



# A.D.A. Trail @ the Needham Reservoir

**Public Workshop**  
January 15, 2015



# A.D.A. Trail @ the Needham Reservoir

1. EXISTING SITE
2. GENERAL TRAIL INFORMATION
3. TRAIL DESIGN CONSIDERATIONS

Discussion and Q & A will follow each  
of the above sections



# Existing Site

- 1. Site History & Use
- 2. Historic Photos
- 3. Drainage
- 4. Wetland
- 5. Vegetation
- 6. Wells



## SITE HISTORY & USE



Reservoir was built around 1910 and was approximately 7 acres in area

Today there is about 6 acres of open water

It was designed to hold 9 million gallons of water

Served as Town's water supply until the early 1960s

Roland G. Johnson Fishing, Sailing And Recreation Area



Current uses for the reservoir and path include walking, fishing, model boat sailing, ice skating, and cross country skiing



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA





Photo Circa 1910



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



Photo Circa 1910



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA





Photo Circa 1913



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## DRAINAGE



Reservoir receives water via overland flow  
& piped drainage from:

Surrounding Land Uses –  
DPW Facilities, Adjoining  
Wetlands, Residential Areas,  
and Golf Course



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## DRAINAGE



Reservoir empties water into

- Spillway
- Exposed Channel
- Alder Brook
- Charles River



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## WETLAND SYSTEM



The 12 acre reservoir is surrounded by a mature bordering vegetated wetland

Indicator plants include Buckthorn, Red Maple, River Birch, Cinnamon Fern, Blueberry, Royal Fern, Cattails, and Sedges



Several intermittent streams enter the Reservoir

Reservoir empties into Alder Brook (Perennial Stream with associated 200 foot riverfront area)

No FEMA flood zone is associated with the Reservoir



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## VEGETATION



Survey located trees larger than 8 inch caliper along existing trail

Site walks identified the following:

TREES - Red & Sugar Maples, Swamp & White Oaks, Eastern White Pines, Cherry, Ironwood, and Ash

SHRUBS – Arrowwood, Silky Dogwood, Elderberry, Summersweet, and Blueberry

HERBACEOUS – Skunk Cabbage, Ferns, Joe-Pye Weed, Golden Rod, Sedges, Jewel Weed, Wild Grape, and Green briar

INVASIVES – Norway Maple, Buckthorn, Honeysuckle, Euonymus, Bittersweet, and Purple Loosestrife



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## WELLS



2 Inactive wells along the northern section of the reservoir

25 foot diameter, hand dug in 1913

Well abandonments approved by DEP

Wells will be physically removed and capped during this project



Will remove pavements and fencing and re-grade area

Seed with Native Restoration mix

Potential wetland mitigation

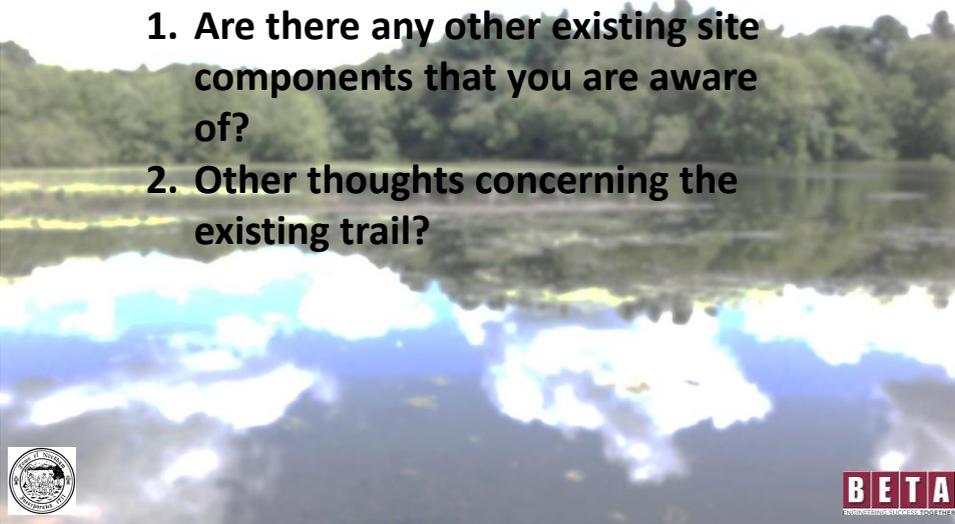


**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## Discussion & Questions EXISTING SITE

1. Are there any other existing site components that you are aware of?
2. Other thoughts concerning the existing trail?



## General Trail Information

1. Existing Plan
2. Existing Trail Conditions
3. Proposed Trail Requirements



# EXISTING PLAN



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# EXISTING TRAIL CONDITIONS



Existing Trail – Approximately 2,600 l.f.  
(just under ½ mile)

Tread (width) is 2-3 feet wide,  
unimproved dirt and/or grass

Generally flat – some low and seasonally  
saturated areas



Not currently accessible – surface  
material, tread width, tree roots

Path is not continuous at spillway and  
eastern end of dam

Limited access to water's edge

Golf course conflict



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# PROPOSED TRAIL REQUIREMENTS



Fully ADA compliant

Tread width 3 feet minimum (6 feet required for wheelchairs to pass)

Surface shall be firm and stable

Clear area to either side of path should be 12 inches minimum

Grades shall be between 2 and 10% (no more than 30% steeper than 8.33%)

Trail obstructions between 1/2 and 2 inches (Trail Class 5 and 4)

Railings at steep grades or significant drop-offs (30 inches or greater)



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



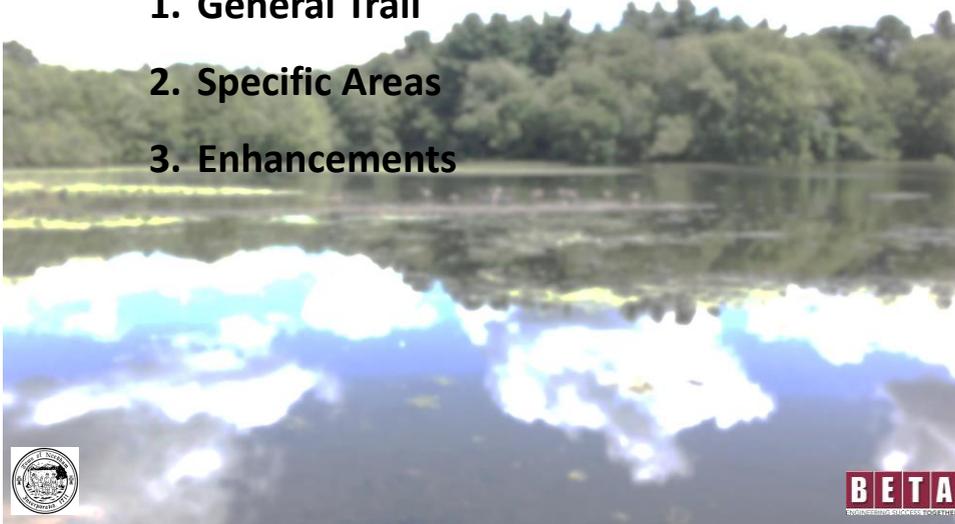
## Discussion & Questions GENERAL TRAIL INFORMATION

**1. Are there any questions or comments?**



# Trail Design Considerations

1. General Trail
2. Specific Areas
3. Enhancements



## TRAIL DESIGN CONSIDERATIONS

### GENERAL TRAIL

- Alignment and width
- Trail Surface Material
- Tree Roots
- Seasonally Saturated Areas



### SPECIFIC AREAS

- Parking & Access
- The Ledge
- The Wetland
- The Oak Grove
- The Meadow Lane
- The Spillway
- The Dam



### ENHANCEMENTS

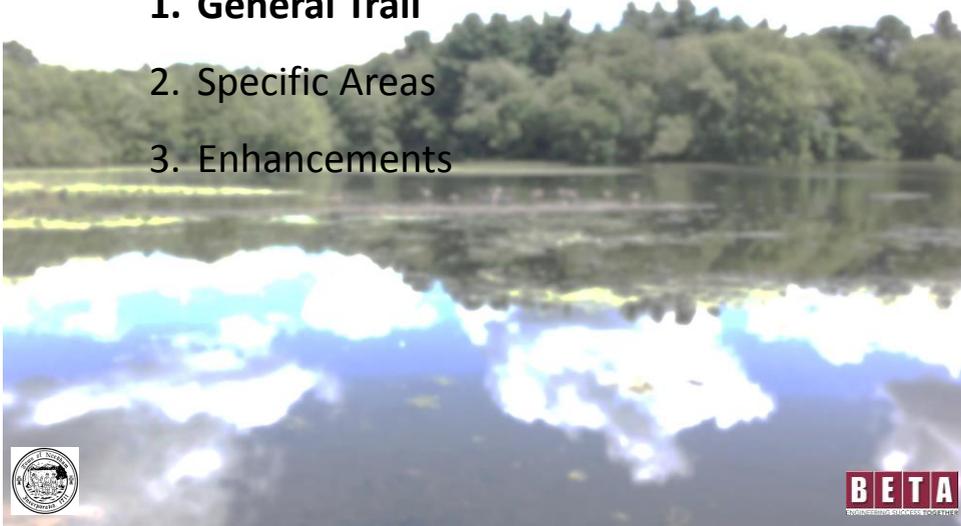
- Access to Water's Edge
- Fishing Dock
- Trail Features
- Benches
- Interpretation
- Sensory




**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA
 

# Trail Design Considerations

- 1. General Trail
- 2. Specific Areas
- 3. Enhancements



## ALIGNMENT & WIDTH



Stay within existing alignment as much as possible – limit impacts to wetlands

Opportunity for new alignment in upland (near golf course)

Minimum width - 3 foot minimum (one way) or 6 foot for two way



Clear 12 inches on either side of path for easier use and maintenance

Widen path on top of existing dam – fill on land side only



**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA



## TRAIL SURFACE MATERIAL



Stabilized Engineered Wood Fiber

Dense Graded Crushed Stone

Stabilized Stone

Bituminous Pavement – only on steep areas if erosion is a concern



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## TREE ROOTS



Many areas of exposed tree roots

Present major contributor to surface obstructions

Work to minimize removal of trees

Some cutting or filling may be required

For significant trees to save can specify excavation work by hand



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## SEASONALLY SATURATED AREAS



There is a 600-700 foot long area on the east side of the reservoir that appears to have sections that are seasonally saturated

The wetland comes right up to and includes some of the path

This area also has many exposed tree roots



**How do we minimize impacts to the wetlands but still have trail access throughout the year?**



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## Discussion & Questions

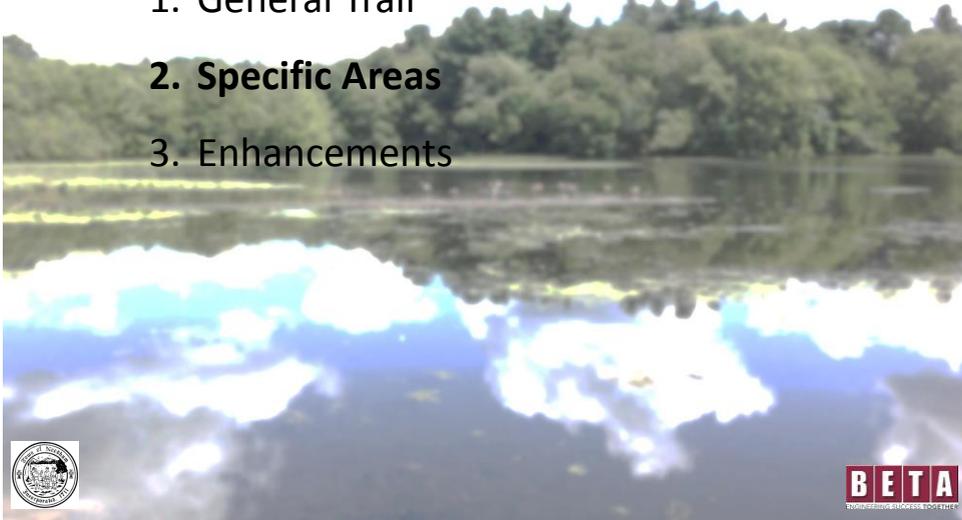
### GENERAL TRAIL

1. Trail Width
2. Trail Material
3. Tree Roots
4. Seasonally Saturated Areas
5. Anything else?



# Trail Design Considerations

1. General Trail
2. Specific Areas
3. Enhancements



## PARKING & ACCESS



 **A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA 

# PARKING & ACCESS - PLAN



2-4 Additional Paved Parking Spaces if Allowed by Conservation

New Trail Segment

Based on 30 foot Bridge Over Spillway


**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA
 

# PARKING & ACCESS - PLAN



2 Additional Paved Parking Spaces – at South End of Parking Lot

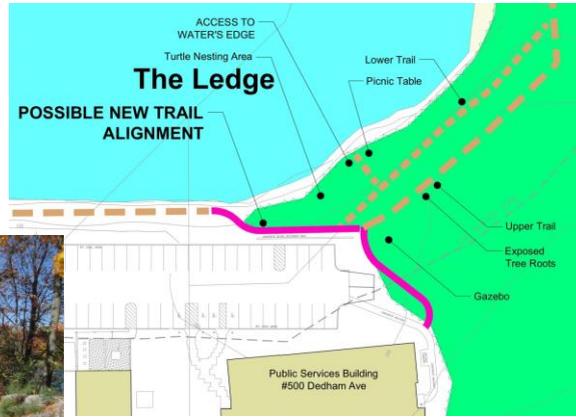
New Paved Accessible Trail up to Gazebo Area – check grading

Install Signage


**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA
 

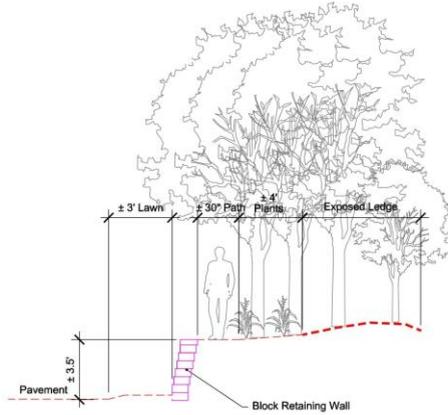
# THE LEDGE

This will require going between the exposed ledge and the top of the block retaining wall and adding a railing.




**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA
 

# THE LEDGE

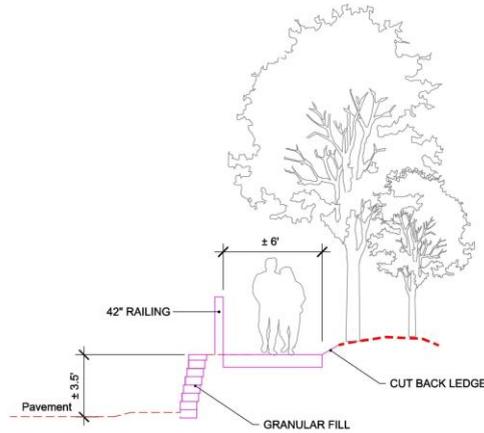


- Existing minimal path on top of existing retaining wall
- Area of grasses and trees
- Exposed ledge
- Environmentally sensitive area – turtle nesting

EXISTING SECTION @ RETAINING WALL


**A.D.A. Trail @ the Reservoir**  
 Dedham Avenue, Needham, MA
 

## THE LEDGE



SECTION @ RETAINING WALL

Protect turtle nesting area

Expand trail to 6 foot width for two-way or 3 foot for one-way

Remove grasses and trees

Remove ledge

Install railing outside of retaining wall in areas of 30 inch drop



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## THE WETLAND



Remove existing saturated soils within limit of proposed trail

Remove existing plants as necessary

Fill with granular fill

Slope trail to drain towards Reservoir

Seed edges with native restoration seed mix



**A.D.A. Trail @ the Reservoir**

Dedham Avenue, Needham, MA



## THE WETLAND



Install wood boardwalk on helical piles

Remove / trim existing plants as necessary

Minimal wetland impacts or damage to existing tree roots

Raised boardwalk signals to the user to stay out of environmentally sensitive areas



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## THE OAK GROVE



Area Appears to be Upland

Weave Proposed Trail Through Existing Large Oaks

High Point Above Existing Reservoir



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# THE MEADOW LANE



Area of Native Meadow  
Herbaceous Plants

Elevated Trail Section



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# THE SPILLWAY



Will span spillway with pre-fabricated wooden bridge or build bridge to span Alder Brook

Foundations for bridge will limit impacts to existing wetlands and will be outside the existing masonry walls of Alder Brook



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# THE SPILLWAY OPTION 1



30 Foot Pre-manufactured Bridge

New Trail Alignment

Possible Parking - Add 2-4 Spaces



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



# THE SPILLWAY OPTION 1



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



## THE SPILLWAY OPTION 2



Construct 20 Foot Bridge Across Walled Stream

Remove Existing Pavement & Construct New Trail Alignment

Revise Vehicular Access

Possible New Drainage Improvement



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



## THE SPILLWAY OPTION 2



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



# THE DAM



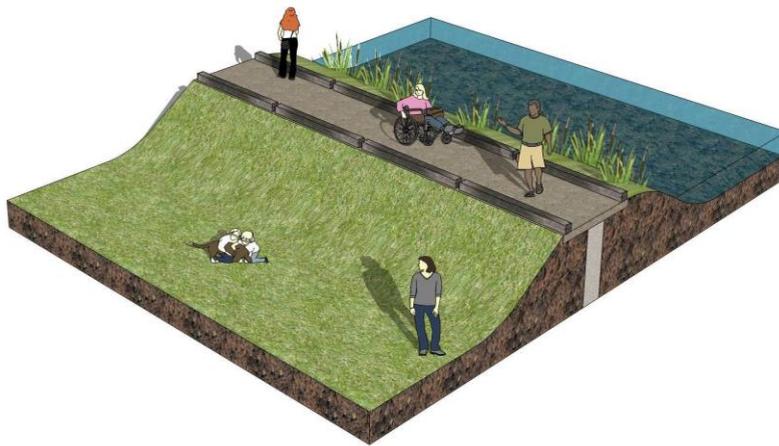
- Pedestrian Access
- Railings
- Seating
- Core Wall
- Minor Slope Erosion



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



# THE DAM



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



## THE DAM



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



## Discussion & Questions

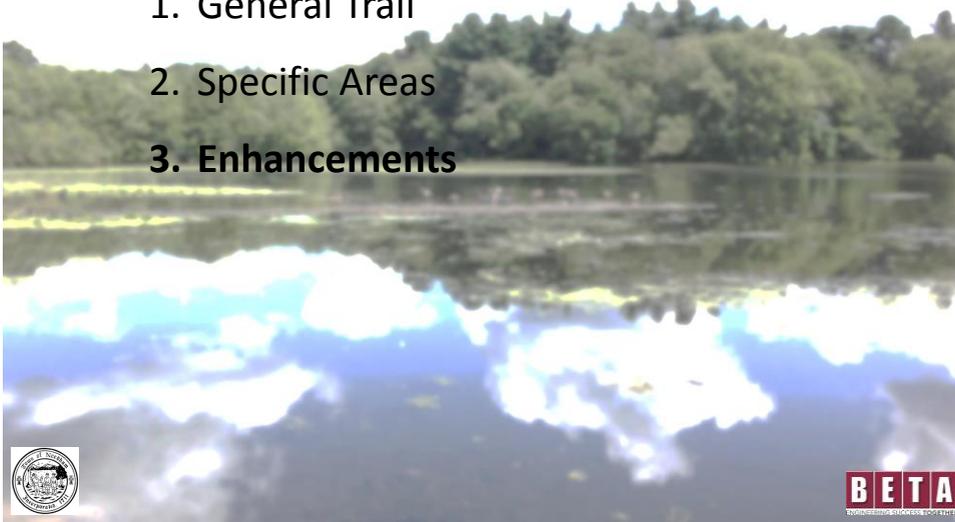
### TRAIL DESIGN CONSIDERATIONS

1. Parking Location
2. The Ledge
3. The Wetland – Fill or Boardwalk
4. The Oak Grove
5. The Meadow Lane
6. The Spillway / Bridge
7. The Dam
8. Anything else?



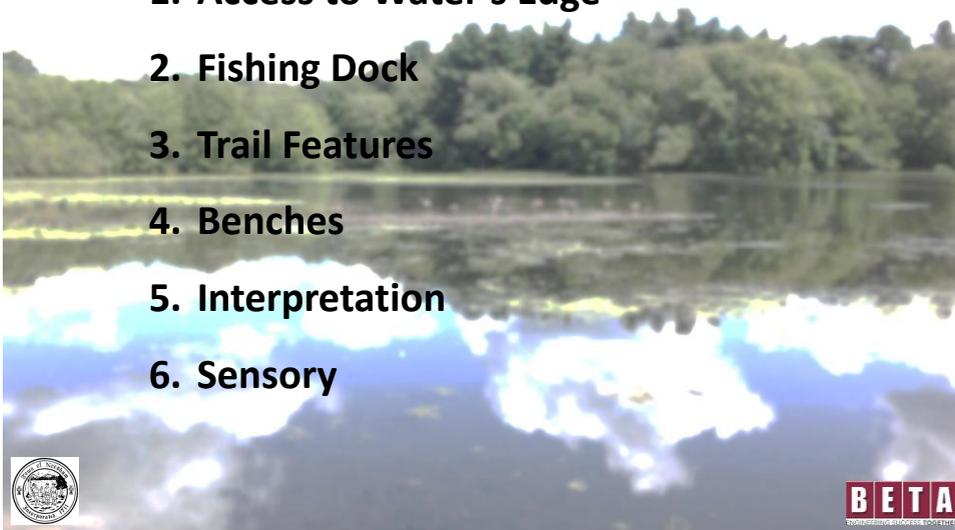
## Trail Design Considerations

1. General Trail
2. Specific Areas
3. Enhancements



## Enhancements

1. Access to Water's Edge
2. Fishing Dock
3. Trail Features
4. Benches
5. Interpretation
6. Sensory



## ACCESS TO WATER'S EDGE



There are 5 locations where people can go off the existing main path to access the edge of the reservoir

- 1) Along the top of dam
- 2) South side near picnic table
- 3) SE side near clearing
- 4) NE side near well (May be good spot for fishing deck)
- 5) West side just north of spillway



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## ACCESS TO WATER'S EDGE - PLAN



Should these access points:

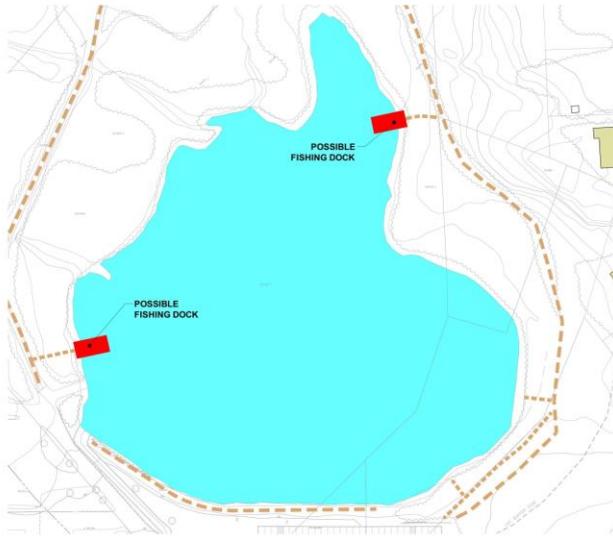
- Remain
- Be improved or
- Eliminated?



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## FISHING DOCK - PLAN



Possible locations for a fishing dock extending out into the water



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



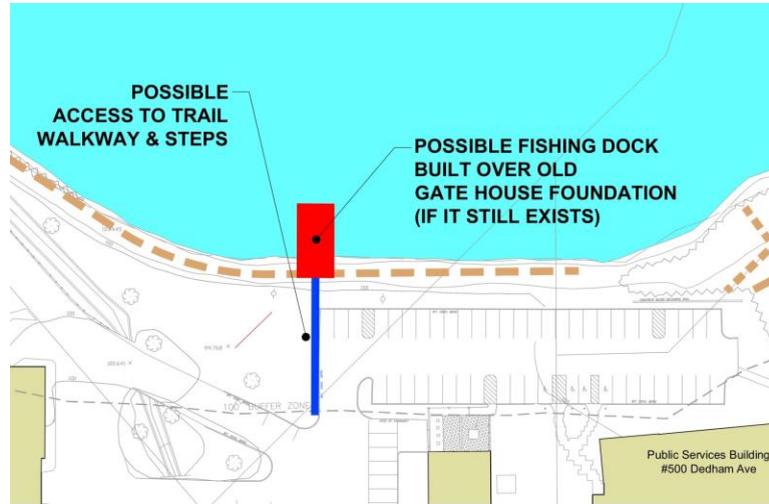
## FISHING DOCK



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



# FISHING DOCK @ EXISTING DAM



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



# FISHING DOCK @ EXISTING DAM



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA





# INTERPRETATION



Celebrate water

Tell the site's history – Town's water use

Tell about how water moves through the site

Tell story of the naturally occurring flora and fauna



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



# SENSORY



Trail is to be accessible and enjoyed by all  
– all ages and abilities

Opportunity for adding sensory  
enhancements for the blind – guide  
ropes, railings, signs in braille



**A.D.A. Trail @ the Reservoir**  
Dedham Avenue, Needham, MA



## SENSORY



Opportunities exist for engaging trail users in fun and creative ways

Touch  
Hearing  
Smell



A.D.A. Trail @ the Reservoir  
Dedham Avenue, Needham, MA



## Discussion & Questions ENHANCEMENTS

1. Water's Edge
2. Fishing Dock Locations
3. Features – Signs, Kiosks, Trail Markers
4. Bench Types, Locations
5. Interpretive Panels
6. Sensory
7. Other thoughts?

