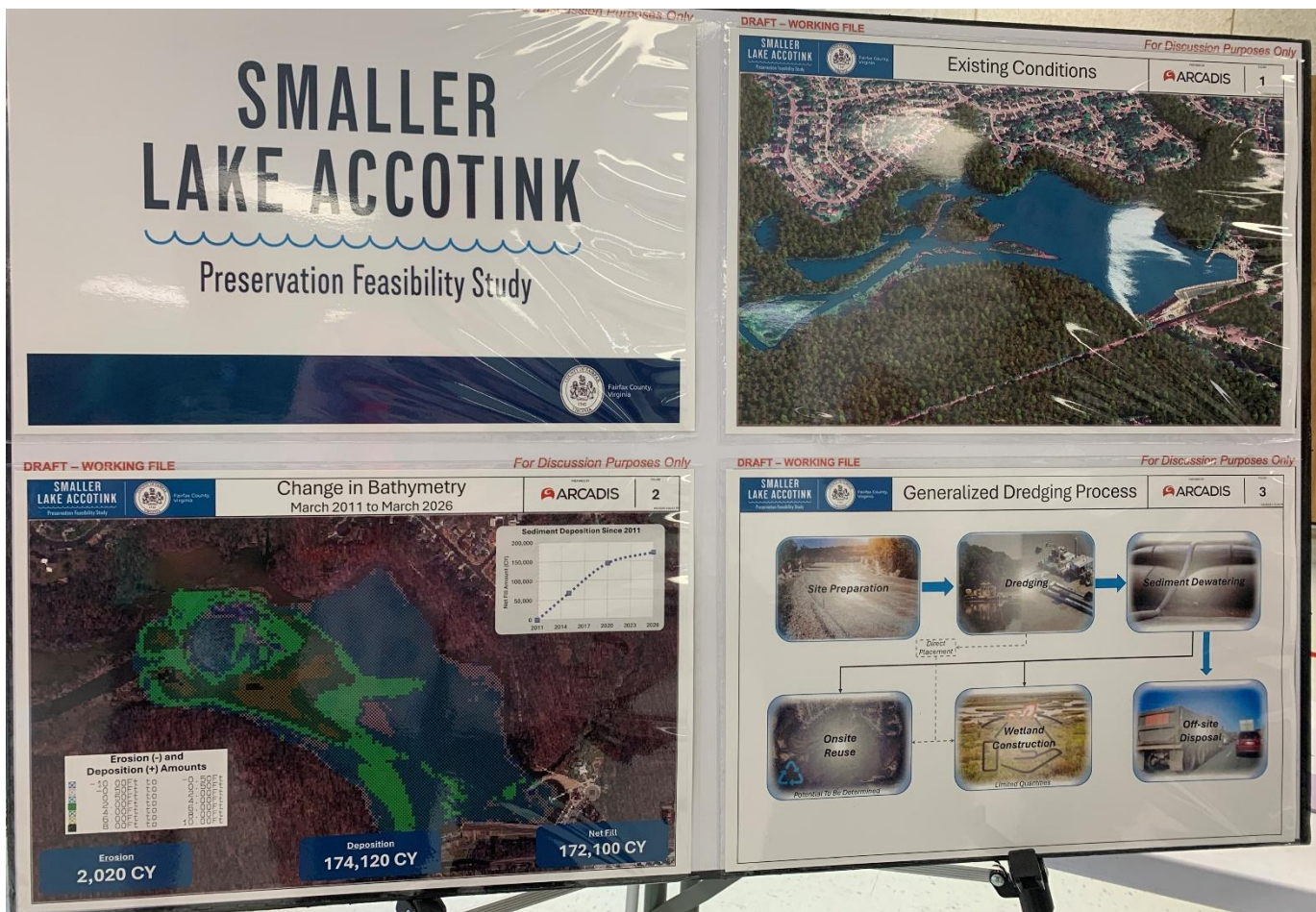


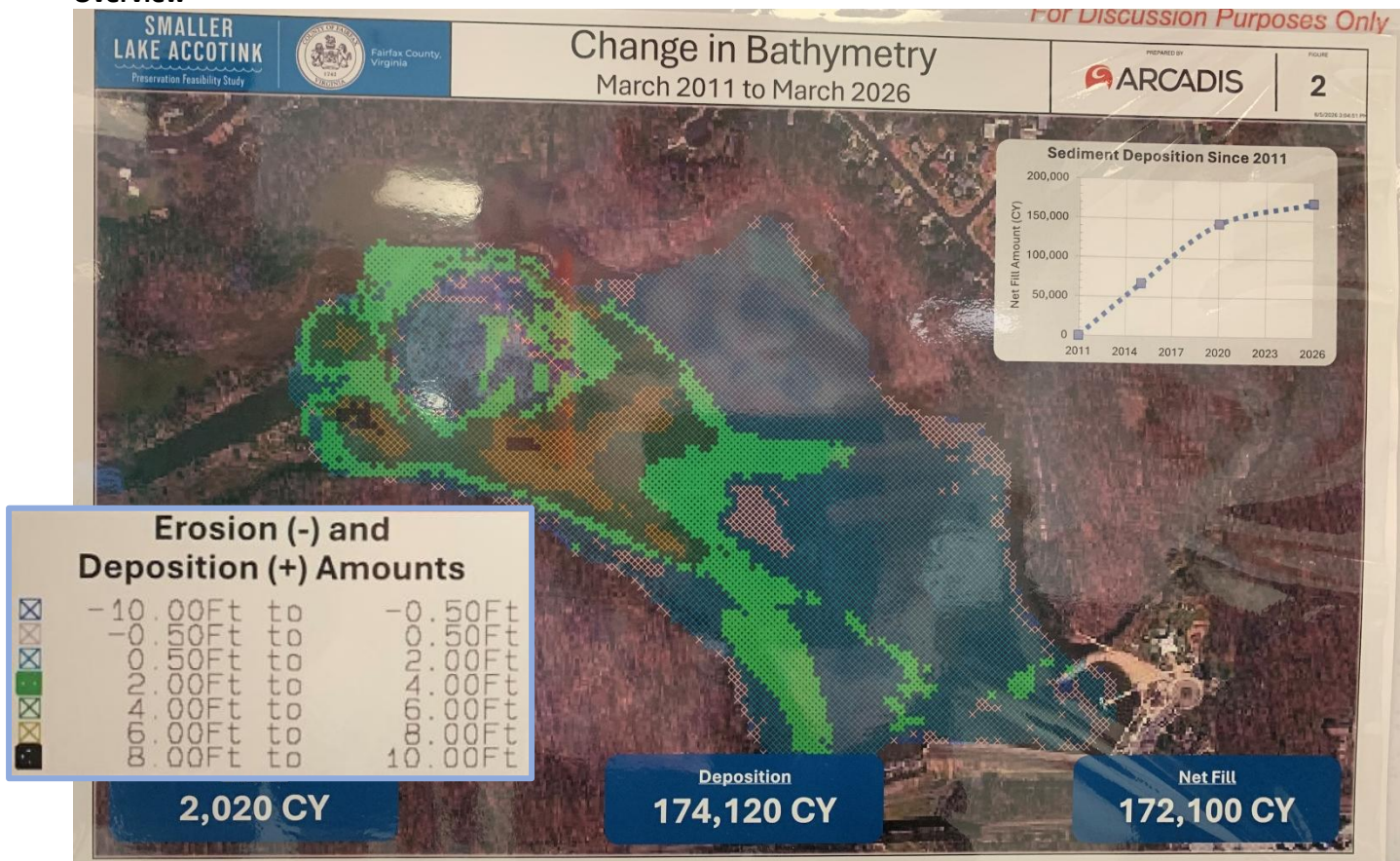
Open House - Lake Accotink Smaller Lake Feasibility Study 20260606

Photo documentation of display graphics

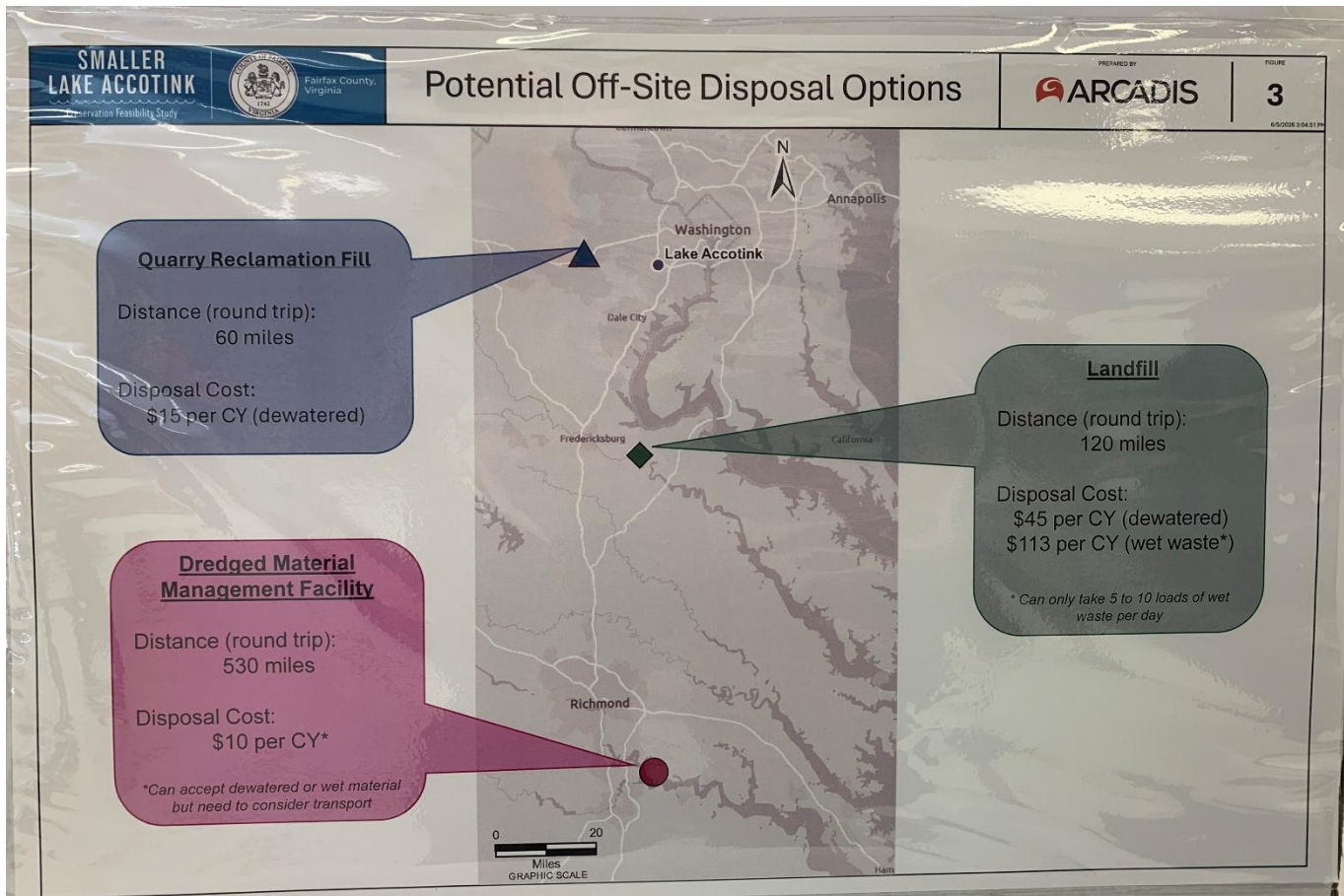




Overview



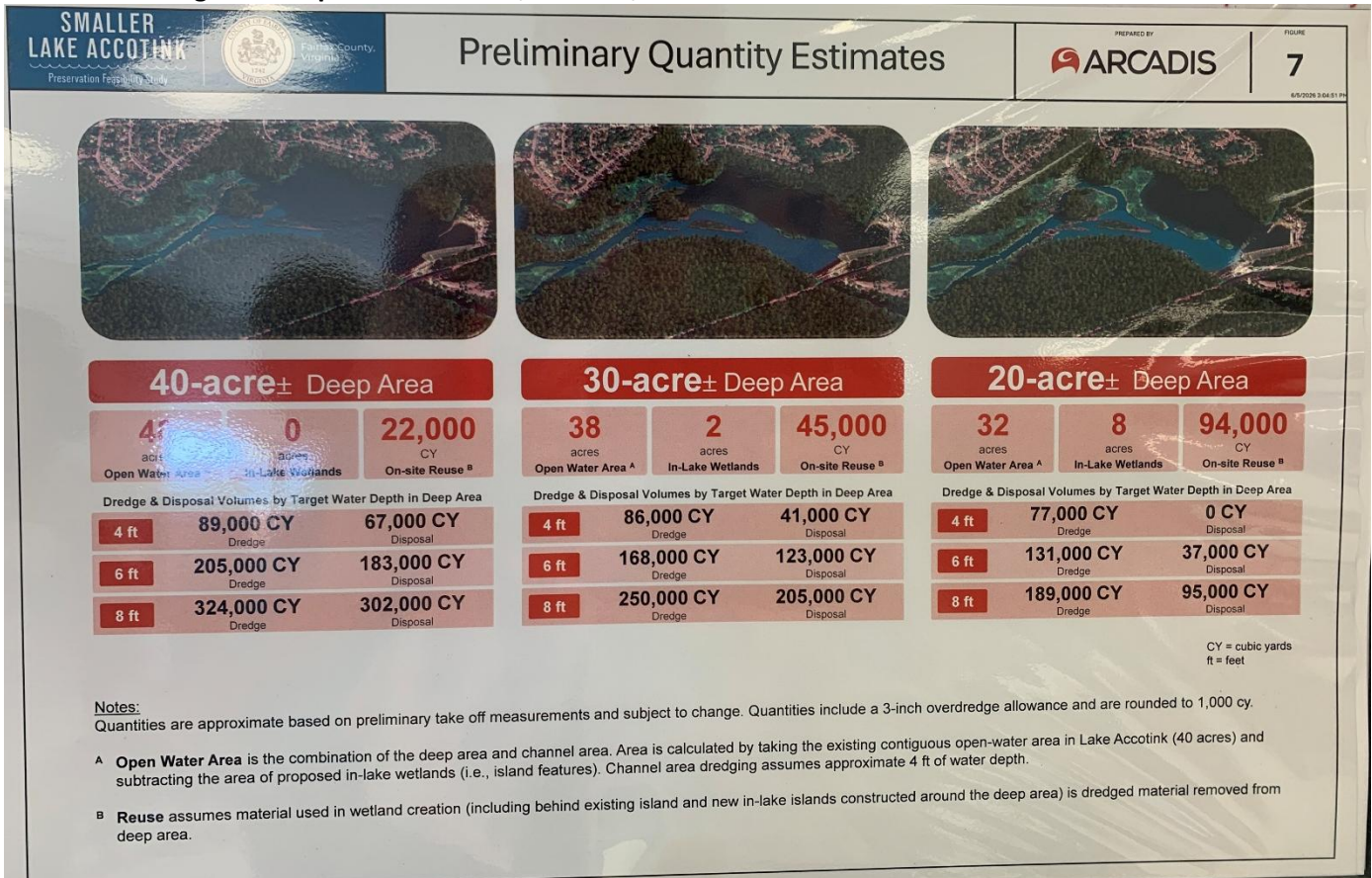
Loss of lake depth since 2011



Three viable final spoils disposal options



Three lake configuration options – 40 acres, 30 acres, 20 acres



Quantities of sediment to be dredged



**SAVE OUR LAKE!!
DON'T LET IT TURN
INTO A POND!!**

Call or write to the Board of
Supervisors (BOS) and the
Department of Public Works and
Environmental Services (DPWES). Tell
them you don't want a 20-acre
POND.....you want a 40-ACRE LAKE!!

2017

Historical Imagery Viewer - Fairfax County, VA



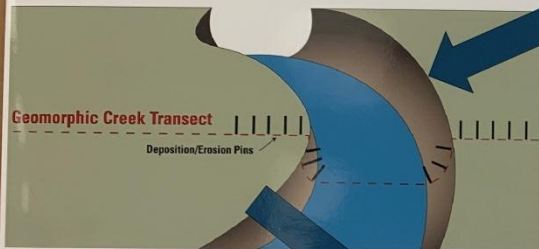
2024



[Save Lake Accotink](#) aerals
of open water loss

THE
COST
OF
DELAY

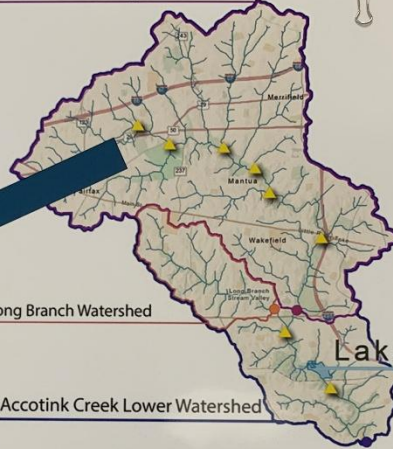
Lake Accotink Sediment Study: USGS Measuring Changes



Accotink Creek Upper Watershed

Long Branch Watershed

Accotink Creek Lower Watershed

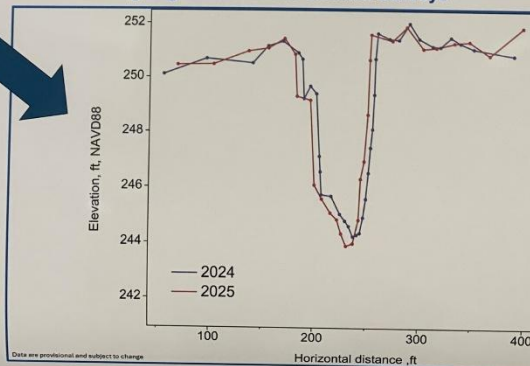


Explanation

- Accotink Creek at Keene Mill - Station ID 01654670
- Accotink Creek Near Annandale - Station ID 01654000
- Long Branch Near Annandale - Station ID 01654500
- ▲ Accotink Creek Transects



Ongoing Annual Cross-Section Surveys



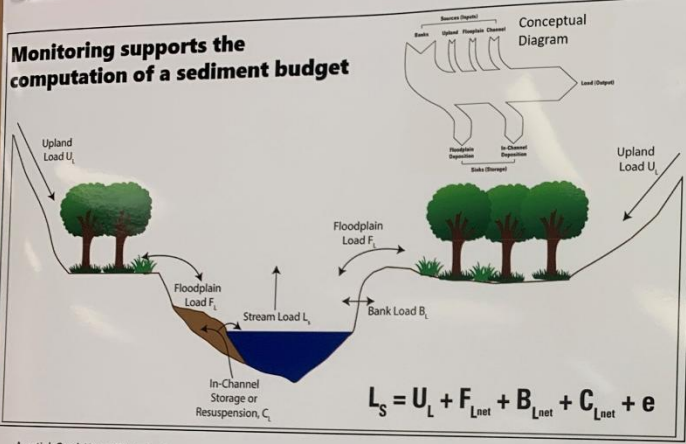
USGS
science for a changing world



USGS measures stream channel erosion

Lake Accotink Sediment Study: Sediment Loads

Monitoring supports the computation of a sediment budget



**Accotink Creek at Old Keene Mill Rd
USGS Station ID – 01654670 (installed Aug 2024)**



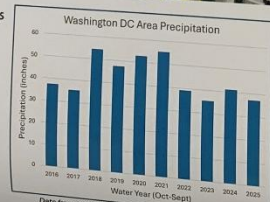
Link to Old Keene Mill Road Station Data



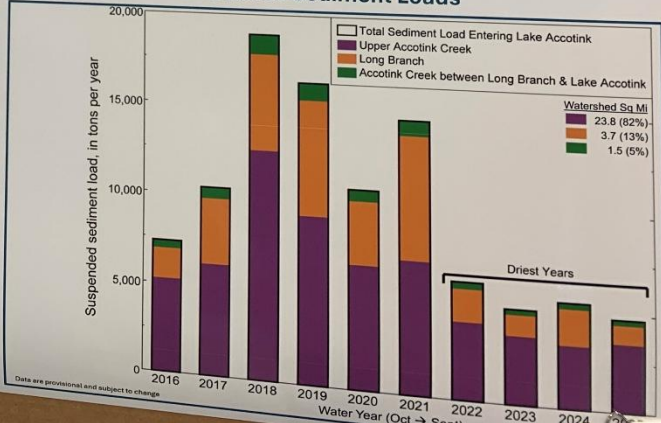
Explanation

- Accotink Creek at Keene Mill - Station ID 01654670
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- Long Branch Near Annandale - Station ID 01654500
- ▲ Accotink Creek Transects

USGS scientist at Long Branch gage.

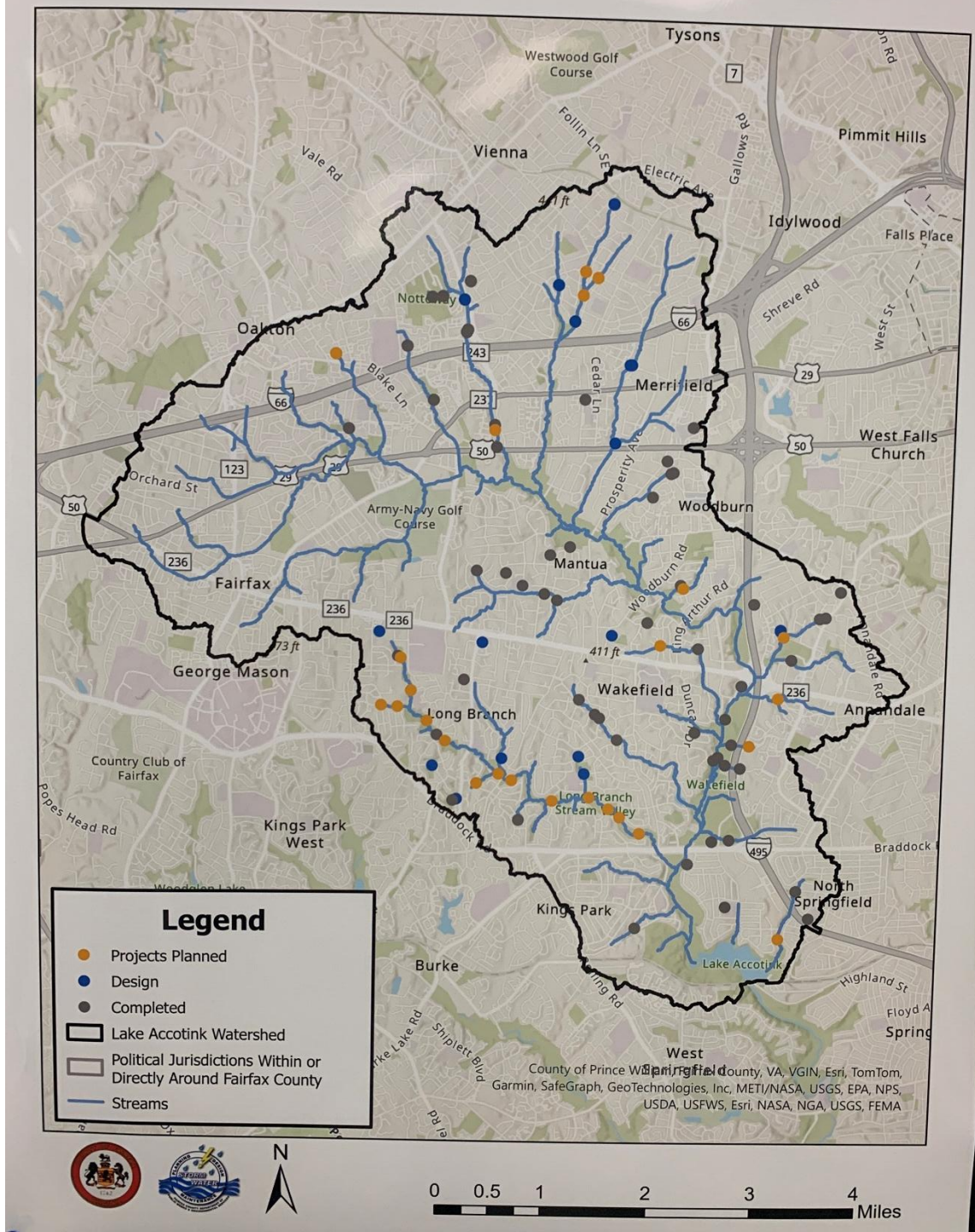


Calculated Sediment Loads



USGS computation of sediment entering Lake Accotink

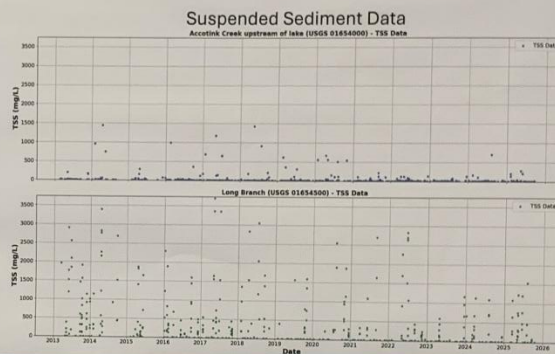
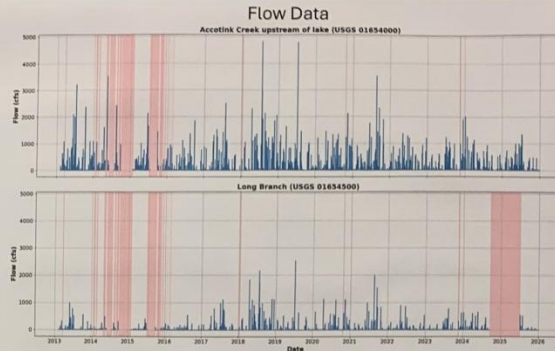
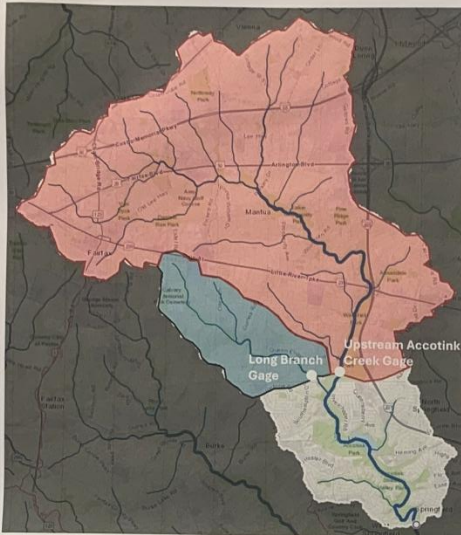
Lake Accotink Upstream Projects



Fairfax County erosion control projects upstream from Lake Accotink

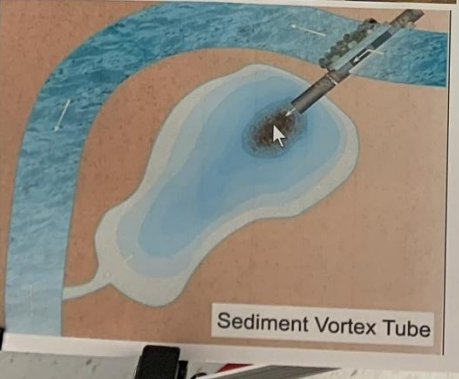
Smaller Lake Accotink Preservation Feasibility Study: Upstream Watershed Sediment Reduction Strategies

ACCOTINK CREEK AND LONG BRANCH FLOW AND SEDIMENT DATA FROM USGS GAGES



EXAMPLE OF BEDLOAD SEDIMENT REDUCTION THROUGH A "SEDIMENT VORTEX TUBE"

Example of a sediment vortex tub in the Blanco River, CO. Bedload sediment, which is heavy, falls into the slotted vortex tub and is carried into a cleanout bay where it is deposited. Image courtesy of Wildland Hydrology. <https://wildlandhydrology.com/restoration/Blanco%20River/93/>

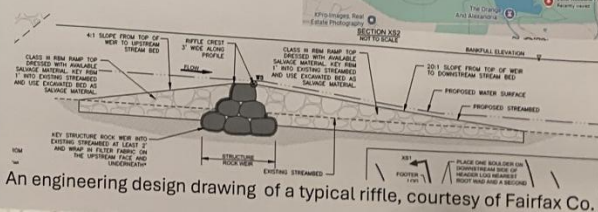
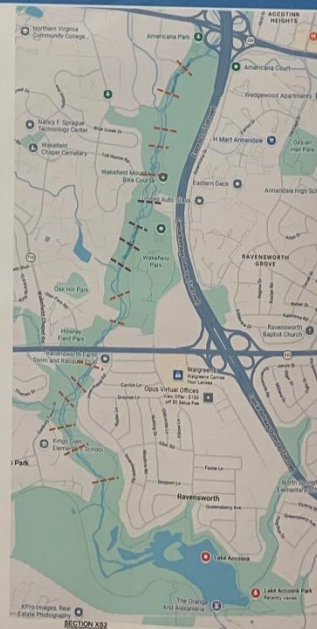


EXAMPLE OF SUSPENDED SEDIMENT REDUCTION THROUGH "RIFFLES"

"Riffles" are rock and gravel structures that are formed across a stream channel, creating areas of shallow water (over the riffle) and deeper water (downstream of the riffle).

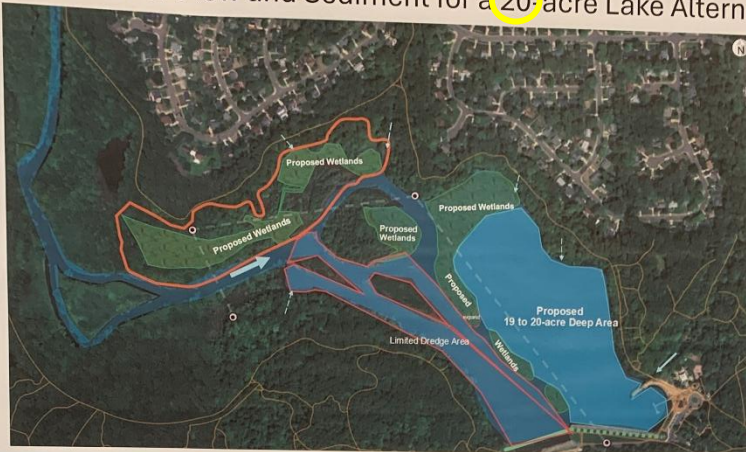
As water and sediment moves over the riffle, sediment settles out and deposits in the deeper water sections of the riffle. Riffles also slow the velocity of water, which helps prevent erosion of the stream banks.

The county installed man-made riffles in Wakefield Park in 2021 to reduce the sediment load of Accotink Creek (see purple lines on map). Additional riffles could be constructed along Accotink Creek to further reduce the sediment load (see orange lines).

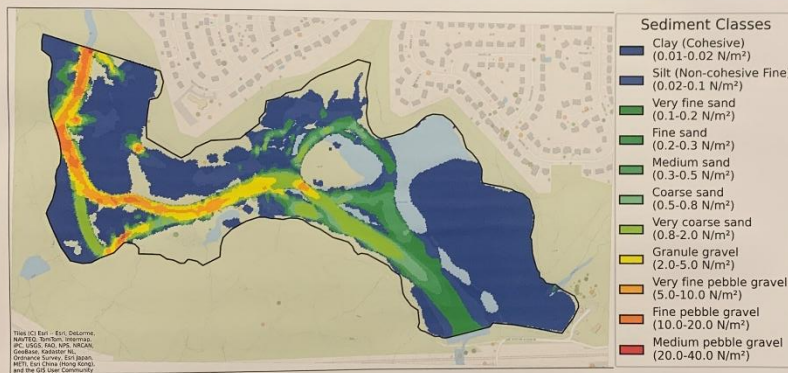


Glimpse of some sediment reduction strategies in use

Smaller Lake Accotink Preservation Feasibility Study Distribution of Flow and Sediment for a 20-acre Lake Alternative



LOCATIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (20-ACRES) UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS

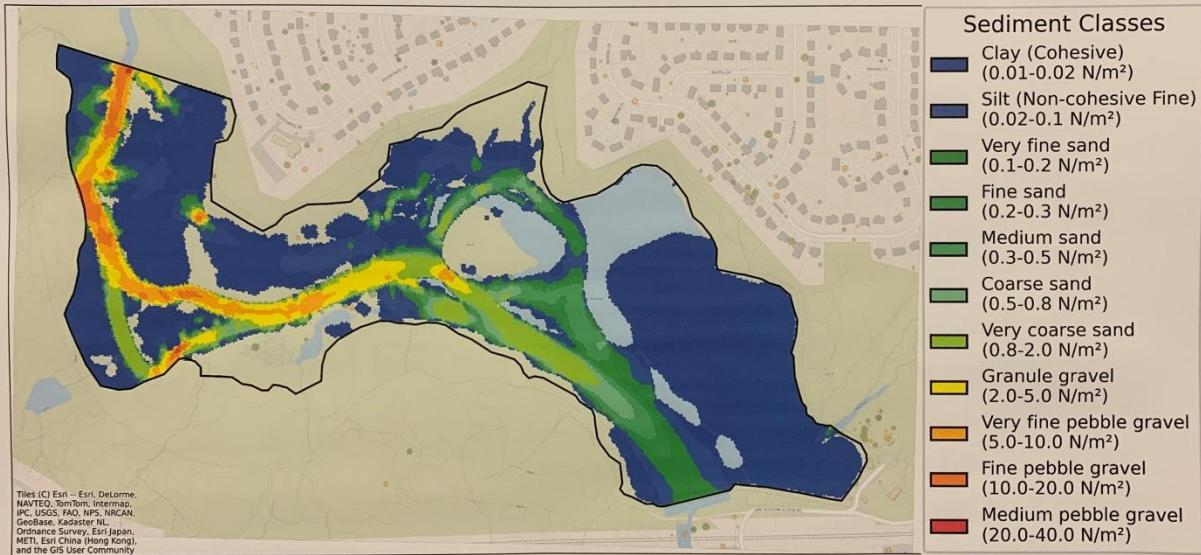


ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR A 20-ACRE LAKE ALTERNATIVE (YEAR = 2020)

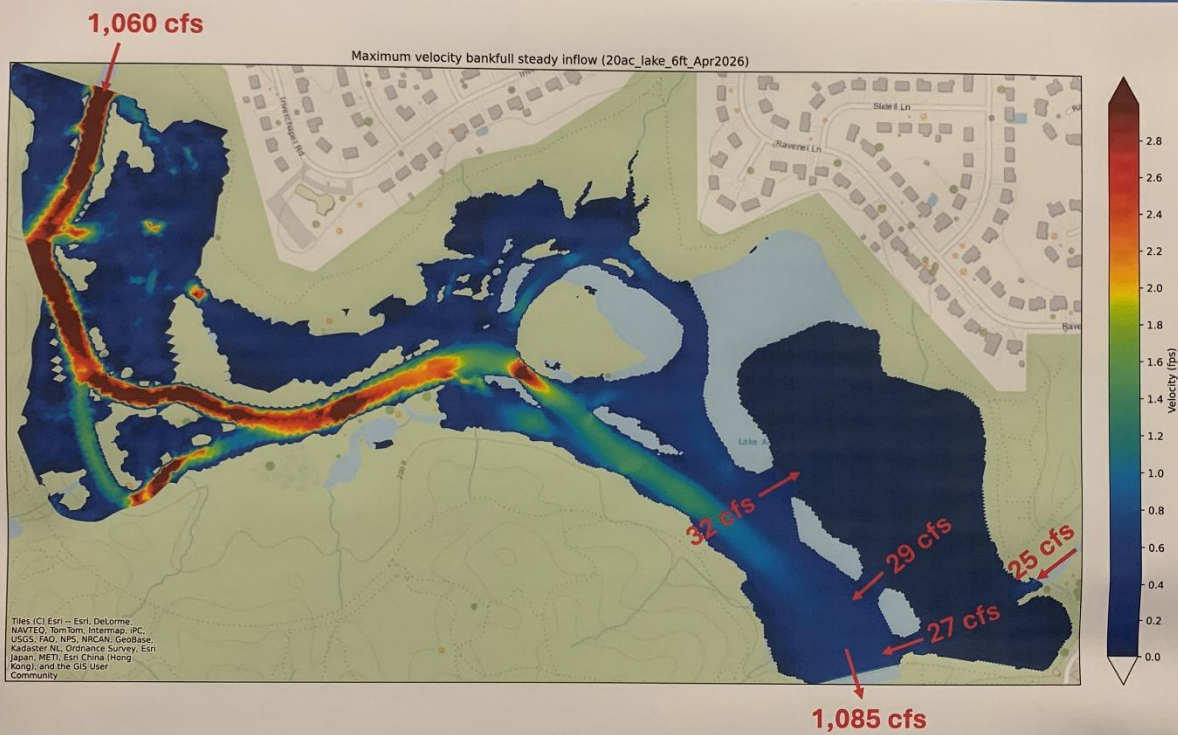


20-acre configuration – how sediment moves into and through the lake

LOCATIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (20-ACRES) UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS

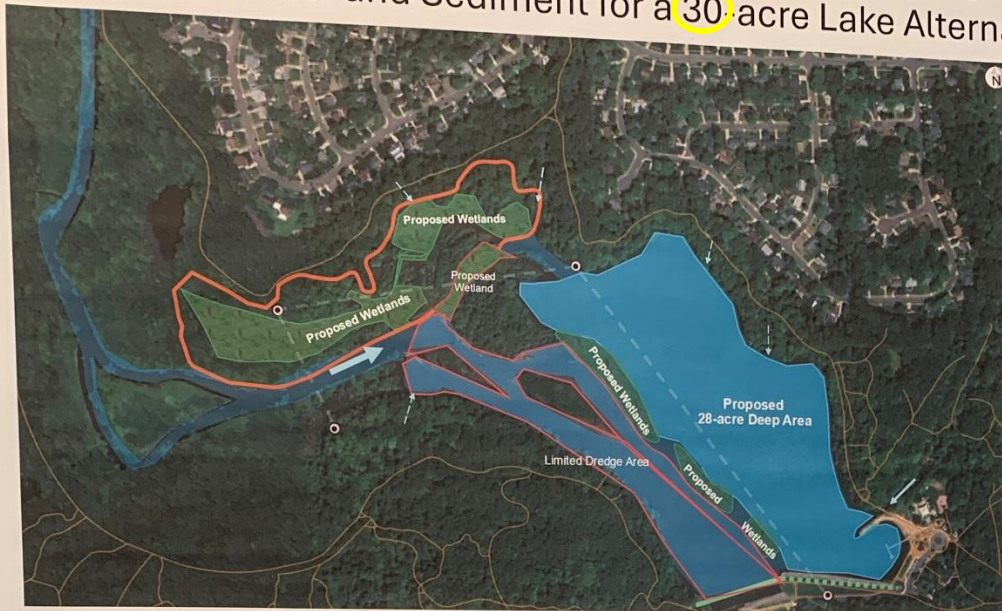


ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR A 20-ACRE LAKE ALTERNATIVE (YEAR = 2020)

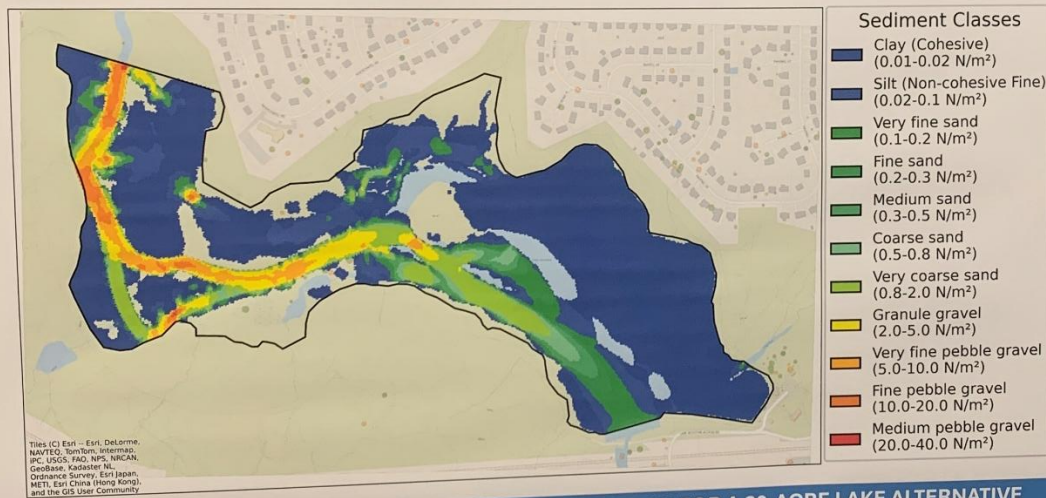


20-acre configuration – how sediment moves into and through the lake

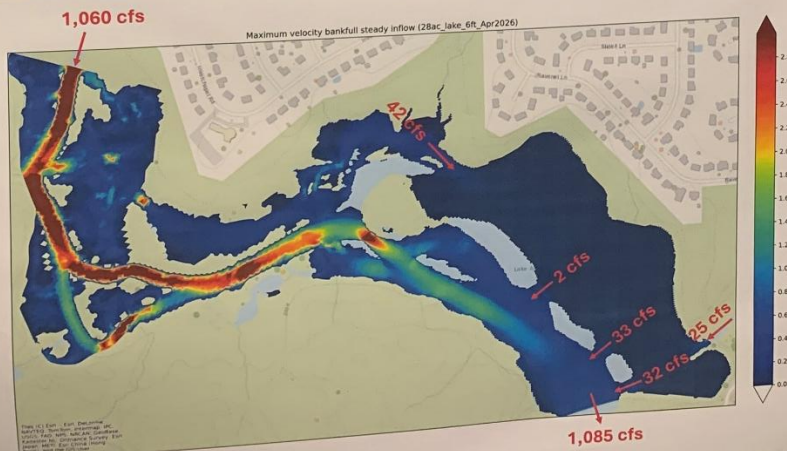
Smaller Lake Accotink Preservation Feasibility Study Distribution of Flow and Sediment for a 30-acre Lake Alternative



CONDITIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (30-ACRES)
UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS

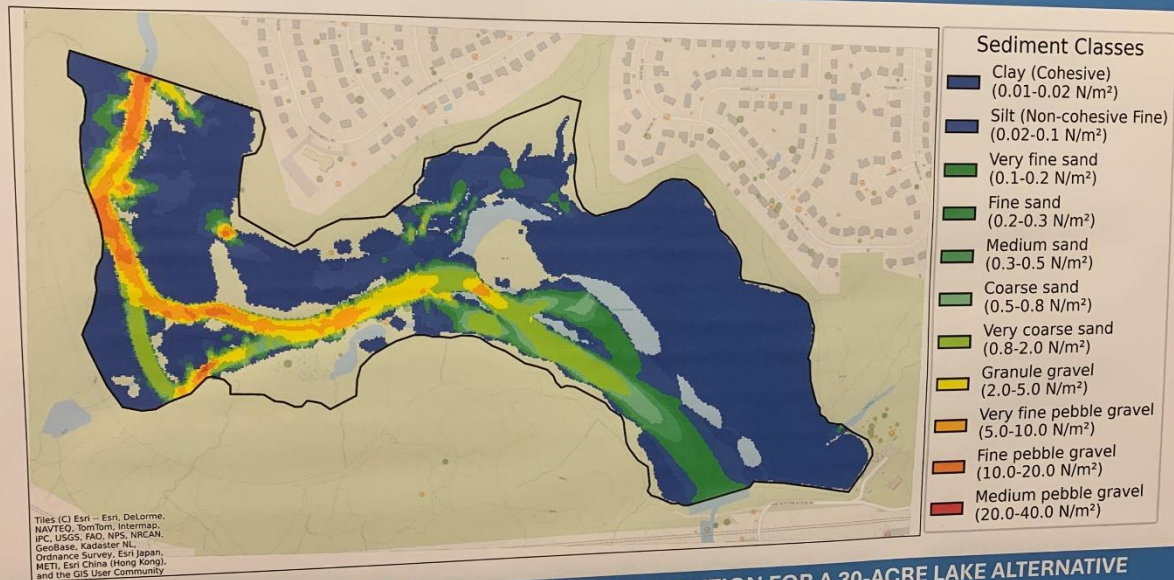


ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR A 30-ACRE LAKE ALTERNATIVE
(YEAR = 2020)



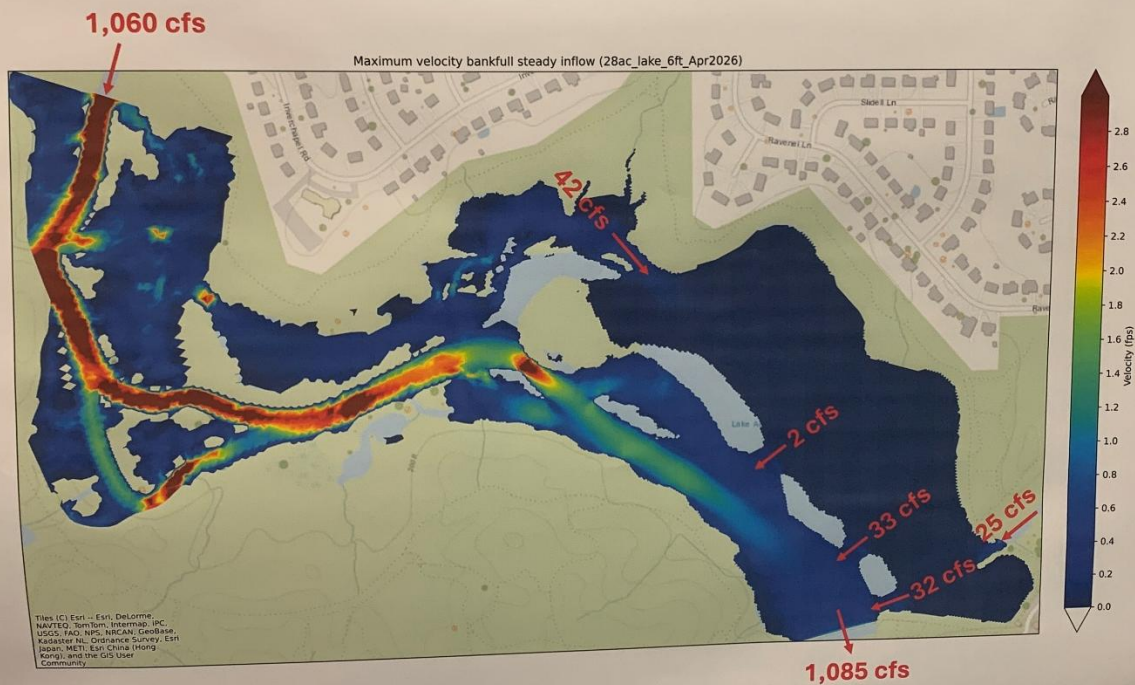
30-acre configuration – how sediment moves into and through the lake

LOCATIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (30-ACRES) UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS



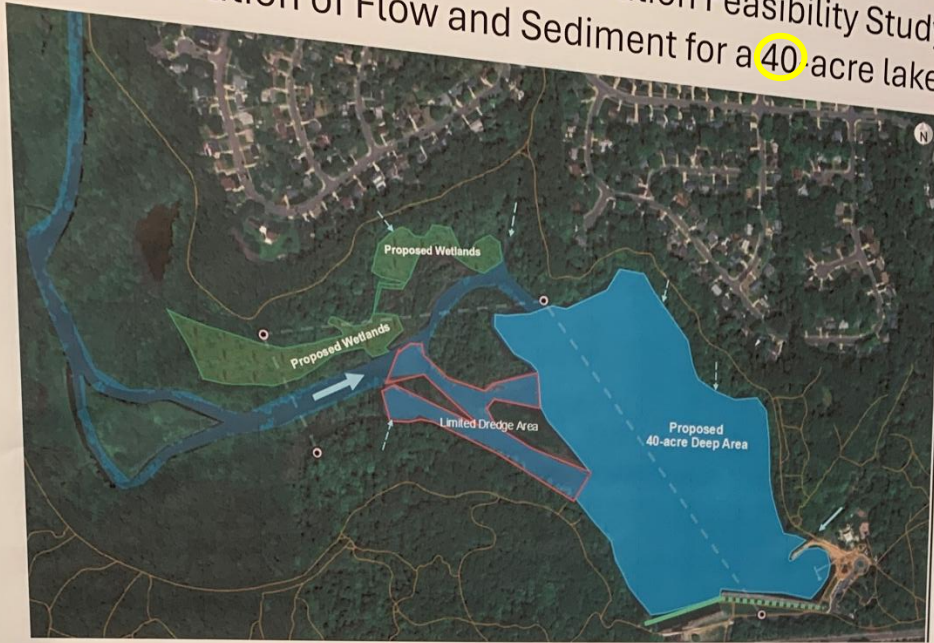
ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR A 30-ACRE LAKE ALTERNATIVE (YEAR = 2020)

ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR A 30-ACRE LAKE ALTERNATIVE (YEAR = 2020)

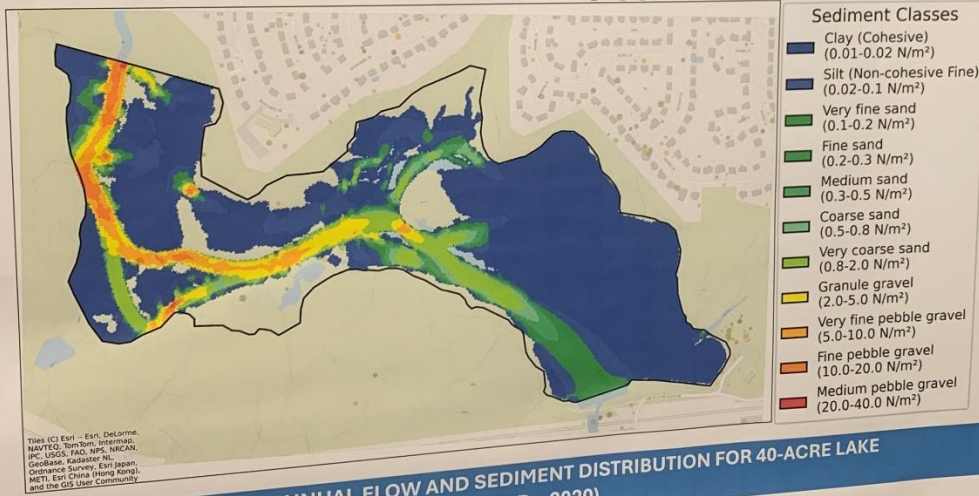


30-acre configuration – how sediment moves into and through the lake

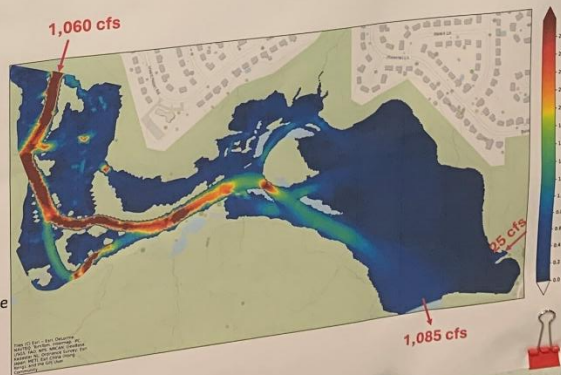
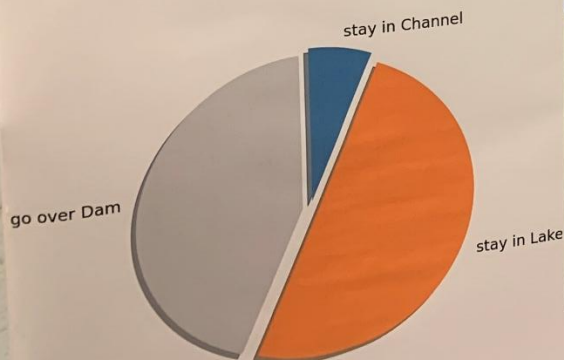
Smaller Lake Accotink Preservation Feasibility Study Distribution of Flow and Sediment for a 40-acre lake



LOCATIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (40-ACRES)
UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS

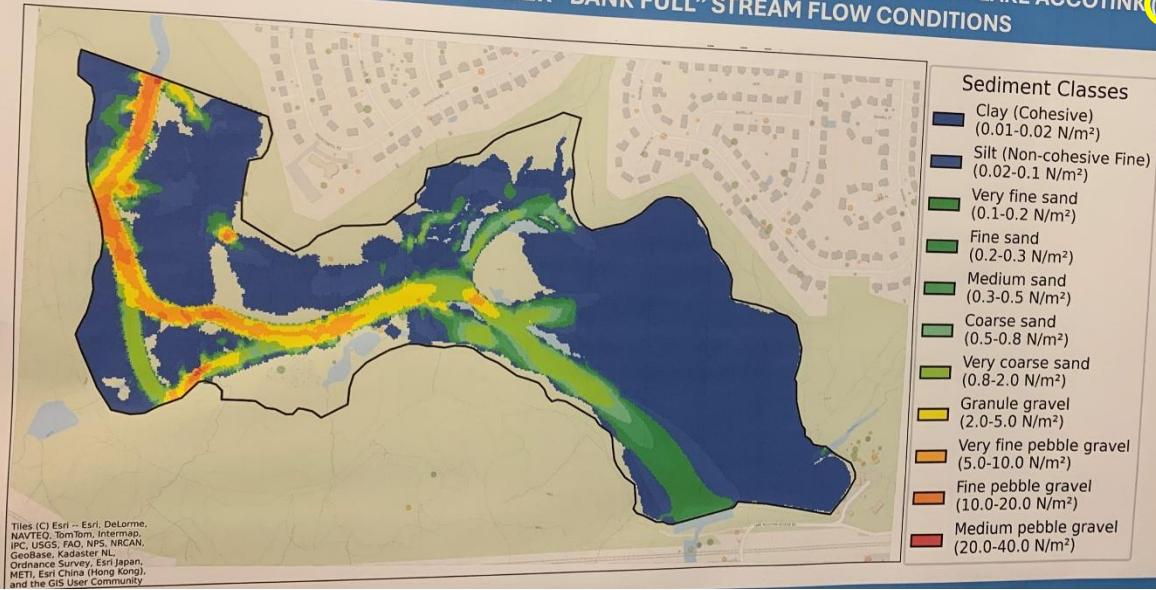


ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR 40-ACRE LAKE
(YEAR = 2020)

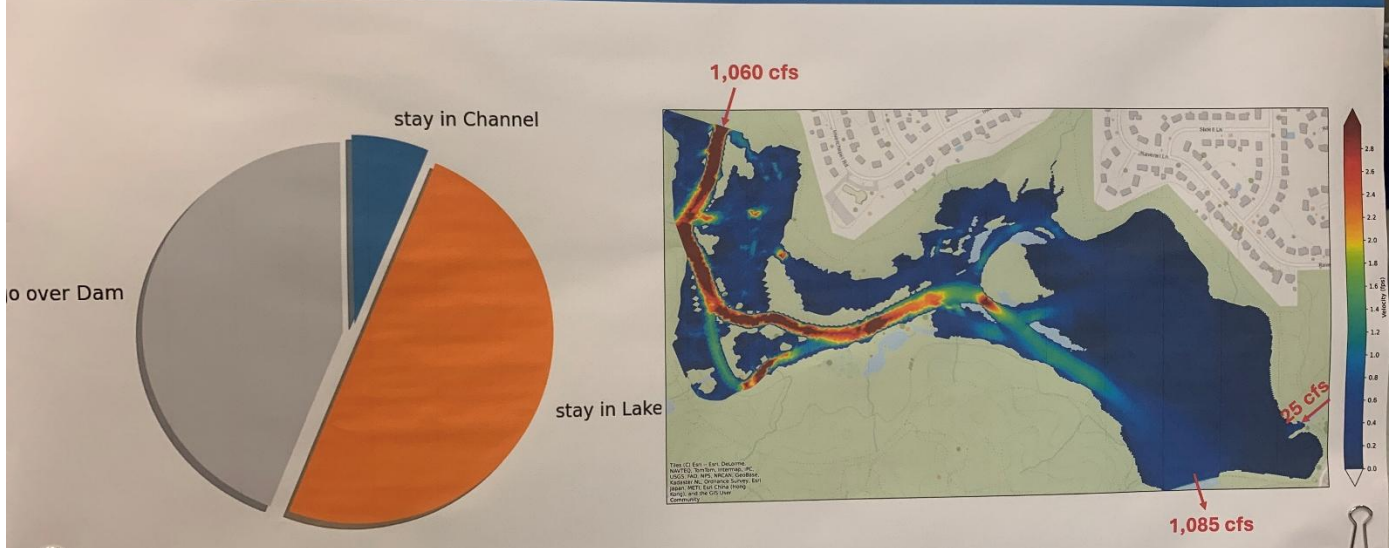


40-acre configuration – how sediment moves into and through the lake

LOCATIONS OF SEDIMENT MOVEMENT/SUSPENSION FOR DIFFERENT SEDIMENT SIZES IN LAKE ACCOTINK (40-ACRES) UNDER ACCOTINK CREEK "BANK FULL" STREAM FLOW CONDITIONS



ESTIMATED ANNUAL FLOW AND SEDIMENT DISTRIBUTION FOR 40-ACRE LAKE (YEAR = 2020)



40-acre configuration – how sediment moves into and through the lake

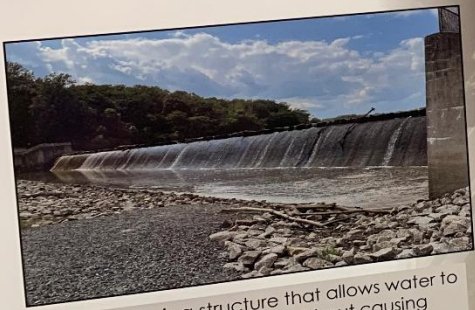
UNDERSTANDING LAKE ACCOTINK DAM



HOW THE DAM WORKS



An embankment is a large structure made of compacted earth designed to hold back water by using the mass of material to resist water pressure.



The spillway is a structure that allows water to bypass the embankment without causing erosion. This spillway is subject to continuous flow during normal operating conditions.



REHABILITATION EFFORTS

The current condition of the dam is rated as "poor," and engineers determined the spillway is too small for the types of storms that are expected in this area. Research on how to increase spillway capacity is ongoing.



Core samples taken from the spillway are used to test its strength and condition.



The concrete is showing its age with several areas of cracking and spalling.



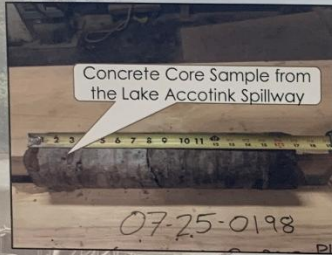
Monitoring tools called piezometers were installed to track the condition of the embankment.

Explanation of dam functions and their evaluation

ASSESSING THE HEALTH OF THE DAM

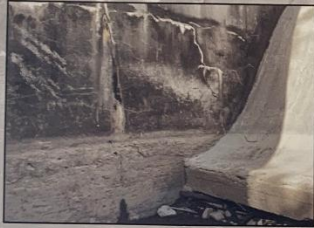


CONCRETE TESTING



Concrete Core Sample from the Lake Accotink Spillway

Concrete testing in 2026 showed strengths between 3,000 psi to 6,000 psi. This indicates the structural integrity remains serviceable but targeting repair and maintenance activities are required.



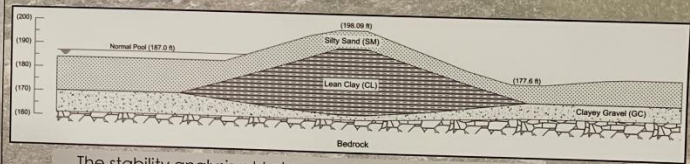
The spillway and stilling basin are in generally "Fair" condition with localized areas in "Poor" condition. Moderate to heavy deterioration was found throughout with most damage limited to the top 5-10 mm of the concrete surface.

EMBANKMENT STABILITY



Soil sample from Lake Accotink Embankment

Stability testing on a dam determines if it is capable of withstanding the water pressure behind it without sliding or slumping. Stability can be affected by the embankment materials, compaction, and the ground slope.



The stability analysis at Lake Accotink indicates the embankment exceeds the minimum requirement recommended by the U.S. Bureau of Reclamation and performs satisfactorily under normal loadings. Ongoing monitoring will continue to ensure long-term stability.

While the dam and spillway can likely continue operating with targeted repairs, substantial improvements are needed to increase spillway capacity. Expanding the spillway's ability to safely pass flood flows is essential to ensuring the long-term public safety.

Dam condition will not directly affect the lake dredging plans