SMALL LAKE ALTERNATIVES

Smaller Lake Scenario	Lake Area in Square Feet	Lake Area in Acres	Average Water Depth Based on 2021 Bathymetric Survey	Average Excavation to Reach 8 ft Depth	Total Dredge in Cubic Feet	Total Dredge in Cubic Yards	Areas in Acres Needed to Store Dredge Material at 50 foot Height	Areas in Acres Needed to Store Dredge Material at 20 foot Height	Sediment Removal & Dewatering Cost per Cubic Yard	Water Treatment and Dewatering Costs	One Time Cost to Dredge and Waste On Site
1	1,787,569	41	3	5	8,937,845	331,031	4	10	$54	$16,000,000	$33,875,689
2	972,703	22	4	4	3,890,813	144,104	2	4	$54	$16,000,000	$23,781,626

Notes:
1. These estimates are based on Arcadis dredge cost estimate updated January 2023.
2. This estimate does not include costs to clear land, conduct environmental assessments, or mitigate potential impacts.
3. This estimate is for one dredging event and does not take into account maintenance dredging frequency, quantities, necessary area to dispose of materials or inflation.
4. It is assumed that maintenance dredging would need to occur at least once every five years and no costs are included for those maintenance dredging events.

SOURCE: Fairfax County Department of Public Works and Environmental Services, September 2023.

33 acre lake scenario

Grassland Option Cost Scenario

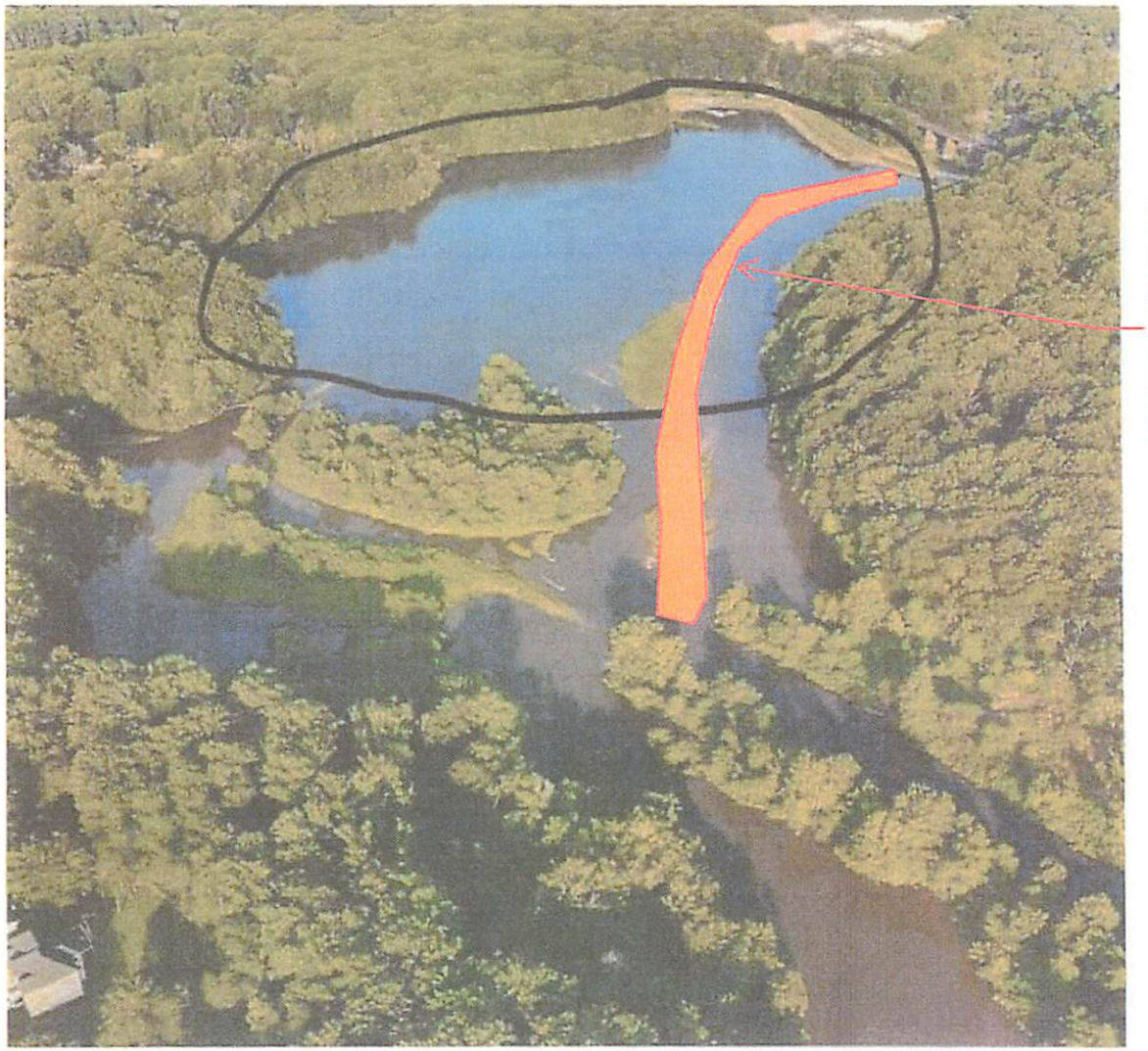
Lake Area in Square Feet	Lake Area in Acres	Average Water Depth Based on 2021 Bathymetric Survey	Average Excavation to Reach 8 ft Depth	Total Dredge in Cubic Feet	Total Dredge in Cubic Yards	Areas in Acres Needed to Store Dredge Material at 50 foot Height	Areas in Acres Needed to Store Dredge Material at 20 foot Height	Height of dredged material (in feet) in a 22.2-acre site.	Sediment Removal & Dewatering Cost per Cubic Yard	Water Treatment and Dewatering Costs	One Time Cost to Dredge and Waste On Site
1,150,848	33.3	3.5	4.5	5,178,816	295,482		8.25	6.75	$54	$16,000,000	$31,956,028

1. These estimates are based on Arcadis dredge cost estimate updated January 2023.
2. This estimate does not include costs to clear land, conduct environmental assessments, or mitigate potential impacts.
3. This estimate is for one dredging event and does not take into account maintenance dredging frequency, quantities, necessary area to dispose of materials or inflation.
4. It is assumed that maintenance dredging would need to occur at least once every five years and no costs are included for those maintenance dredging events.

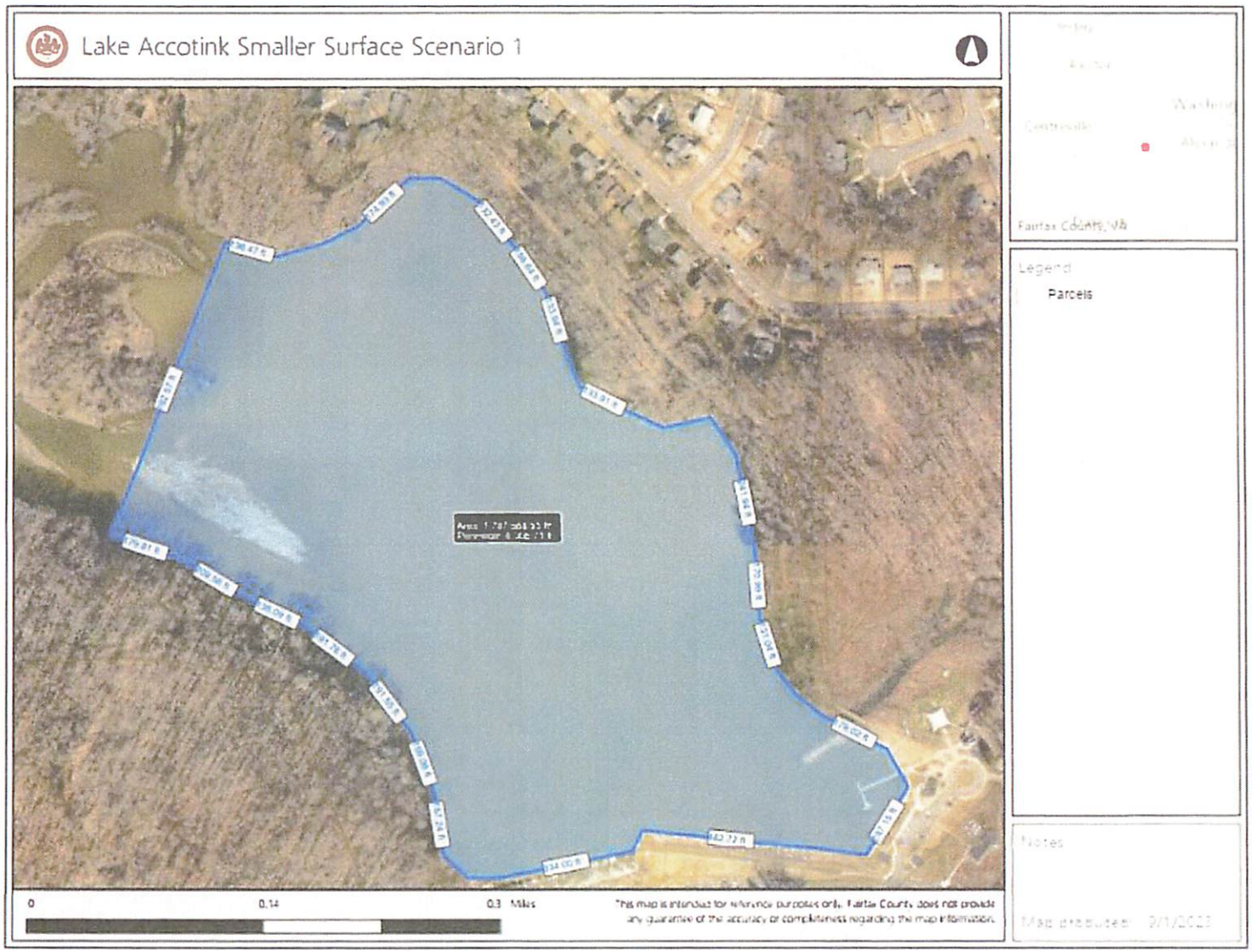
				dredge cost - dewatering	
4,840	cubic yards in a cubic acre	33.3	acres to dredge	#REF!	41 acres
34,560	qubic feet in a cubic acre	4.5	depth to dredge (ft)	$15,956,028	22 acres
22.2	acres for grassland site	5,178,816	estimated cubic feet of dredge	#REF!	33.3 acres
767,232	cubic feet in grassland site				
5,178,816	estimated cubic feet of dredge				
6.75	estimated height of dredge in grassland site				

COST CRITERA: Detailed cost information for implementing this option is beyond the current scope of this analysis. However, the Fairfax County Department of Public Works and Environmental Services provided Information on two smaller lake dredging scenarios. (See table, "Small Lake Alternatives.") The Advisory Committee used county staff estimates for dredging a 41-acre lake and a 22-acre lake to estimate similar information for a 33.3-acre lake described in this section on Grassland Ecosystem Option for Lake Accotink.

Lake Accotink – Smaller Lake Footprint Scenario 1

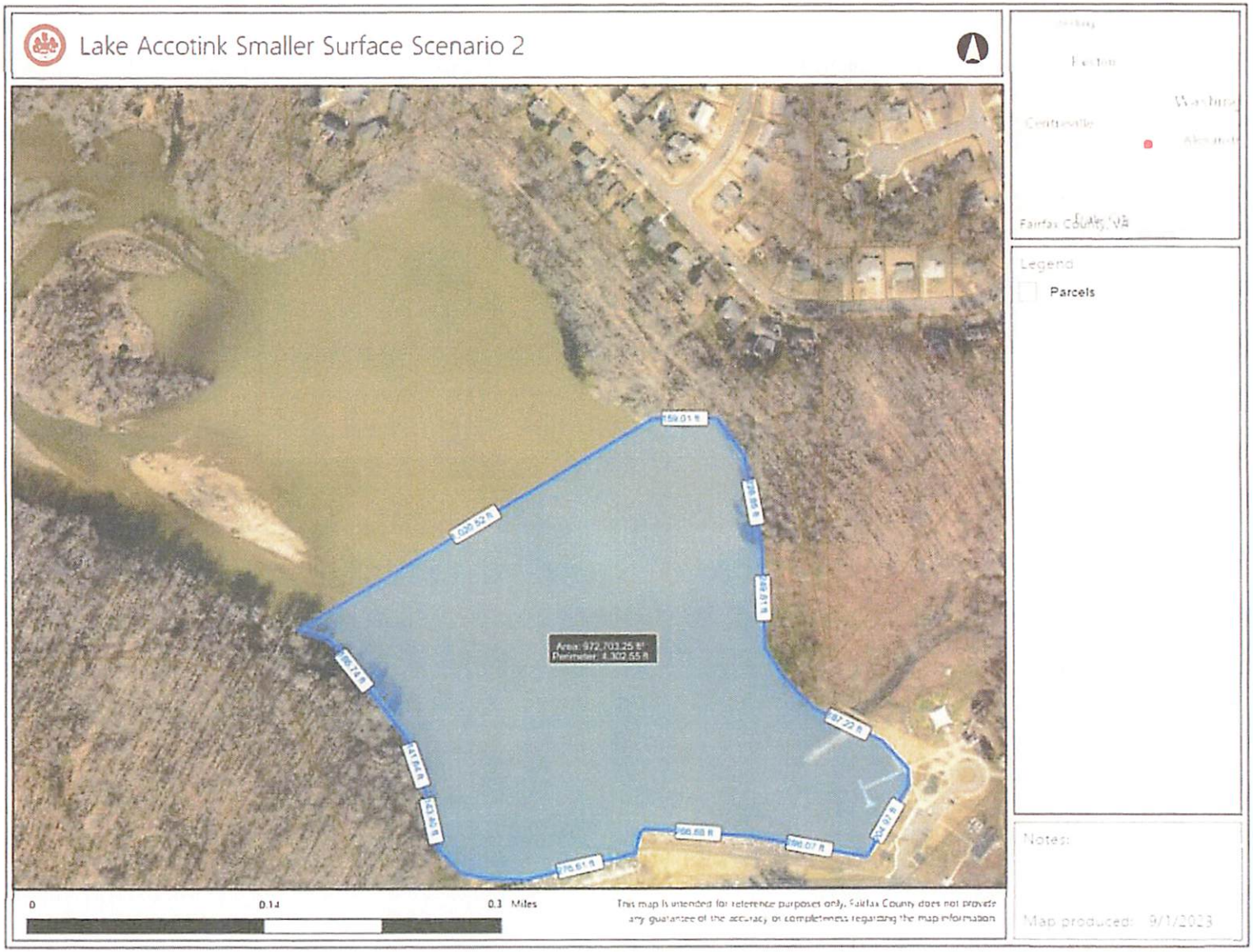


Lake Accotink – Smaller Lake Footprint Scenario 1

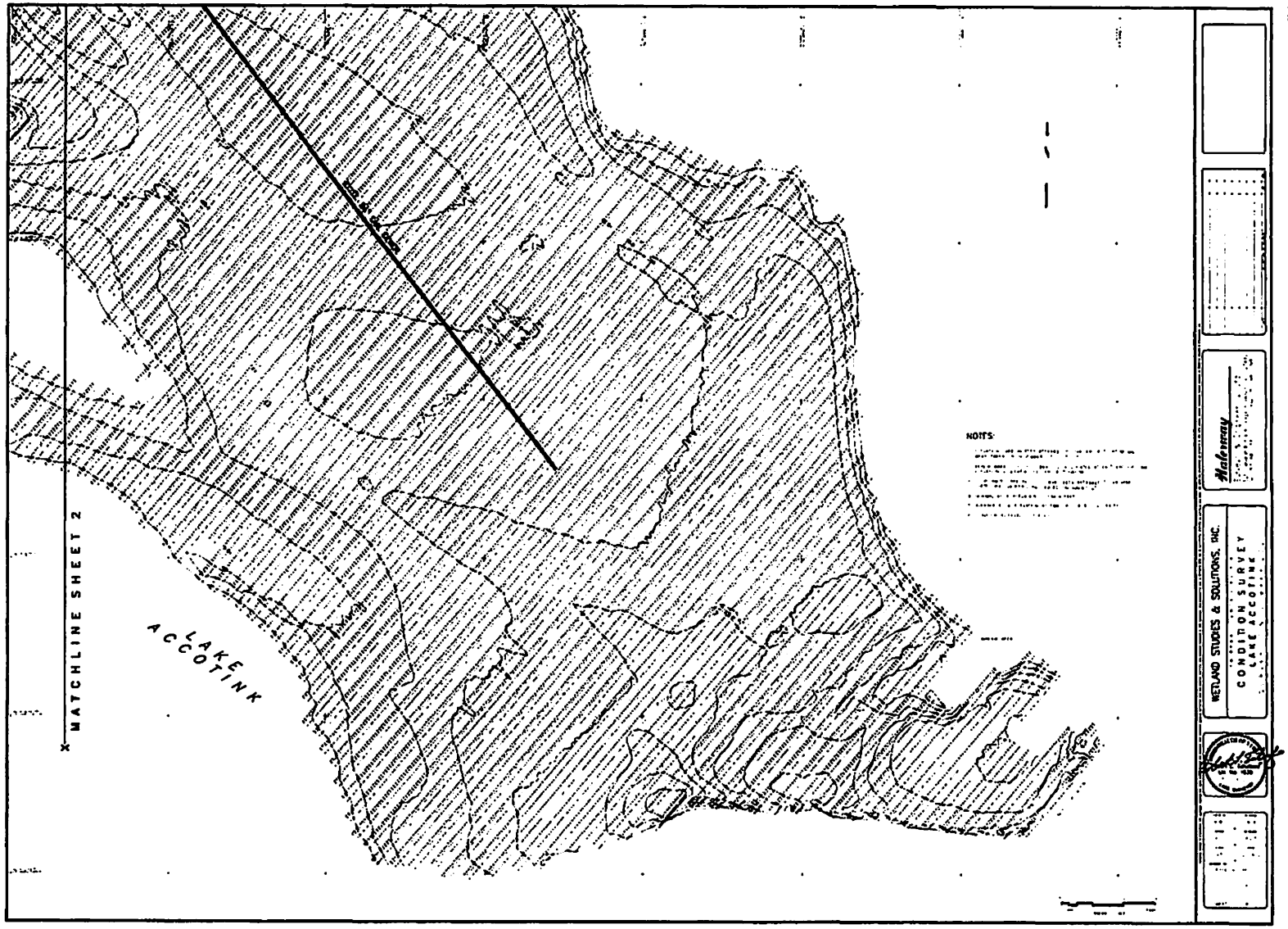


Lake Accotink – Smaller Lake Footprint Scenario 2

Lake Accotink – Smaller Lake Footprint Scenario 2



Lake Accotink – 2021 Bathymetric Survey Lower Lake



Lake Accotink – 2021 Bathymetric Survey Upper Lake

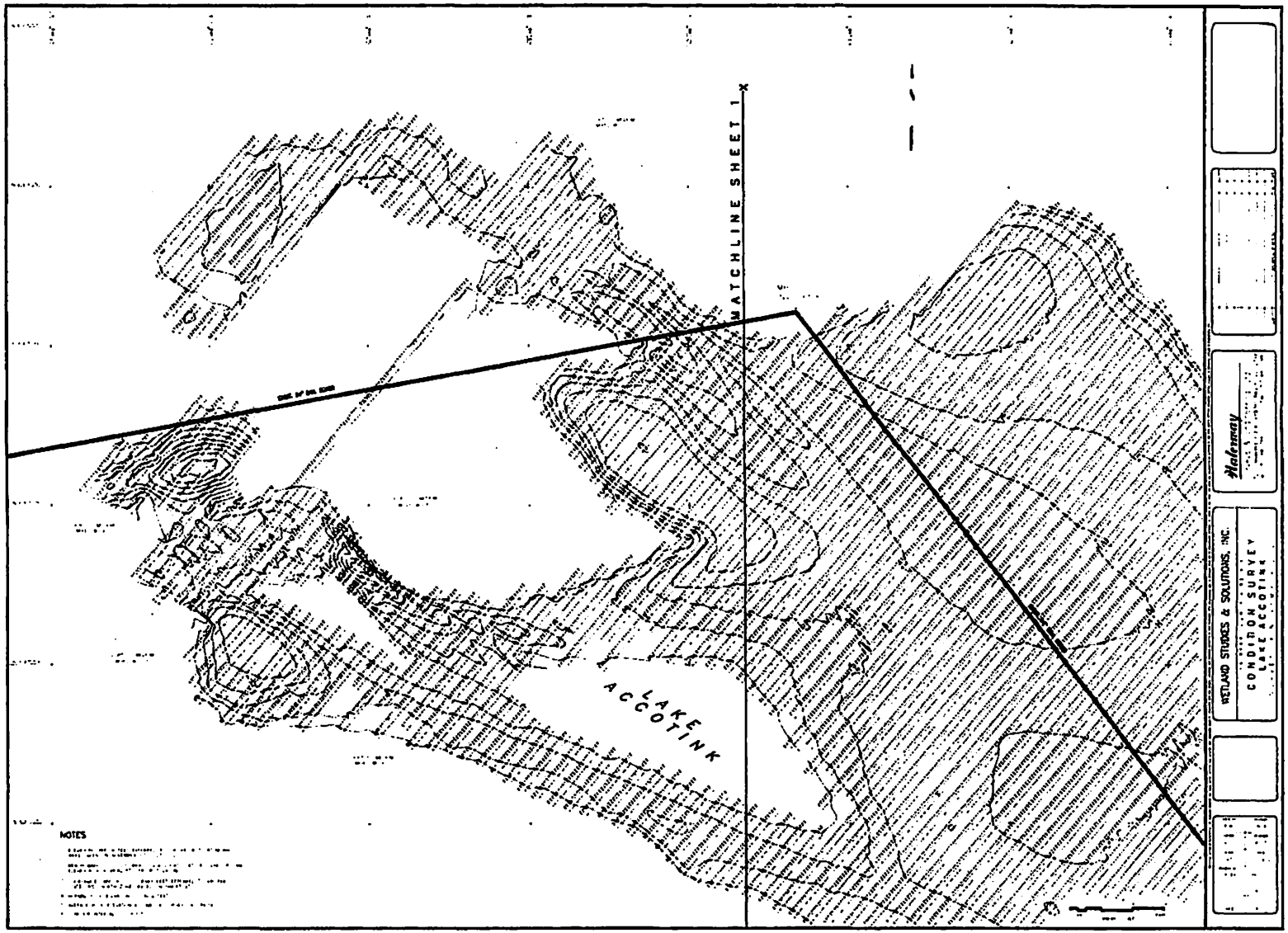


Figure-2. Lake Accotink Grassland Plateau & Dredge Proposed Locations