

ACID BROOK DELTA AREA OF POMPTON LAKE REMEDIATION & RESTORATION





BACKGROUND

In 1991, DuPont began remediation of contaminated sediment and soil in a stream called Acid Brook, which originates on the site and empties into Pompton Lake. The project was completed and approved by EPA and NJDEP in 1997. Investigations completed from 2003 to 2009 in the area where the stream discharges to the lake (called the Acid Brook Delta (ABD) area) identified the presence of metals, such as lead and mercury, in the sediments. These studies showed that the metals were tightly bound to the sediment and that concentrations decrease with distance from the stream discharge area.

DuPont has submitted a Corrective Measures Implementation Work Plan (CMI WP) to the EPA and NJDEP to address impacted sediment and soil in the ABD area. The CMI WP presents elements of the remedial approach to be implemented by DuPont that includes the removal of an estimated 4,600 cubic yards of non-hazardous soil from the uplands area and 57,000 cubic yards of non-hazardous sediment from ABD through excavation and dredging.

SOIL AND SEDIMENT REMOVAL AREA



-  Soil removal boundary
-  Sediment removal boundary

FOR MORE INFORMATION | Pompton Lakes Works Remediation Project Information Center | (973) 492-7729 | 223 Wanaque Avenue, Pompton Lakes, NJ 07442

www.pomptonlakesworks.com

ACID BROOK DELTA AREA WORK AREA LAYOUT




VISUAL SCREEN

TRUCK DROPOFF
OR PICKUP ROUTE

SOIL & SEDIMENT
HANDLING AREA

BUFFER ZONE

BOAT RAMP: This area will be temporarily closed for approximately 1 month at the beginning and end of the project to allow for movement of equipment and supplies.

 Contractor operating area

UPLANDS SOIL REMOVAL



ELEMENT	OPTIONS OR APPROACHES	CONSIDERATIONS
Stream Water Management	Flow diversion (<i>pumps/piping and/or temporary channel</i>)	<ul style="list-style-type: none">• Management measures will likely be necessary to divert channel flow to allow excavation in the channel bed
Work Area Isolation and Control Measures	Temporary control measures or barriers (<i>silt fencing, hay bales, sheetpile, and/or sand bags</i>)	<ul style="list-style-type: none">• Needed to prevent erosion or washout and divert surface water from work areas• Provide a means to separate Pompton Lake water from uplands work areas• Provide stability during removal operations to prevent material sloughing
Soil Removal	Excavation	<ul style="list-style-type: none">• Removal performed using typical construction equipment• Clearing of heavy shrubs and trees will likely be necessary prior to excavation• Requires a Soil Mining Permit from Pompton Lakes Borough (along with other permits, approvals, and coordination)• Typical removal rate of ~500 cy/day• Survey control using GPS technology to verify removal extent/depth

STREAM WATER MANAGEMENT



FLOW DIVERSION

Flow could be managed through using a structure (sheetpile, earth berm) placed in brook to divert water flow to ABD through bypass pumps or piping or through creating a new temporary channel.

WORK AREA ISOLATION AND CONTROL MEASURES



TEMPORARY CONTROL MEASURES AND BARRIERS

Isolation and control measures could include silt fencing, hay bales, and diversion berms to prevent erosion from work areas, a barrier between the uplands and ABD, and/or sand bags to isolate certain remote removal areas.

UPLANDS SOIL REMOVAL



EXCAVATION

Material in the uplands area will be excavated using conventional construction equipment (e.g., trackmounted excavator, backhoe, and loader) operating from land.

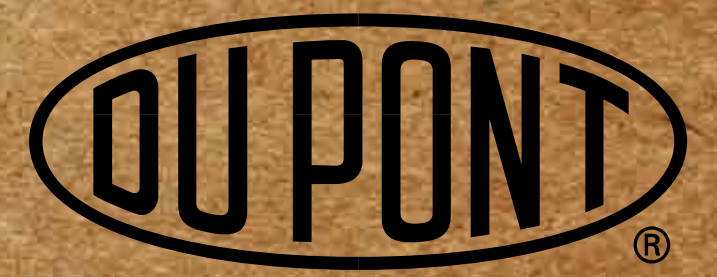


ABD SEDIMENT REMOVAL



ELEMENT	OPTIONS OR APPROACHES	CONSIDERATIONS
In-Water Work Area Isolation	Silt curtain	<ul style="list-style-type: none">• Reduces solids release from work area• Can be installed quickly with low impacts• Can be used in combination with rigid barriers
	Rigid barrier (sheetpile)	<ul style="list-style-type: none">• Provides maximum isolation and minimizes solids release from work area• Installation requires about 1 month with large construction equipment• Sheet piling will extend above the water• Can be used in combination with silt curtains
Sediment Removal	Dry excavation	<ul style="list-style-type: none">• Truck traffic for material transport and disposal• Exposes organic materials that could generate odor issues• Requires management of large quantities of groundwater• Potential to mobilize off-site plume by groundwater pumping• Requires pumping for 24 hours/day, 7 days/week• Typical removal rate of ~200 cy/day• Survey control using GPS technology to verify removal extent/depth
	Mechanical dredging	<ul style="list-style-type: none">• Truck traffic for material transport and disposal• Minimizes odor potential• No groundwater pumping• Increased disposal volume as material processing would include the addition of stabilizing agents• Typical removal rate of ~200 cy/day• Survey control using GPS technology to verify removal extent/depth
	Hydraulic dredging	<ul style="list-style-type: none">• Less truck traffic for material transport and disposal compared to other options• Minimizes odor potential• No groundwater pumping• Reduced disposal volume as material processing would include filtering/pressing of materials• Requires management of water removed during processing of dredged materials• Typical removal rate of ~300 cy/day• Survey control using GPS technology to verify removal extent/depth

IN-WATER WORK AREA ISOLATION



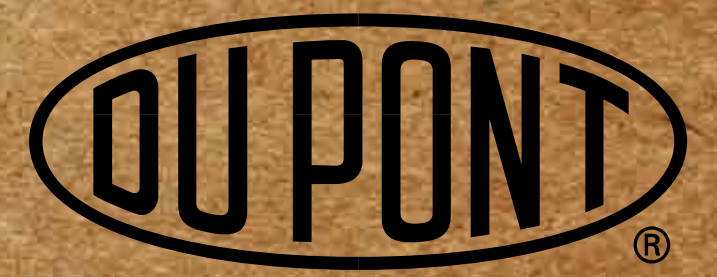
SILT CURTAINS

Silt curtain includes a flexible barrier with surface floats and bottom weights that is placed around the work area to contain suspended materials from leaving the work area.

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IN-WATER WORK AREA ISOLATION



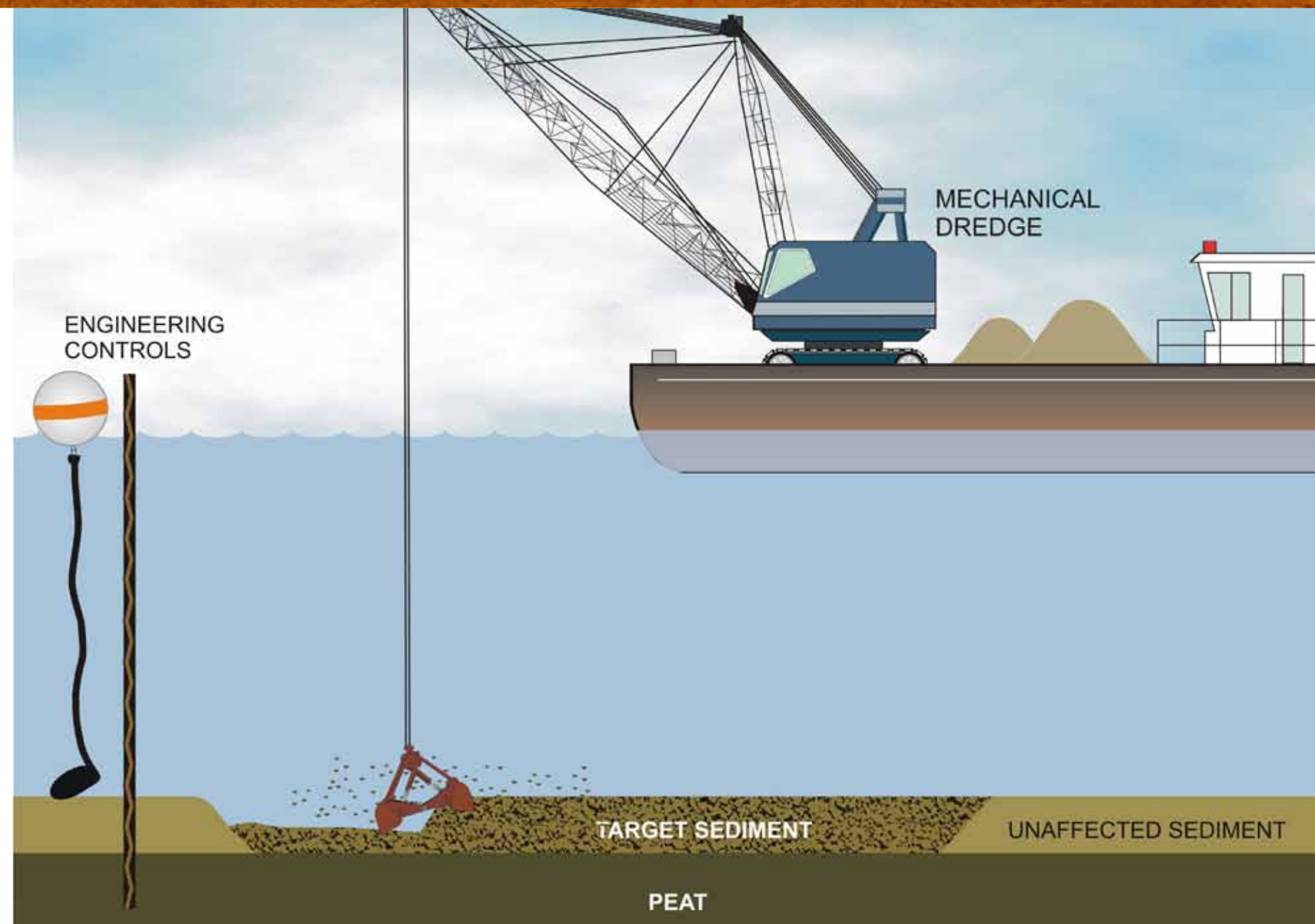
SHEETPILE

Sheetpile includes solid steel sheeting that is driven into the sediment bed around the work area to isolate the work area and contain suspended materials from leaving the work area.

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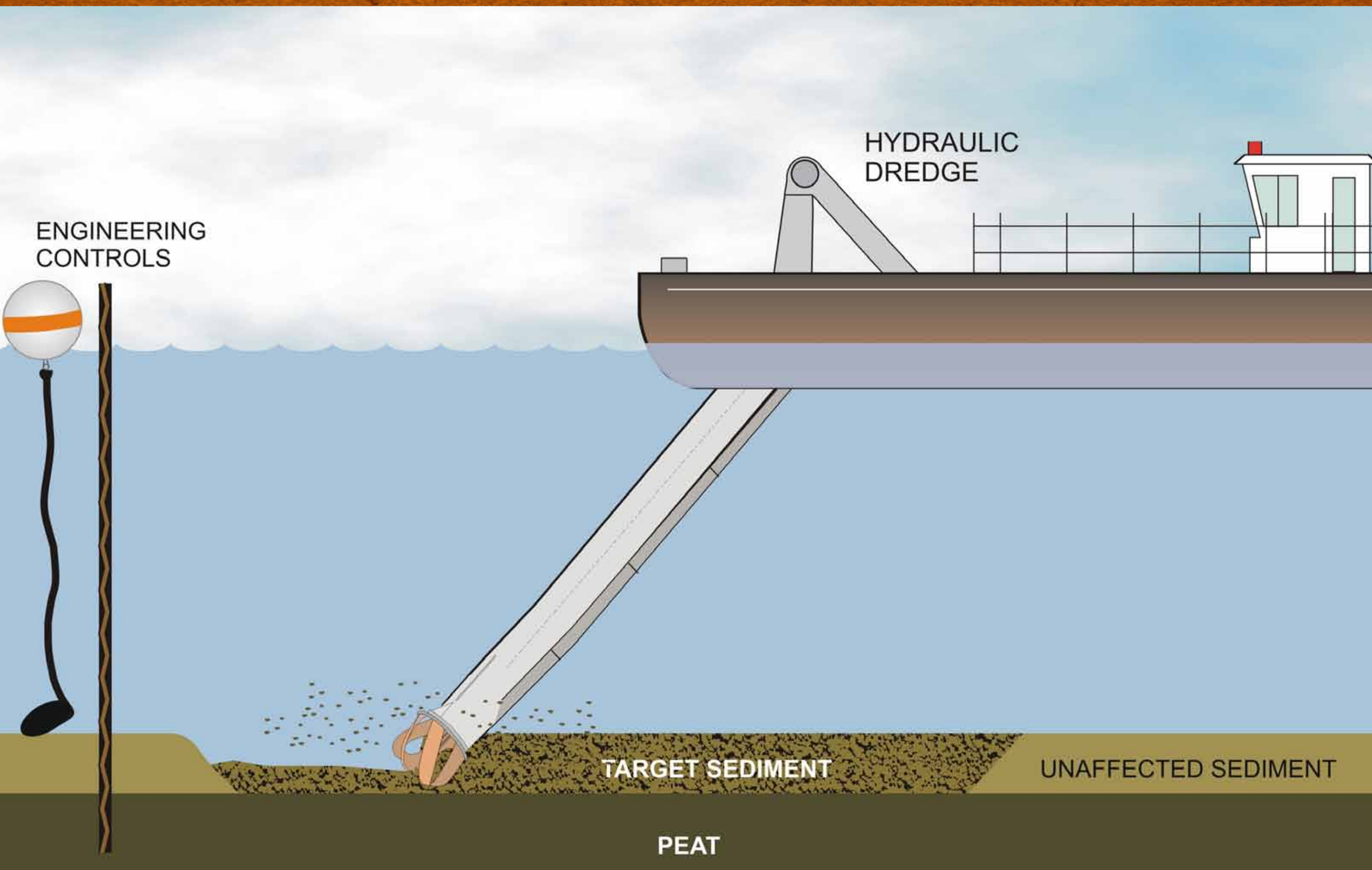
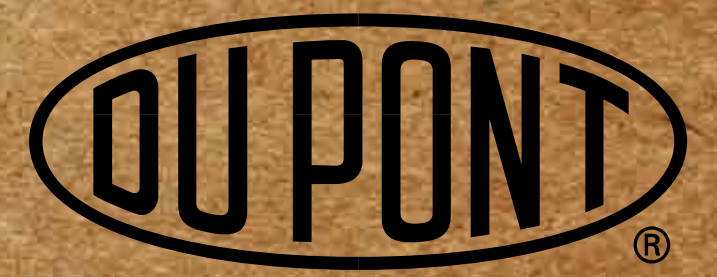
ABD SEDIMENT REMOVAL DREDGING



MECHANICAL DREDGING

Mechanical dredges use a bucket or clamshell to scoop and remove materials and then place them into a barge.

ABD SEDIMENT REMOVAL DREDGING



HYDRAULIC DREDGING

Hydraulic dredges apply a force to loosen materials and then a pump suctions it into a pipeline.

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SEDIMENT PROCESSING



ELEMENT	OPTIONS OR APPROACHES	CONSIDERATIONS
Sediment Processing The sediment in the Acid Book Delta has a high natural water content, so compression or solidification is needed prior to transport on public streets.	Particle separation and compression <ul style="list-style-type: none">• Slurry pumped from pipeline directly into separation equipment.• Sand-sized particles separated for possible beneficial reuse.• Sediment contained inside equipment, until compressed solids exit equipment.	<ul style="list-style-type: none">• The weight of compressed sediment is less than the natural sediment in the lake, so there is less weight to transport off-site, which reduces the truck traffic through the community.• Since the process is contained, there is less impact to air quality than solidification.• Sediment processing can be completed in one season.
	Solidification <ul style="list-style-type: none">• Wet sediment placed into stockpiles, where solidification agents are added.• Requires truck delivery of solidification agents (i.e. cement).	<ul style="list-style-type: none">• The weight of solidified sediment is more than the natural sediment in the lake, so there is more weight to transport off-site, which increases the truck traffic through the community.• Potential for dust as solidification agents are added.• Potential for volatile emissions and odors during mixing.• Sediment processing is expected to take two seasons.

PARTICLE SEPARATION AND COMPRESSION PROCESS



**PIPELINE
FROM DREDGE**

**Material
Separation**



**Mix
Tank**



**SAND
&
GRAVEL**

Press



**Materials Ready
for Transportation**

**SILT
&
CLAY**



SOLIDIFICATION PROCESS



BARGE
FROM DREDGE

Unload Barge



Mix Solidification
Agents



Cure in Stockpiles



TRUCKING OPERATIONS



- Work Hours 8 a.m. to 6 p.m., Monday thru Saturday
- On school days no transport between 7:30 a.m. – 8:30 a.m. and 2:30 p.m. – 3:30 p.m.
- Truck route considerations include
 - Safety, traffic congestion and efficiency

ROTARY PARK/LAKESIDE AVE. TO I-297 (S) POTENTIAL TRUCK ROUTES



WANAQUE AVE. S.

Rotary Park/Lakeside Ave. (W) to Wanaque Ave. (S)
to Hamburg Turnpike to I-287 Exit 53

RINGWOOD AVE. S.

Rotary Park/Lakeside Ave. (W) to Wanaque Ave. (N)
to Ringwood Ave. (S) to Hamburg Turnpike to I-287
Exit 53

RINGWOOD AVE. N.

Rotary Park/Lakeside Ave. (W) to Wanaque Ave. (N)
to Ringwood Ave. (N) to I-287 Exit 55

JEFFERSON AVE. – COLFAX AVE. (SW)

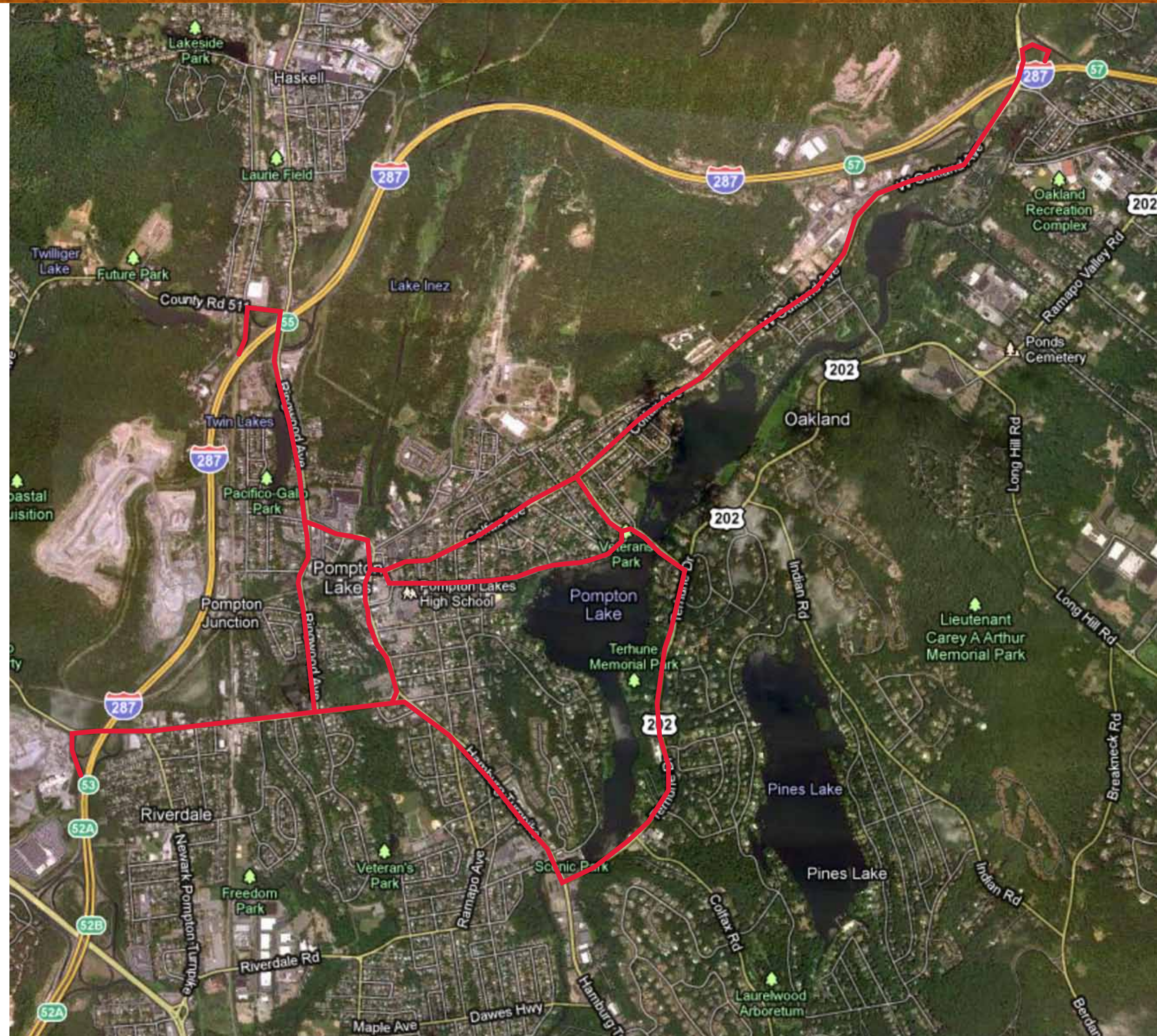
Rotary Park/Lakeside Ave. (E) to Jefferson Ave.
to Colfax Ave. (SW) to Wanaque Ave. (N) to
Ringwood Ave. (S) to Hamburg Turnpike to I-287
Exit 53

JEFFERSON AVE. – COLFAX AVE. (NE)

Rotary Park/Lakeside Ave. (E) to Jefferson Ave.
to Colfax Ave. (NE) to I-287 Exit 57

TERHUNE DR.

Rotary Park/Lakeside Ave. (E) to Terhune Dr.
to Hamburg Turnpike to I-287 Exit 53



POMPTON LAKES RESTORATION



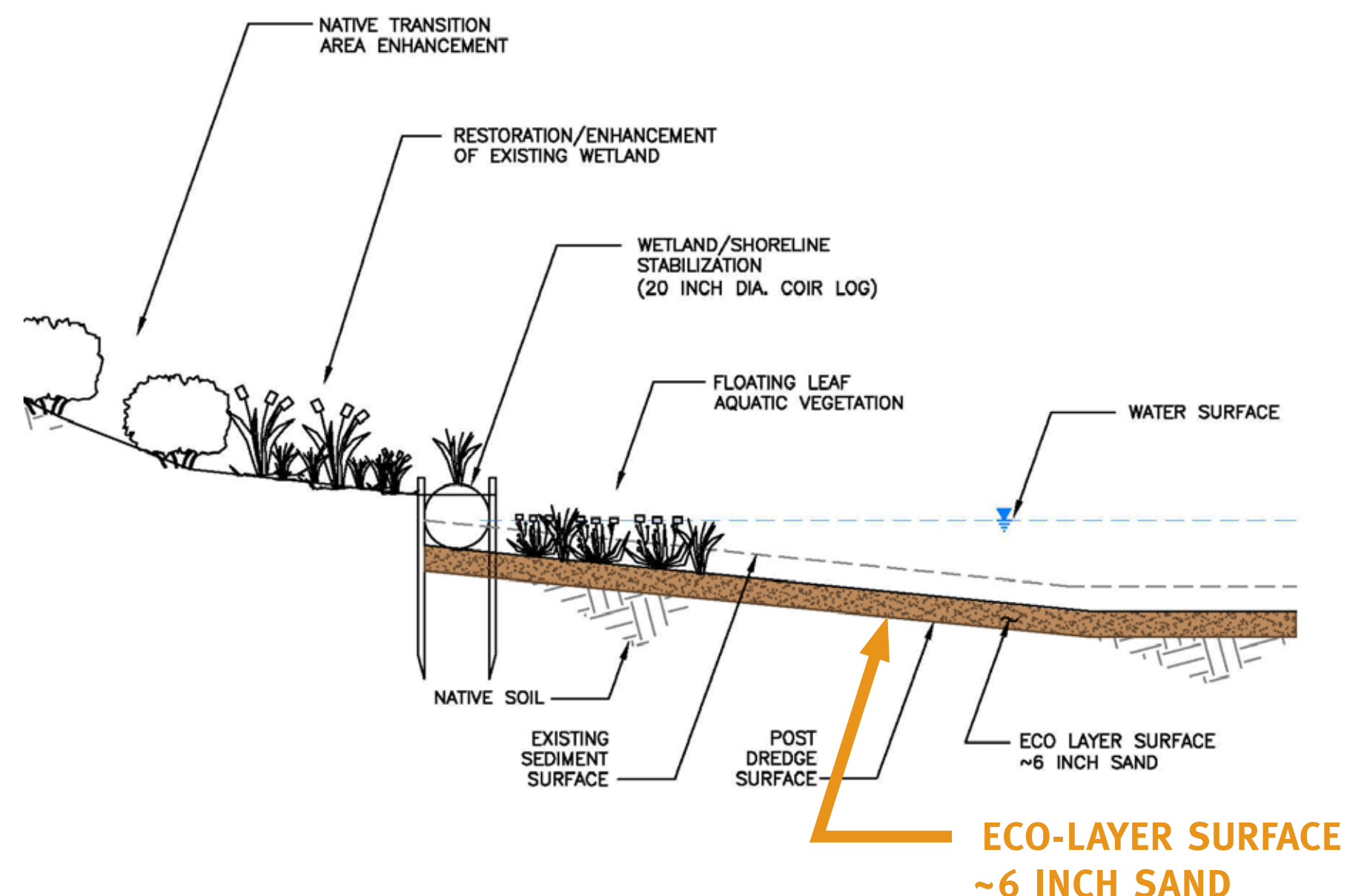
**ECO-LAYER
PLACEMENT**



**ECO-LAYER
THICKNESS**

ECO-LAYER POMPTON LAKE ABD CMI

After targeted sediments have been removed, an approximate 6-inch granular layer of sand (termed an eco-layer) will be placed in the dredged area to establish a zone for benthic community colonization.

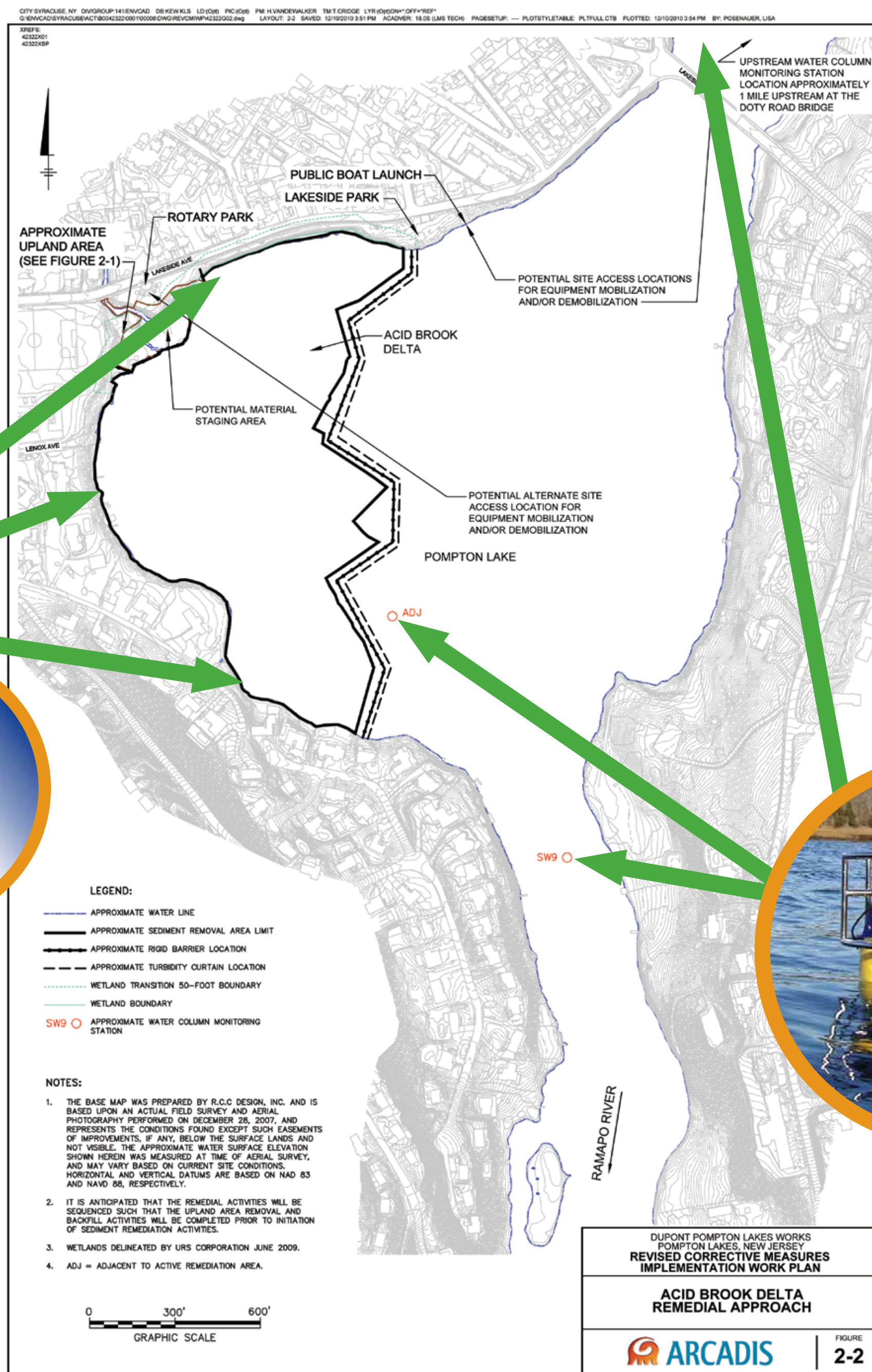


WORK PERIMETER MONITORING



ELEMENT	APPROACHES	CONSIDERATIONS	DURATION
Water	Real-time measurement of solids (<i>turbidity</i>)	3 fixed stations <ul style="list-style-type: none">• Upstream (Doty Road)• Downstream (SW9)• Adjacent to work area	Continuous during material handling work hours
	Sampling for dissolved mercury and solids (<i>TSS</i>)		Weekly plus when turbidity corrective action level is exceeded
Air	Real-time monitoring for particulates (<i>dust</i>)	1 upwind and 2 downwind of work area (selected daily based on forecasted wind direction)	Continuous during material handling work hours
	Verification sampling of mercury on particulate		10-hour sample collected during at beginning materials handling operations
Vibration	Structural inspections	Structures within 100 feet of rigid barrier installation and removal work	Before and after rigid barrier installation and removal
	Real-time measurements of vibration	Select structures	Continuous during rigid barrier installation and removal work hours
Noise	Real-time measurements of sound level	At work perimeter nearest sound source (not truck traffic)	Twice daily and at beginning of new sound source

MONITORING LOCATIONS



AIR & NOISE
(locations along
work perimeter)

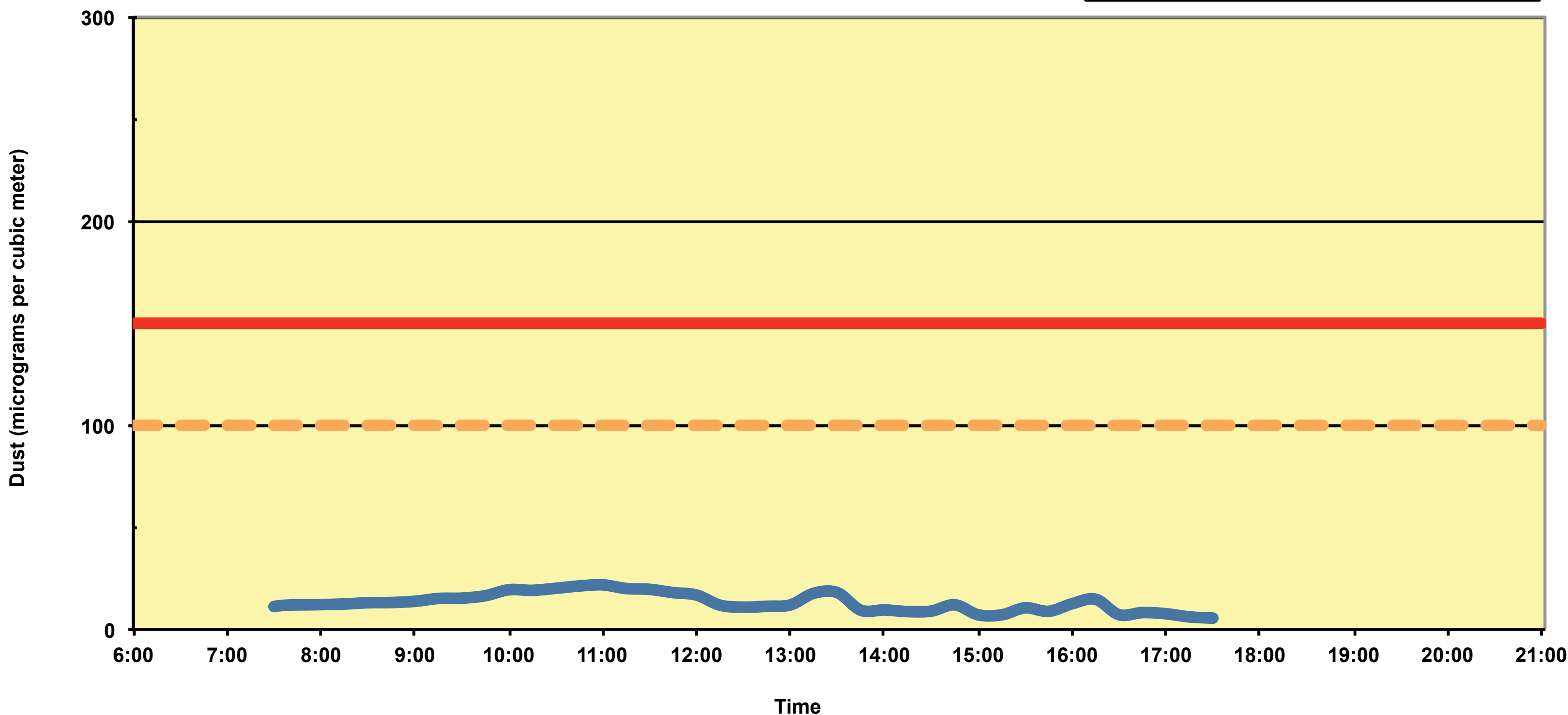


WATER
(3 locations)

PERIMETER WORK AREA MONITORING



Particulate Monitoring Results Site Name [Date]



Example Data Display

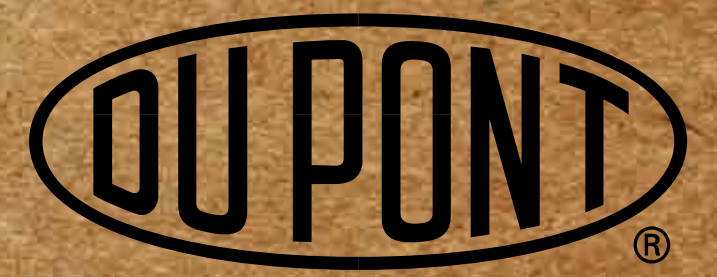
PROJECT SAFETY MEASURES



AREA	CONSIDERATIONS
On-land	<ul style="list-style-type: none">• Limiting work hours• Fencing around perimeter of work area• Screens and visual barriers• Limited/restricted access to work areas• Warning signage• Flag people for traffic direction• Consideration of school start/end• Defined truck routes• Security personnel (24 hours)• Designated observation area• Clearly identified pedestrian path• Develop Health and Safety Plan to protect people
In-water	<ul style="list-style-type: none">• Limiting work hours• Installation of rigid barrier and silt curtains• Lighted buoys• On water warning signage• Buoys along in-water barrier• Limited/restricted access to work areas• Develop Health and Safety Plan to protect people

Our Goal is Protection of People and the Environment

PROJECT SAFETY MEASURES



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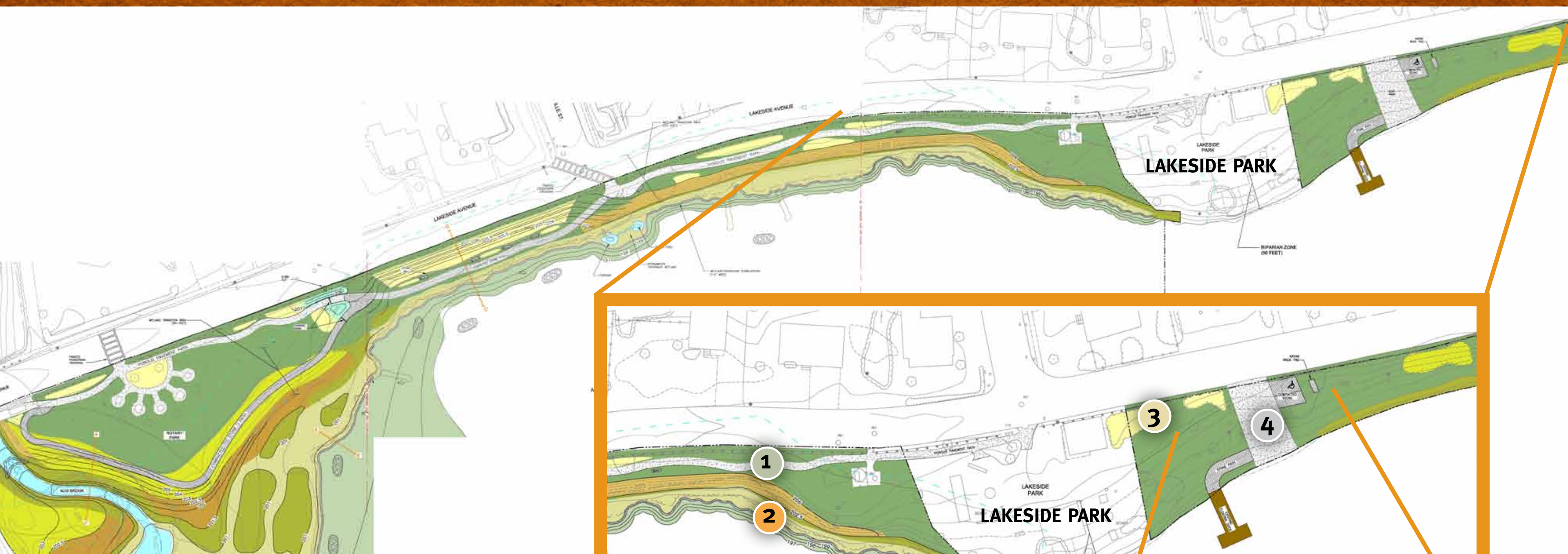
ROTARY PARK & ACID BROOK AREA RESTORATION CONCEPT



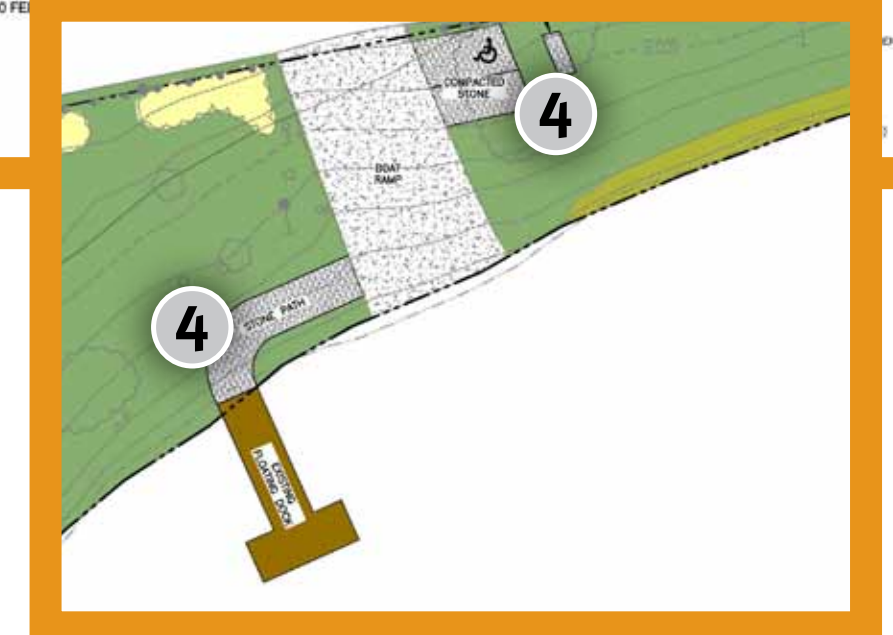
- 1** Forest Restoration
- 2** Wetland Restoration
- 3** Stream Restoration
- 4** Shore & Lake Restoration
- 5** Walking Paths & Trails
- 6** Rain Gardens



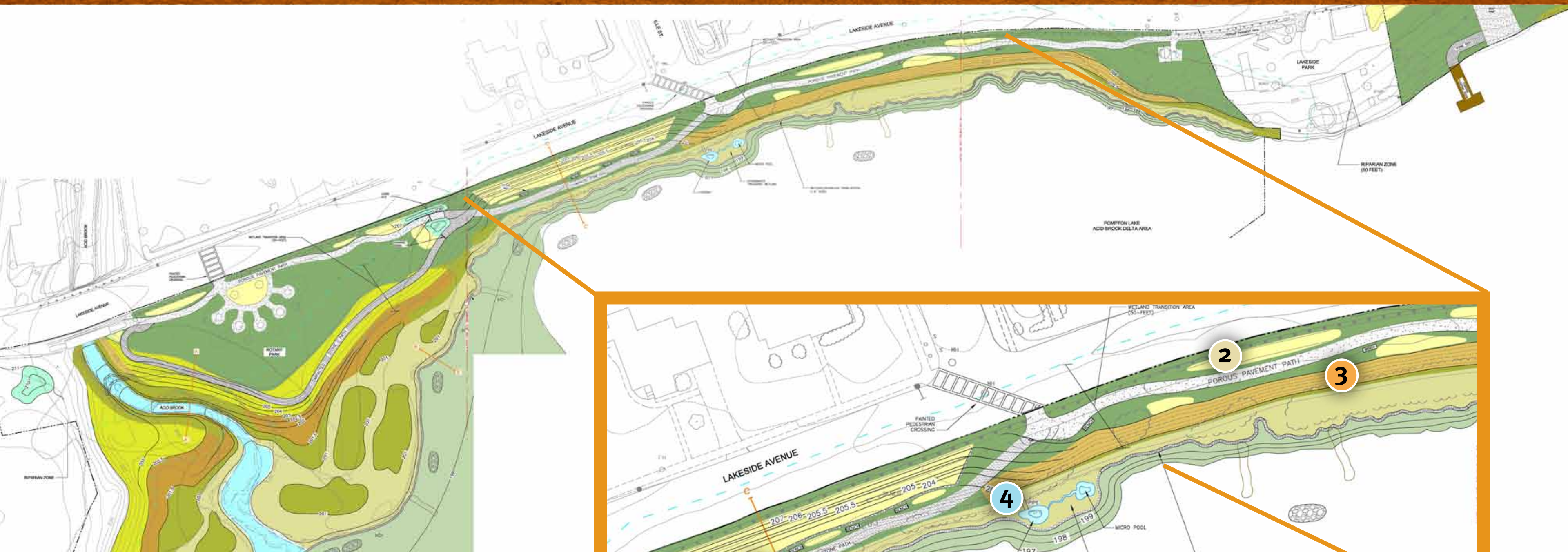
ROTARY PARK TO LAKESIDE PARK RESTORATION CONCEPT



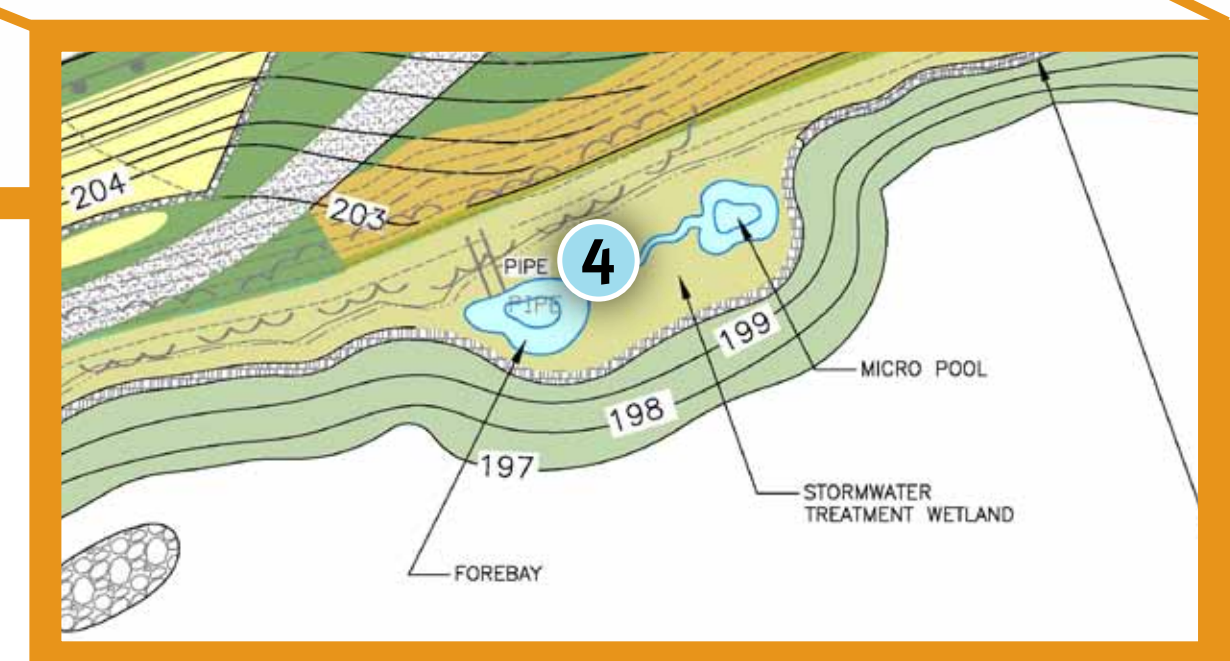
- 1** Walking Paths
- 2** Wetland & Shore Restoration
- 3** Planting Beds
- 4** Dock Path & Public Access



ROTARY PARK TO LAKESIDE PARK RESTORATION CONCEPT



- 1** Lakeside Path and Benches
- 2** Planting Beds
- 3** Riparian Buffer Plantings
- 4** Stormwater Treatment Wetland



ROTARY PARK & ACID BROOK AREA RESTORATION CONCEPT



RESTORED



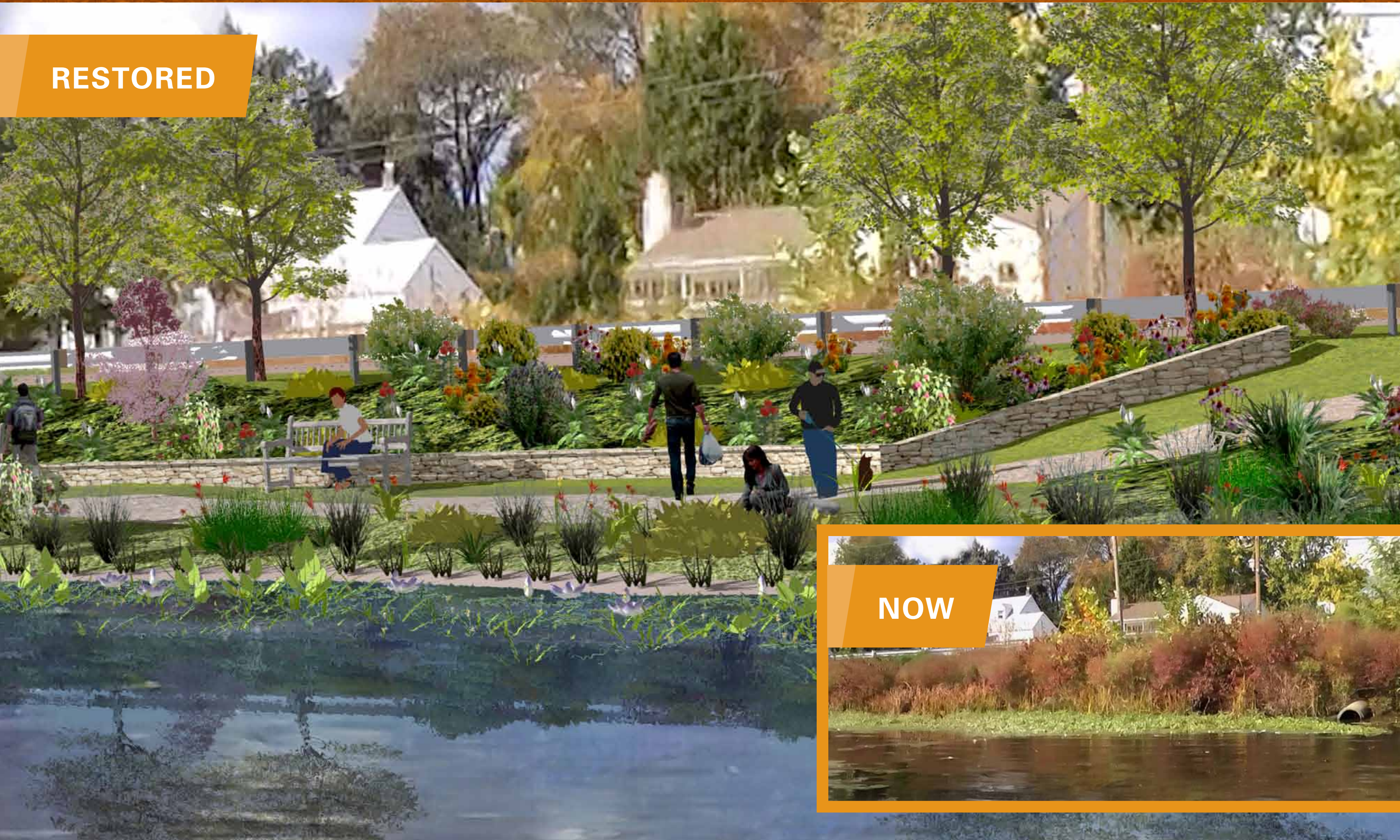
NOW



ROTARY PARK & ACID BROOK AREA RESTORATION CONCEPT



RESTORED



NOW



IMPLEMENTATION SCHEDULE



SCHEDULE - PERMITS/CONSTRUCTION/RESTORATION		Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	2012 - 2014 Construction Season		
													2012	2013	2014
CONSTRUCTION OPERATIONS PLAN															
PERMITS & APPROVALS	PREPARATION														
	SUBMITTAL														
	REVIEW														
	APPROVAL														
CONTRACTOR NOTICE TO PROCEED															
CONSTRUCTION MOBILIZE															
PROJECT AREA ISOLATION															
CONSTRUCTION (HYDRAULIC)															
	OR														
CONSTRUCTION (MECHANICAL)															

ENVIRONMENTAL PERMITS, APPROVAL AND COORDINATION



- NJDEP ODST and DLUR Mitigation Unit Coordination and Review
- NJDEP (N.J.A.C. 7:7A): Freshwater Wetlands General Permit 4
- NJDEP (N.J.A.C. 7:13): Individual Flood Hazard Area Permit w/ Hardship Waiver
- NJDOA (Chapter 251, P.L. 1975): Soil Erosion and Sediment Control
- NJDEP (N.J.A.C. 7:8): Stormwater Management Plan
- NJDEP Division of Water Quality: Treatment Works Approval
- NJDEP Division of Fish and Wildlife: Scientific Collection Permit
- NJ SHPO and Natural Heritage Coordination
- Pompton Lakes Borough: Soil Mining Permit
- Pompton Lakes Borough: Shade Tree Ordinance