



# Lake Accotink Dredging

Item Type: Recommendation

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# Lake Accotink Dredging Project

- Park visited by over 250,000 people per year
- Accessible to residents from numerous communities
- Community engagement process in 2016 – 2019 to discuss management options results in decision to implement a permanent dredging program
- Dredge program project goals:
  - Establish 8 ft average lake depth
  - Implement maintenance dredging program
- Dredge program intended to maintain lake as aesthetic and recreational amenity



## Additional Resources:

- [Lake Accotink Dredging \(AC89-0009\) | Public Works and Environmental Services \(fairfaxcounty.gov\)](https://www.fairfaxcounty.gov/public-works/programs-services/lake-accotink-dredging)
- [The Story of Lake Accotink Park: https://storymaps.arcgis.com/stories/b85512da45b8420085167291998d19af](https://storymaps.arcgis.com/stories/b85512da45b8420085167291998d19af)

## Project Timeline

2016 - 2019	Community engagement process on management of Lake Accotink resulted in a decision to implement a permanent dredging program
October 29, 2019	BOS approves Lake Accotink Dredging Financing Plan
June 25, 2020	BOS authorizes staff to apply for \$30.5 million for Lake Accotink Dredging from the Virginia Clean Water Revolving Loan Fund (VCWRLF)
September 2020	County staff hire Arcadis and begin dredge program project
September 2020 – February 2023	Project team gathers data, develops alternatives analysis, develops cost estimates, holds stakeholder and public meetings, and re-evaluates alternative smaller off-line lake option (once cost of dredging understood)
July 27, 2021	BOS authorizes staff to apply for an additional \$30 million for Lake Accotink Dredging from VCWRLF based on revised estimates
February 9, 2023	DPWES staff launches story map with updated estimates of cost and environmental and social impacts and recommends not to pursue dredging
February 15 & 16, 2023	Public Meetings
February 16 to April 1, 2023	Public Survey and Comment Period

# Dredging Program Overview

## Step 1: Dewatering Site Preparations\*

\* Incl Pipeline Construction & Property Acquisition



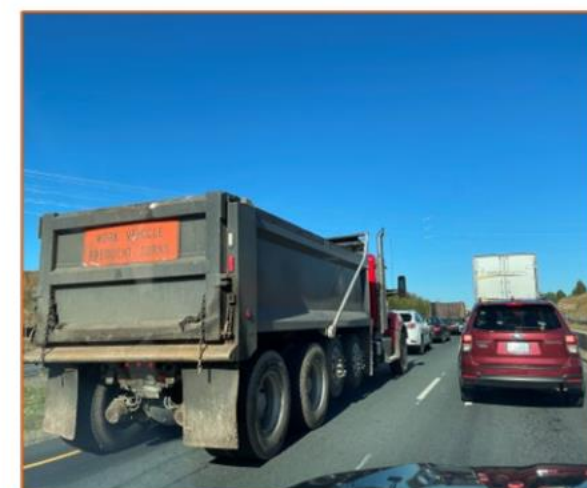
## Step 2: Dredging



## Step 3: Sediment Dewatering



## Step 4: Off-Site Transportation and Disposal



Base Dredging Program – one-time 500,000 cubic yard (cy) removal event (assumed 3-year duration)

Maintenance Dredging Program – 150,000 cy removal every 5 years on average

## Evaluating Options

- Dry and wet dredging options were evaluated.
- County staff & consultants evaluated nineteen potential spoils processing locations.
- Seven pipeline locations were evaluated for viable spoils processing areas.
- Nine spoils disposal options were assessed including site disposal on county lands and beneficial reuse.

## Alternative Components

### Dewatering Locations

#### North of Braddock Road

1. Howrey Field
2. Wakefield Park Maintenance Facility
3. Wakefield Ball Fields
4. Dominion Energy (Dominion) Right-of-Way (ROW)

#### Lake Accotink Park

5. Lake Accotink Upper Settling Basin
6. Lake Accotink Island – Current Footprint
7. Lake Accotink Island – Expanded Footprint

#### Concrete Plant

8. Concrete Plant

Detailed Evaluation in Exhibit 4 of  
Alternatives Analysis Report

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### Pipeline Alignments

#### North of Braddock Road

1. Cross-County Trail
2. Queensberry Avenue
3. Flag Run / Port Royal Road
4. Flag Run / Interstate 495

#### Lake Accotink Park

5. Lake Accotink Trail

#### Concrete Plant

6. Amtrak ROW
7. Residential Route

Detailed Evaluation in Exhibit 5 of  
Alternatives Analysis Report

26 July 2021 23

### Potential Processing Location

#### North of Braddock Road

1. Howrey Field
2. Dominion Right of Way
3. Wakefield Park – Maintenance Building Area
4. Wakefield Park – Ball Field
5. Wakefield Park – Mountain Bike Area

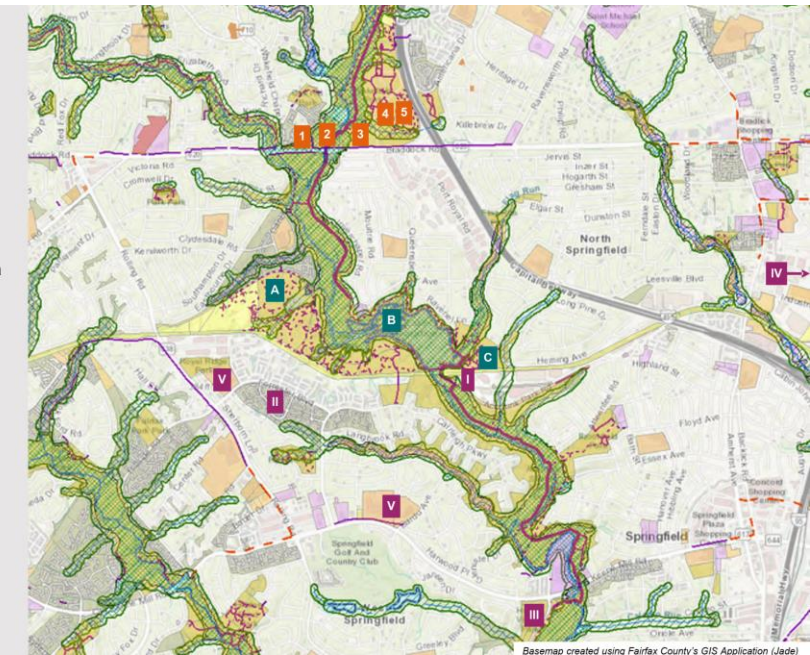
#### Lake Accotink Park

- A. Lake Accotink Park – Rolling Road Access
- B. Lake Accotink Island
- C. Lake Accotink Park – Heming Ave Access

#### Other Locations

- I. Industrial Park Parking Lot
- II. Springfield Golf & Country Club
- III. Hunter Village Park
- IV. Concrete Plant
- V. School Property

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# Dredge Program Cost

Category	Opinion of Probable Cost <sup>(a)</sup>
<b>Base Dredge Event<sup>(b)</sup></b>	
Dewatering Site & Permanent Pipeline Construction <sup>(c)</sup>	\$13.0M (\$9.1M to \$19.5M)
Dredging	\$23.0M (\$16.1M to \$34.6M)
Material Processing	\$24.9M (\$17.4M to \$37.3M)
Transportation & Disposal <sup>(d)</sup>	\$34.4M (\$24.1M to \$51.6M)
<b>Total for Base Dredge</b>	<b>\$95.3M</b> <b>(\$66.7M to \$143.0M)</b>
<b>Maintenance Dredging Events<sup>(e)</sup></b>	
Event 1 (Year 5 Post-Base Dredge)	\$46.5M
Event 2 (Year 10 Post-Base Dredge)	\$59.4M
Event 3 (Year 15 Post-Base Dredge)	\$96.8M
Event 4 (Year 20 Post-Base Dredge)	\$123.5M

Notes:

- (a) The opinions of probable cost presented herein are based on Arcadis' experience, vendor estimates, and Fairfax County staff input. These opinions of probable cost have been prepared for the purpose of comparing potential alternatives and are based on available information from site investigations and the anticipated dredge program scope. These opinions of probable cost are AACE Class 4 level and expected to be within -30% to +50% of the actual project cost. Changes in cost elements are likely to occur as a result of new information and data collected during an engineering design phase, selection of dewatering site location, and determination of final disposal location. Utilization of this cost information beyond the stated purpose is not recommended.
- (b) The base dredge event is assumed to include removal of 500,000 cubic yards of sediment from Lake Accotink and be completed over a three-year period from 2024 to 2026. Costs shown were developed in 2022 dollars and escalated to the mid-point of construction (2025) using a 5% annual inflation factor. Costs are shown to the nearest \$0.1M.
- (c) Cost assumes dewatering site constructed at the Wakefield Park Maintenance Facility location.
- (d) Cost shown assumes transportation and disposal to Luck Ecosystems.
- (e) Maintenance dredging events are expected to continue in perpetuity but only the first four maintenance dredging cycles are shown. The costs presented herein assume \$30.0M (in 2022 dollars) per maintenance dredging event and are escalated to the applicable event year using a 5% annual inflation factor and completion of the first maintenance dredge in 2031.

## Drivers for Lake Dredging Cost Increases

- 43% more sediment needs to be removed
  - Much higher processing costs than original concept
  - Much higher trucking and disposal costs than original concept
  - Market adjustments
  - Frequent maintenance dredging
  - Inflation over years of maintenance dredging
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- Project cost estimates consistent with all Fairfax County projects for consideration of long-term maintenance costs and application of 5% consumer price index for future actions.

# Drivers for Dredging Cost Increases

## Summary of Differences Between Project Conception and Today

Considerations in 2018	Feasible Yes/No	Requirements 2023
Use Wakefield Power Lines to process dredge sediment	No (restrictions due to powerline infrastructure and operations/in the floodplain)	Wakefield Park Maintenance Area: requires significant forest clearing Or Southern Drive: heavy truck traffic through residential communities
Dredge and process 350,000 cubic yards of sediment	No	Dredge and process 500,000 cubic yards of sediment
Dispose of sediment on-site or trucking with low cost disposal	No	Significant cost for trucking and disposal at permitted quarry
Was base dredging duration estimated	No	Minimum 3 years
Total base dredge estimated cost \$30 million	No	Total base dredge estimated cost \$95 million
Was maintenance dredging frequency estimated	No	Every five years
Was maintenance dredging duration estimated	No	One year
Estimated maintenance dredging quantity 150,000 cubic yards of sediment	Yes	Same
Was maintenance trucking volume estimated	No	Estimated 15,000 truck trips for transport and disposal of sediment
Was maintenance dredging cost included	No	Estimated maintenance dredging cost \$300 million for first 20 years after base dredging



# Re-evaluation of Other Lake Management Options

- Escalating project costs drove staff to evaluate additional management options.
- Smaller off-line lake would maintain open water.

## Evaluating Smaller Off-line Lake

- Increased sediment removal.
- 82,500 truck trips to haul out unsuitable sediment and 40,000 truck trips to import suitable fill.
- \$198 million construction cost.
- Significant risk to county for long-term public safety and maintenance due to large dam/levee.
- Staff recommend not pursuing smaller off-line lake option.



Illustration of potential smaller off-line lake

# Implications to Fairfax County of Not Dredging

## Community Impacts:

- Loss of some or all of open-water aesthetic and recreational opportunities.
- Continued management of Lake Accotink Park for social, recreational and aesthetic benefits.
- Avoidance of trucking, noise, and disruption of recreation resources.

## Environmental Impacts:

- Most of the sediment not captured by the lake will be caught within the Accotink Creek floodplain.
- Restoration within the Accotink Creek channels is required whether or not lake is dredged and will reduce in-stream sediment and assist in recovery of stream organisms.
- Avoidance of loss of forest cover and wetlands.
- Opportunity to manage lake footprint for higher quality habitat and climate resiliency

## Regulatory:

- Fairfax County must reduce sediment impacts to Accotink within the stream channels above and below Lake Accotink as required under the Accotink Creek TMDL.
- Staff anticipate minimal increase in additional assigned load reduction below the lake.

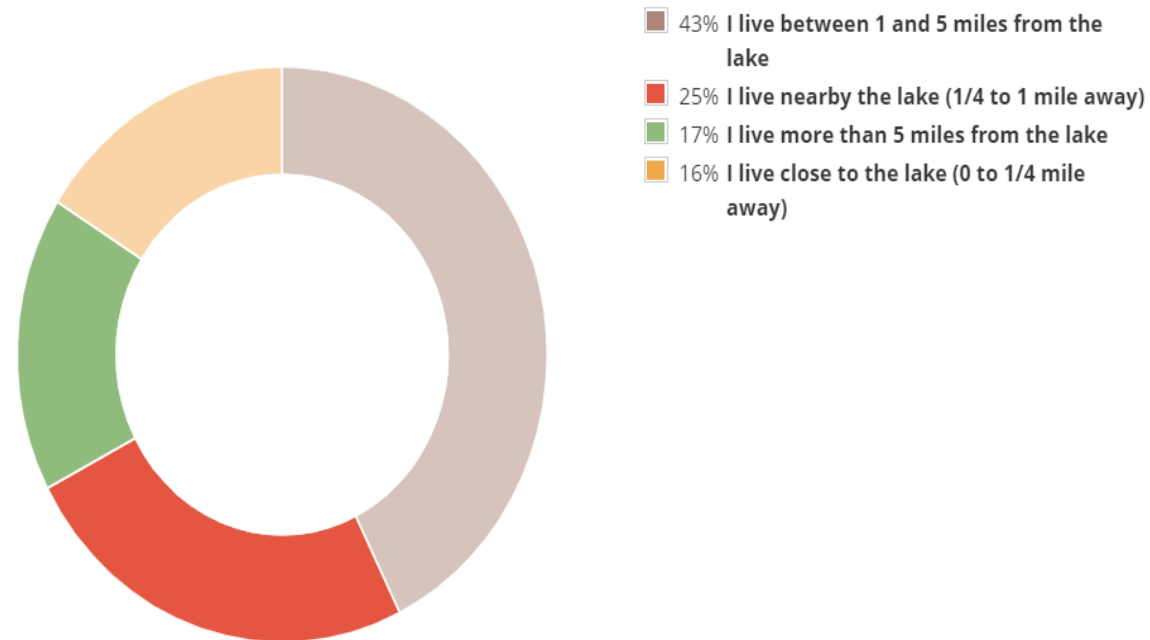
## Project Costs:

- Avoidance of estimated \$16 million annual cost of dredging over 25 years (before debt service)
- Stream restoration in Accotink Creek is necessary to meet county permit requirements even if lake is dredged.

# Summary of the Public Survey and Comments

- Public Input Survey, open Feb 16 – Apr 1, 2023
- 1,078 responses
- All responses read and evaluated
- Standard social science methods were used to analyze survey data
- Respondents had opportunity to write their comments rather than answer yes/no questions
- Many respondents had multiple comments that were captured
- Survey results including all comments available for residents at: [Lake Accotink Dredging \(AC89-0009\) | Public Works and Environmental Services \(fairfaxcounty.gov\)](https://www.fairfaxcounty.gov/public-works-and-environmental-services/lake-accotink-dredging)

\* Which best describes ~~you~~ where you live in relation to Lake Accotink?



1,080 respondents

# Summary of the Public Survey and Comments

Of 1,078 responses

- 84% lived within 5 miles of lake (all but 5 responses in Virginia)
- 89% were somewhat or very familiar with study
- 51% visit weekly or monthly; 32% occasionally; 9% daily; 8% rarely
- Hiking/walking/running most reported use (89%); boating was 8<sup>th</sup> most reported use (26%)

From open-ended comments:

- Nearly equal number support dredging versus not dredging (26% Dredge vs 27% Don't Dredge)
- 20% concerned about dredging costs
- 16% needed more information
- 16% supported return to park visioning
- 14% supported transition to wetland; 5% concerned about wetlands

## Staff Recommendations

County staff recommend that Lake Accotink not be dredged due to significant community and environmental impacts and excessive cost.

County staff recommend that we refocus our attention on completing a new master plan for Lake Accotink Park and reinvesting in that community vision.

Reimagining Lake Accotink Park could include further analysis of managing the lake footprint to support community needs, wildlife habitat and Fairfax County and Park Authority policies.