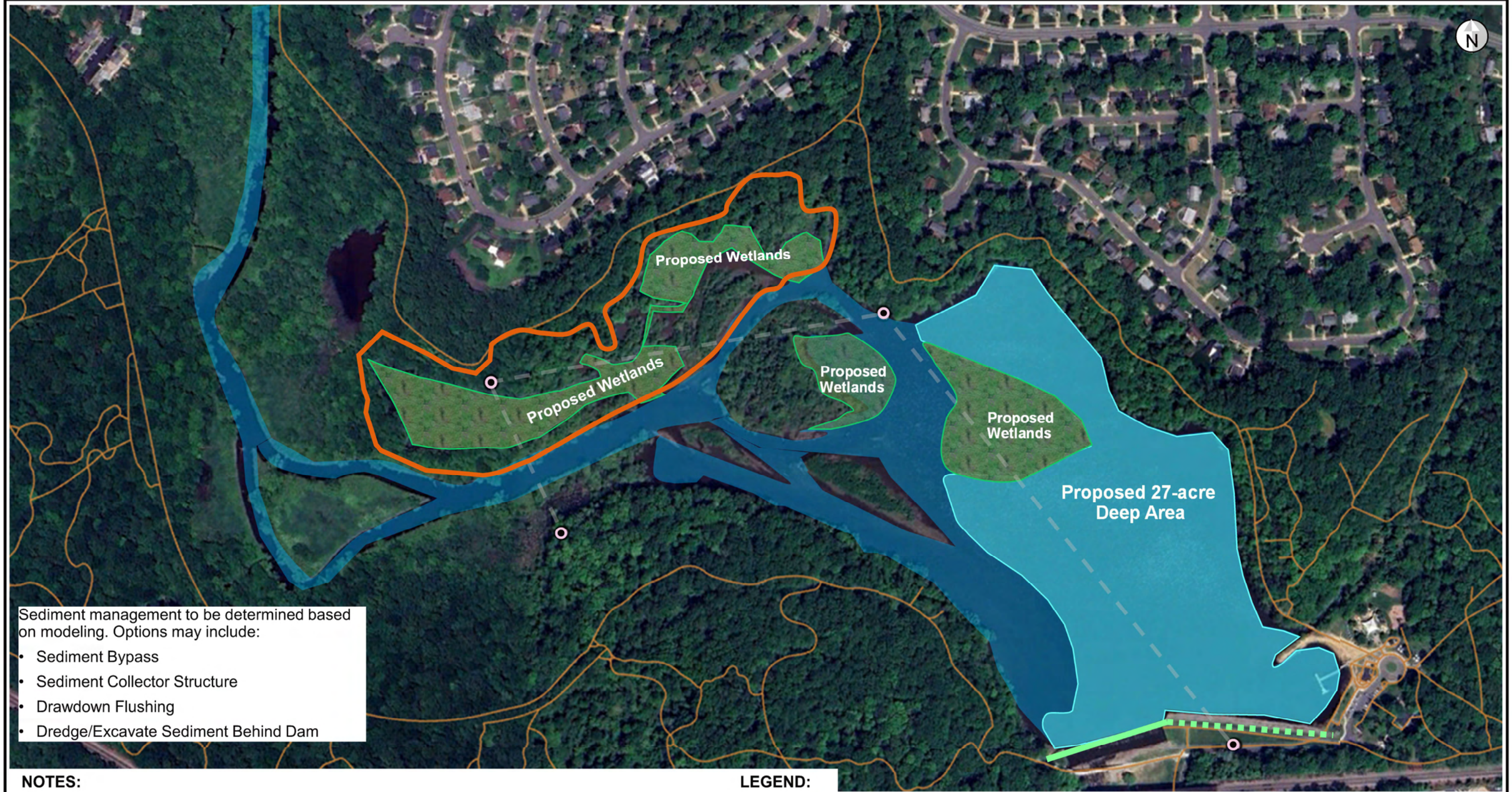

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the proposed lake area to create a 4- to 8-feet deep open water feature. Footprint shown is based on existing deeper locations within the lake.
4. Creation of a grassland area will allow for more dredge sediment to remain onsite. This option would require clearing of the existing trees to allow placement of sediment to upland elevations.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink (Natural Depth)
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Alternate Grassland/Upland Creation (see Note 4)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

27-ACRE DEEP AREA WITH WETLAND ISLANDS

ARCADIS

FIGURE 4

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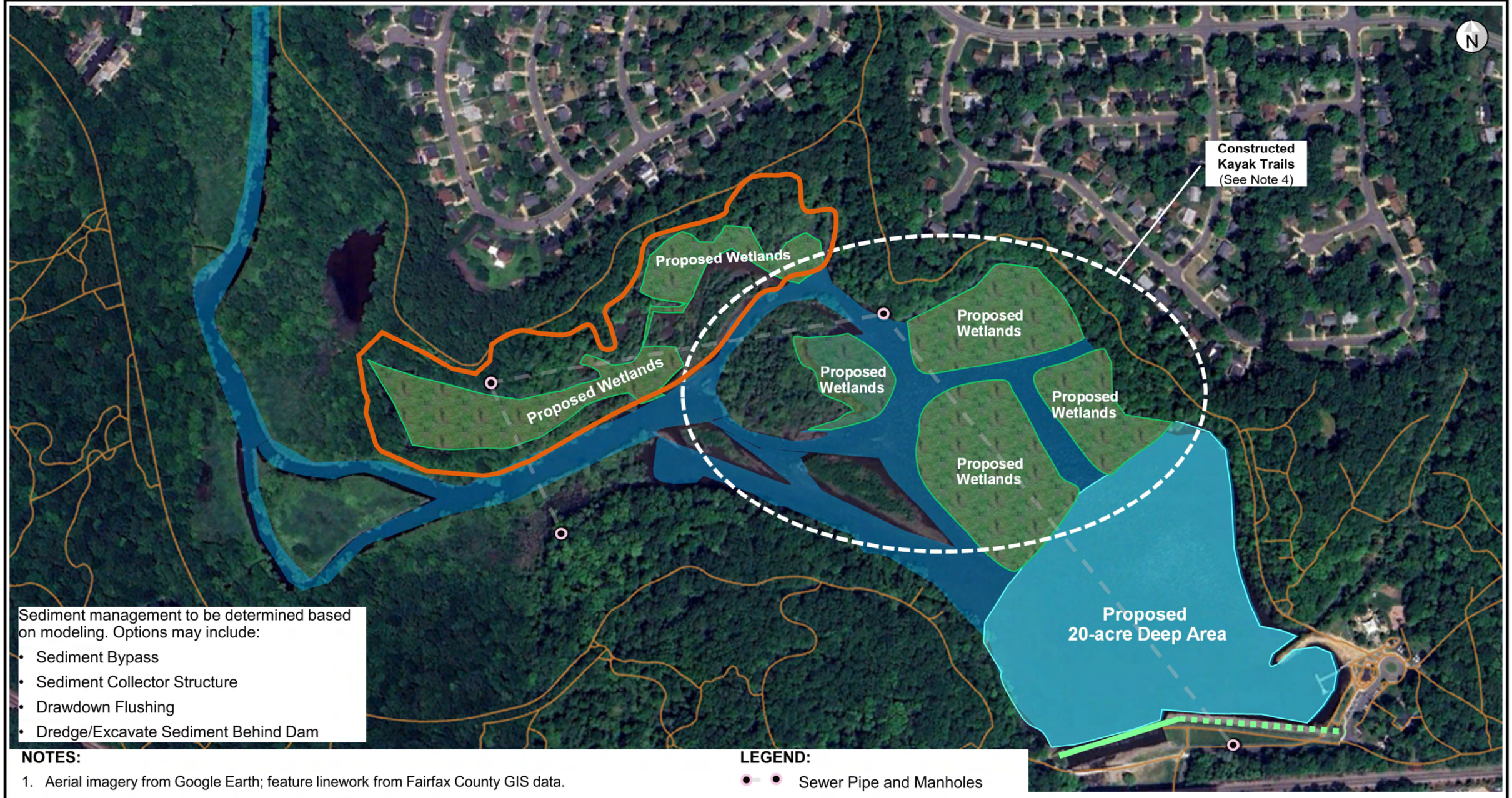

Sediment management to be determined based on modeling. Options may include:

- Sediment Bypass
- Sediment Collector Structure
- Drawdown Flushing
- Dredge/Excavate Sediment Behind Dam

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the proposed deep area to create a 4- to 8-feet deep open water feature. Footprint shown is the portion of lake that is the most likely to fill in last naturally.
4. Kayak trails to be created between/around shoreline wetland areas and island wetlands. Simplified version shown and assumed to be refined during design in consultation with landscape architect. Some dredge material placement may occur within trail areas if sufficient depth is maintained.
5. Creation of a grassland area will allow for more dredge sediment to remain on site. This option would require clearing of the existing trees to allow placement of sediment to upland elevations.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Alternate Grassland/Upland Creation (See Note 5)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

20-ACRE DEEP AREA WITH SHORELINE AND ISLAND WETLANDS

ARCADIS

FIGURE 5

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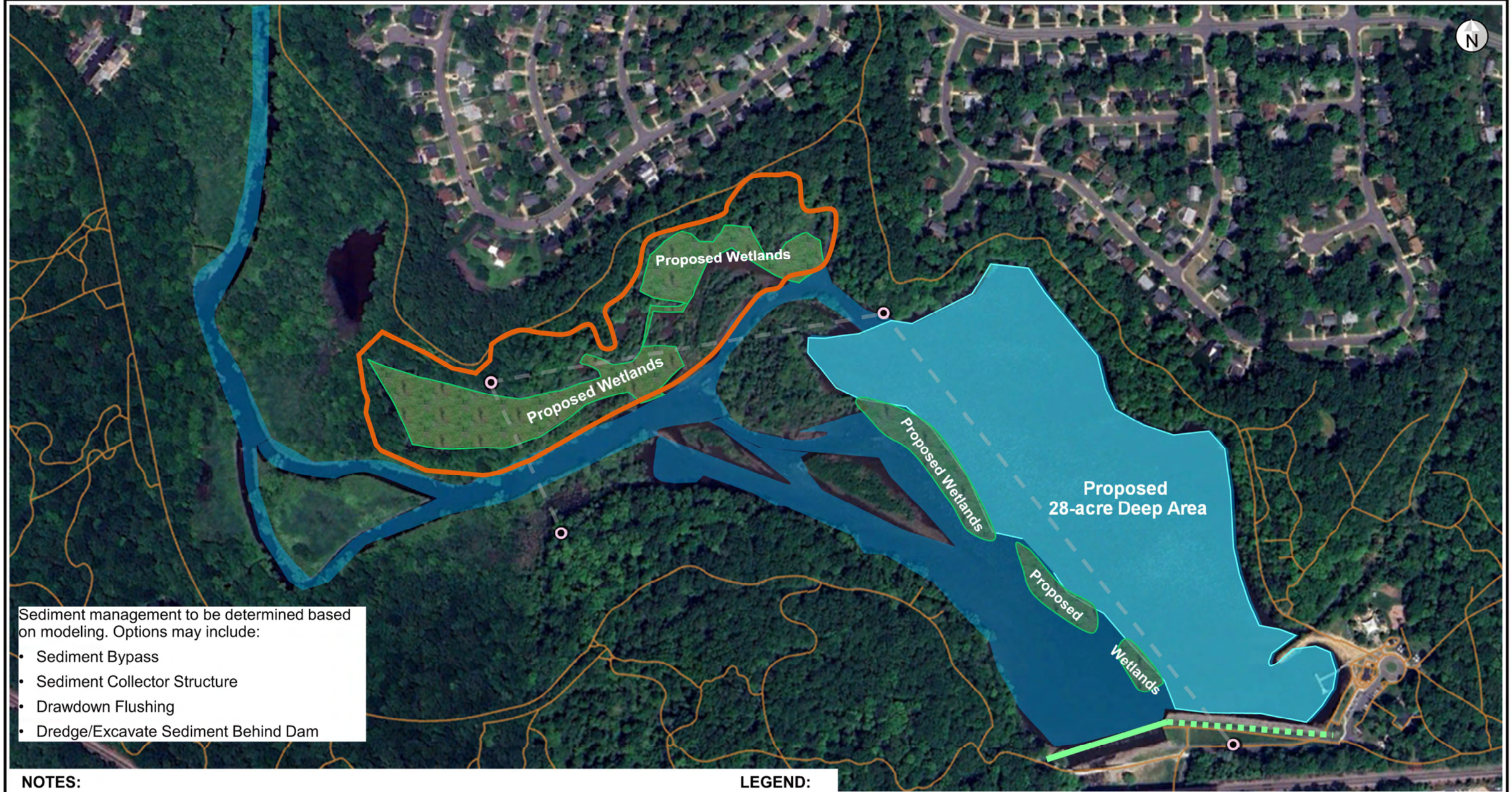

Sediment management to be determined based on modeling. Options may include:

- Sediment Bypass
- Sediment Collector Structure
- Drawdown Flushing
- Dredge/Excavate Sediment Behind Dam

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the proposed lake area to create a 4- to 8-feet deep open water feature. Footprint shown is the maximum open water area under a pseudo-offline lake option.
4. Creation of a grassland area will allow for more dredge sediment to remain onsite. This option would require clearing of the exiting trees to allow placement of sediment to upland elevations.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Alternate Grassland/Upland Creation (See Note 5)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

LARGE PSEUDO-OFFLINE LAKE

ARCADIS

FIGURE
6

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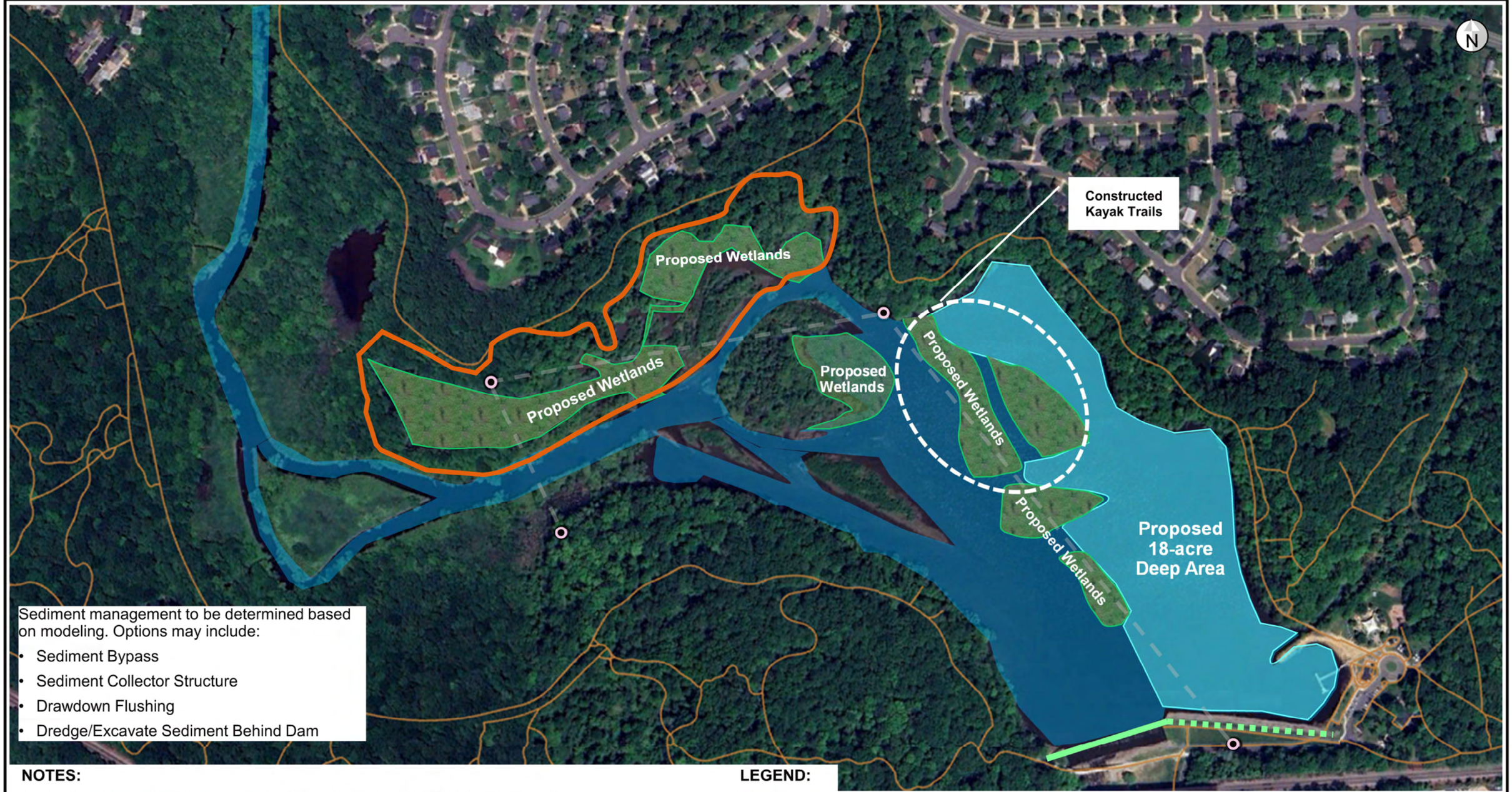

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the proposed lake area to create a 4- to 8-feet deep open water feature. Footprint shown takes advantage of existing deep areas of the lake to minimize dredging.
4. Kayak trails to be created between/around wetland areas. Simplified version shown and assumed to be refined during design in consultation with landscape architect. Some dredge material placement may occur within trail areas is sufficient depth is maintained.
5. Creation of a grassland area will allow for more dredge sediment to remain onsite. This option would require clearing of the existing trees to allow placement of sediment to upland elevations.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Alternate Grassland/Upland Creation (see Note 4)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

SMALL PSEUDO-OFFLINE LAKE (MINIMIZE DREDGING)

ARCADIS

FIGURE 7

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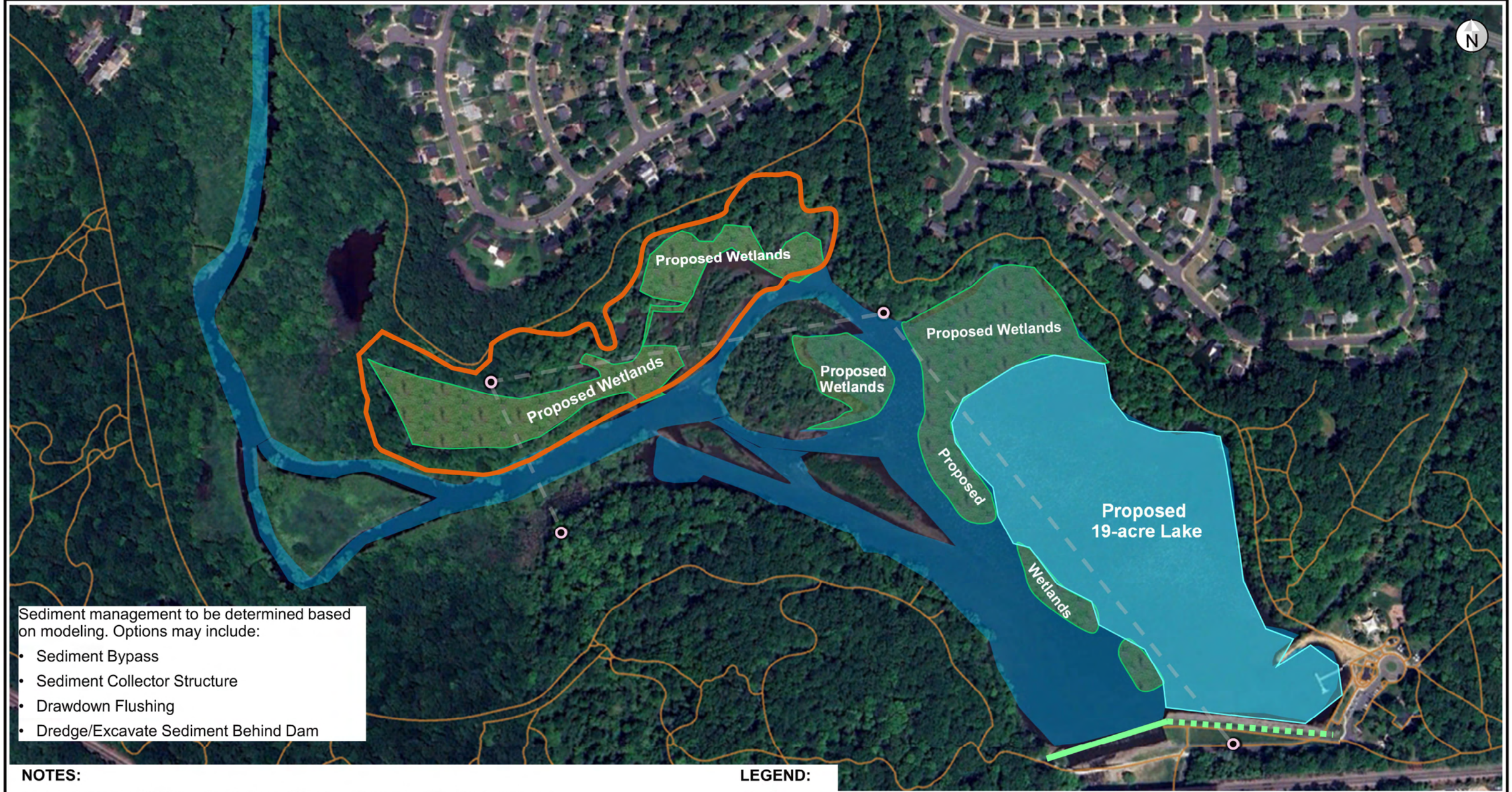

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.
3. Dredging would be performed in the proposed lake area to create a 4- to 8-feet deep open water feature. Footprint shown attempts to maximize the available dredge placement volumes.
4. Creation of a grassland area will allow for more dredge sediment to remain onsite. This option would require clearing of the existing trees to allow placement of sediment to upland elevations.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Wetland Creation
- Proposed Deep (Dredged) Area
- Alternate Grassland/Upland Creation (see Note 4)
- Dam (Concrete Spillway / Earthen Embankment)

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

SMALL PSEUDO-OFFLINE LAKE (MAXIMIZING PLACEMENT)

ARCADIS

FIGURE 8

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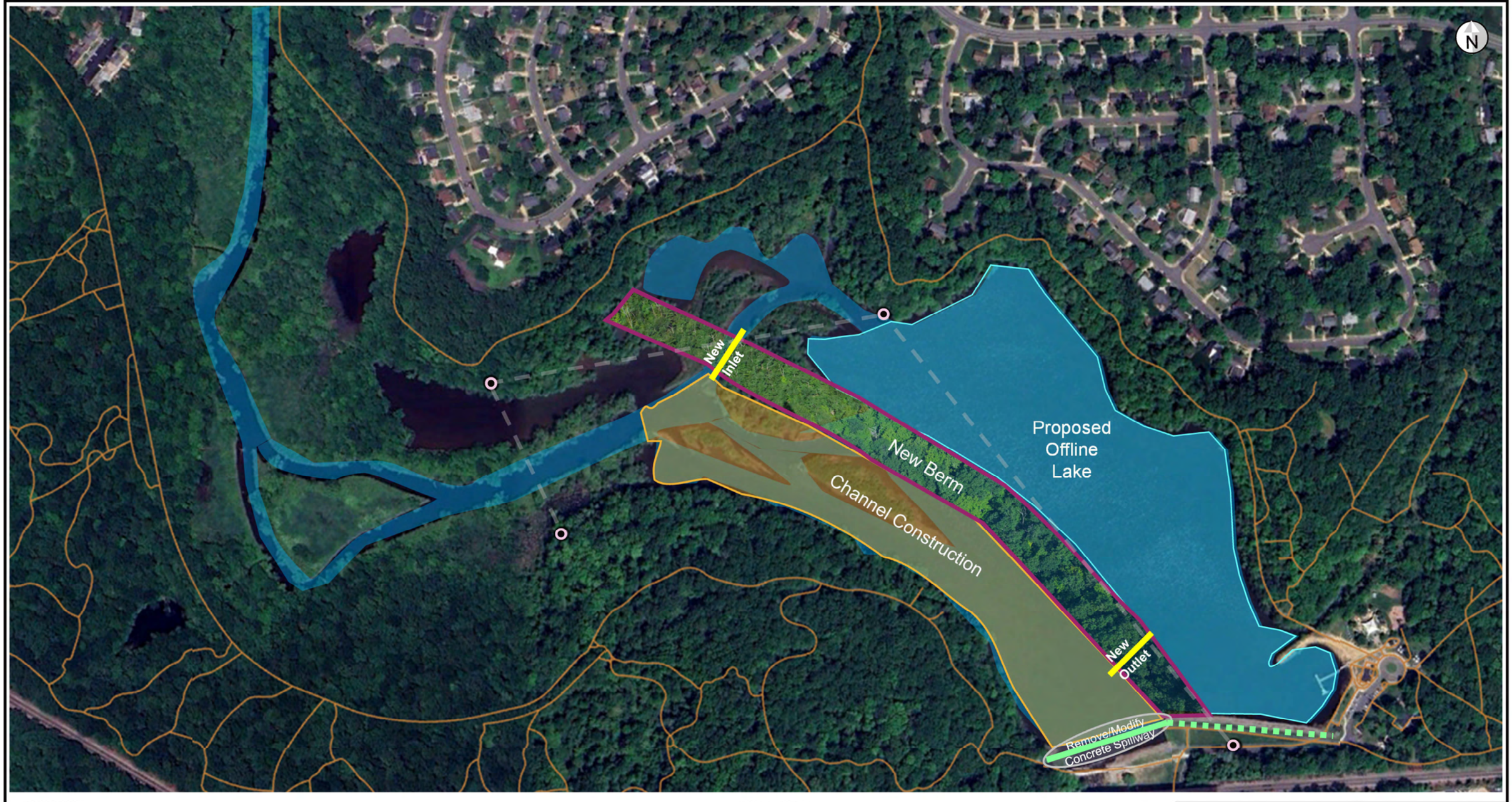

NOTES:

1. Aerial imagery from Google Earth; sewer and trail linework from Fairfax County GIS data.
2. Locations are approximate.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Lake Footprint
- Dam (Concrete Spillway / Earthen Embankment

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

OFFLINE LAKE

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FIGURE
9

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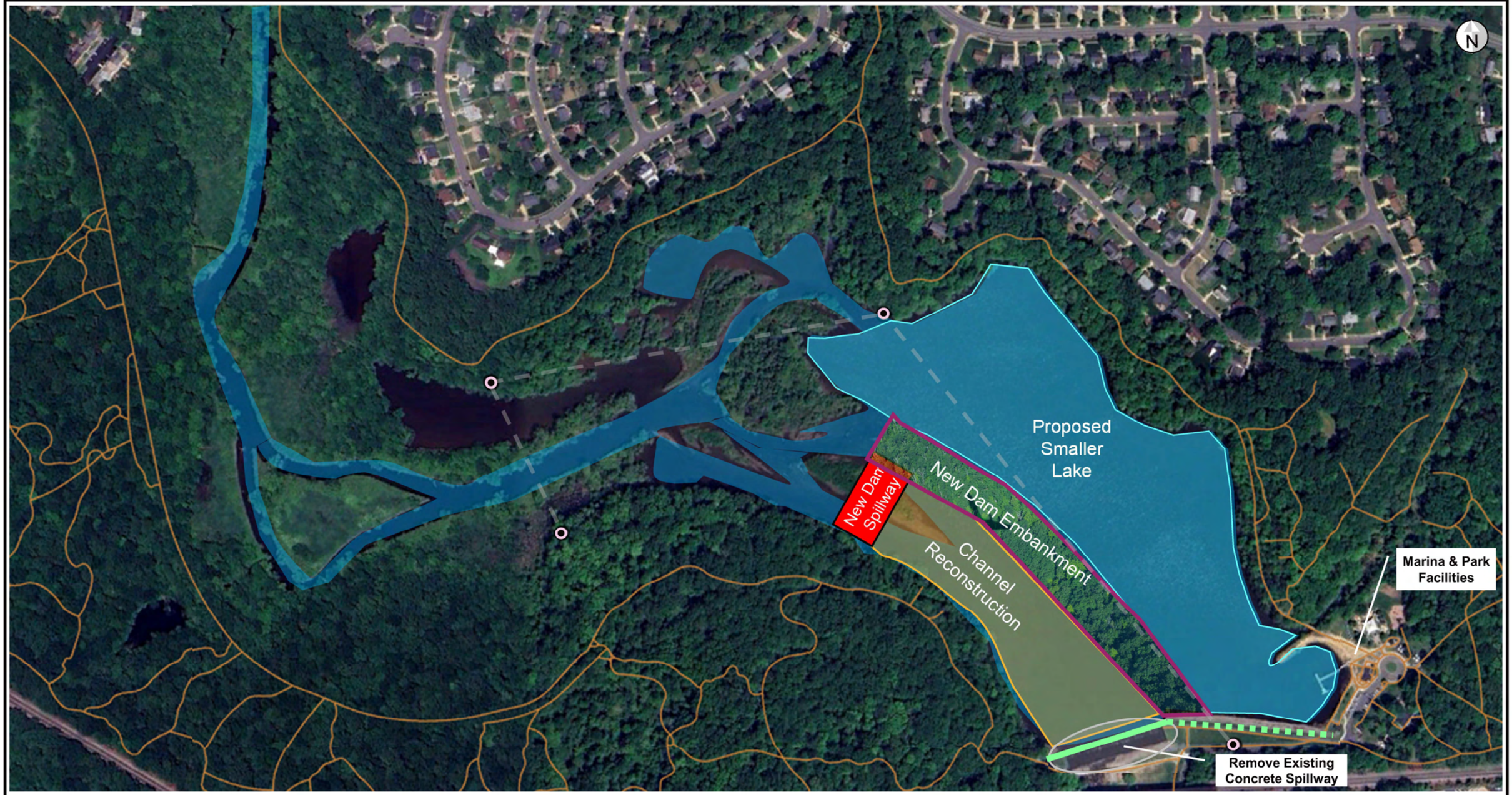

NOTES:

1. Aerial imagery from Google Earth; feature linework from Fairfax County GIS data.
2. Locations are approximate.

LEGEND:

- Sewer Pipe and Manholes
- Trails
- Accotink Creek / Lake Accotink
- Proposed Lake Footprint
- Dam (Concrete Spillway / Earthen Embankment

LAKE ACCOTINK PRESERVATION FEASIBILITY STUDY
DESKTOP ASSESSMENT TECHNICAL MEMO

DAM RELOCATION

ARCADIS

FIGURE
10

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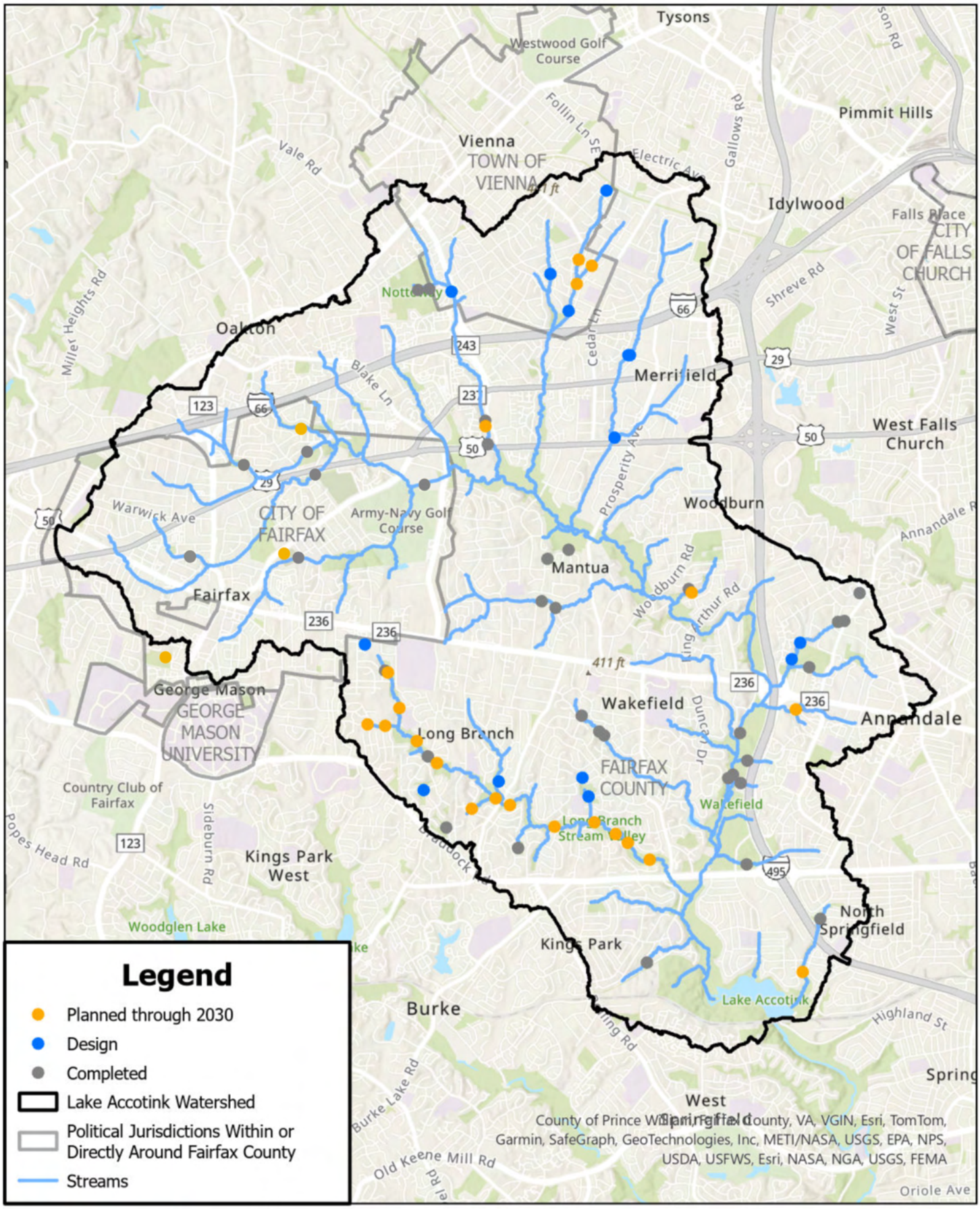
Attachment A

Stream and Outfall Restoration Locations in Lake Accotink Watershed

Provided by Fairfax County Department of Public Works and Environmental Services

Lake Accotink Upstream Projects - Stream and Outfall Restorations



Legend

- Planned through 2030
- Design
- Completed
- Lake Accotink Watershed
- Political Jurisdictions Within or Directly Around Fairfax County
- Streams

N

0 0.5 1 2 3 4 Miles

Attachment B

Desktop Mapping of Existing Wetlands and Vegetative Cover

Prepared by WSSI

2025 Desktop Vegetation Community Mapping
WSSI #22647.04
Lake Accotink Preservation Study

NORTH

0 1,000

Feet

Original Scale: 1:12,000

2018 Field Verified Vegetation Community Mapping Limits

2025 Desktop Vegetation Community Mapping Limits

Community Type*

- Maintained and cleared areas
- Northeastern Successional Shrubland
- Basic Oak-Hickory Forests
- Basic Mesic Forests
- Mesic Mixed Hardwood Forests
- Coastal Plain / Piedmont Bottomland Forest
- Piedmont / Mountain Floodplain Forests
- Piedmont / Mountain Small-Stream Alluvial Forests

**Community types based on the United States National Vegetation Classification as utilized by the Virginia Department of Conservation and Recreation Natural Heritage Program*

Imagery Source: Spring 2025 Fairfax County Digital Data

Wetland Studies and Solutions, Inc.
a DAVEY company

Appendix H

Lake Accotink

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Desktop Wetland and Stream Reconnaissance
WSSI #22647.04
Lake Accotink Dredging

NORTH

0 1,000
Feet

Original Scale: 1:12,000

2018 Wetland Delineation Limits

2025 Desktop Wetland and Stream Reconnaissance Limits

2018 Delineation
- PEM
- PFO
- R3
- R4
- R6

Cowardin Classification
- PFO - Palustrine Forested Wetland
- PEM - Palustrine Emergent Wetland
- POW - Palustrine Open Water
- R3 - Riverine Perennial Stream
- R4 - Riverine Intermittent Stream
- R6 - Riverine Ephemeral Stream

2025 Desktop Wetland and Stream Reconnaissance
- PEM
- PFO
- POW
- PSS
- R3
- R4
- R6

Desktop Data Source: WSSI. 2004 – 2020.
Source: WSSI data, 2021 Color Infrared Aerial
Imagery: Spring 2025 - Fairfax County Digital Data

Wetland Studies and Solutions, Inc.
a DAVEY company

Appendix G

Holborn Ave
Duncan Dr
Briar Creek Dr
Toll House Rd
Georgian Way
Wakefield Chapel Rd
State Rte 710
Private Ln
Queen Elizabeth Blvd
Chanticleer Ave
King Richard Dr
Glen Park Rd
W Braddock Rd
Canterbury Dr
Danbury Forest Dr
Thames St
Weymouth Dr
Braddock Rd - State Rte 620
Carrick Ln
Drayton Ln
Nutting Dr
Landgrave Ln
Ellet Rd
Moultrie Rd
Hatteras Ln
Inverchapel Rd
Sedgwick Ln
Ravenel Ln
Flag Run Dr
Port Royal Rd
Ravensworth Rd
Co Rd 649
Jervis St
Elgar St
Dunston St
Juliet St
Axton St
I-495 Express Lane
I-495 Capital Beltway
Kalorama Rd
Killebrew Dr
Bristow Dr
Queensberry Ave
Southampton Dr
Eastbourne Dr
Clydesdale Rd
Lake Accotink
Royal Ridge Dr
Long Pine Dr
Heming Ave
Southern Dr
Forrester Blvd
Sherborn Ln
State Rte 638
Rolling Rd
Queenston St
Oakford Dr
Roxbury Ave
Carrleigh Pkwy
Langbrook Rd
Greeley Blvd
Highland St

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Attachment C

Preliminary List of Potential Threatened and Endangered Species in Project Area

Because of the complexity of the contents of this attachment, it cannot be made to comply with Section 508 of the Americans with Disabilities Act. For assistance with this attachment, please contact Amanda Kohler at 315.671.9333.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To: 08/12/2025 18:20:55 UTC
Project Code: 2025-0006094
Project Name: Lake Accotink Preservation Study

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2025-0006094
Project Name: Lake Accotink Preservation Study
Project Type: Terrestrial Sources of Water Creation/Improvement
Project Description: This is an approximately 693.8 acre site that is located immediately west of the intersection of U.S. Route 495 and Braddock Road (i.e., U.S. Route 620) in Fairfax County, Virginia. This site is being examined for potential future development of a lake and wetlands.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.7923404,-77.21120076365395,14z

Counties: Fairfax County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Abigail DeCesare
Address: 5300 Wellington Branch Drive, Suite 100
City: Gainesville
State: VA
Zip: 20155
Email adecesare@wetlands.com
Phone: 7036795735

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers