



Borough of Fair Haven

*Proposed Hydro-raking to
McCarter Pond*



LEON S. AVAKIAN, INC.
Consulting Engineers

788 Wayside Road
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Office: (732) 922-9229 Fax: (732) 922-0044

McCarter Pond - *Aerial View*



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HYDRO-RAKING

- ❖ *Remove debris, decaying organic material and aquatic vegetation*
- ❖ *Remove undesirable emergent plant growth such as cattails and Phragmites*
- ❖ *Removing plants and debris will help to reduce the overall nutrient load, minimizing low dissolved oxygen, foul odors and nuisance algae blooms*
- ❖ *Plants create dense mats in the water that block sunlight and exhaust dissolved oxygen*
- ❖ *Hydro-raking services can provide anywhere from one to three years or longer of nuisance plant control*



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ECOLOGICAL SURVEY

- ❖ *Ecological Survey dated August 4, 2016*
- ❖ *Anabaena sp algae filamentous cyanobacteria blue-green algae*
- ❖ *High Concentration of dissolved oxygen*
- ❖ *Average organic material depth was approximately 3 feet*
- ❖ *Aquatic plants identified: Duckweed, watermeal, floating filamentous algal mats, cattails and blue green algae*



BLUE GREEN ALGAE



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ECOLOGICAL SURVEY

WATERMEAL

- ▲ Floats at the surface
- ▲ Grain-like consistency
- ▲ Size of the head of a pin



DUCKWEED

- ▲ Floats at the surface
- ▲ 1/4 inch in size
- ▲ Miniature four leaf clover



INVASIVE PLANTS

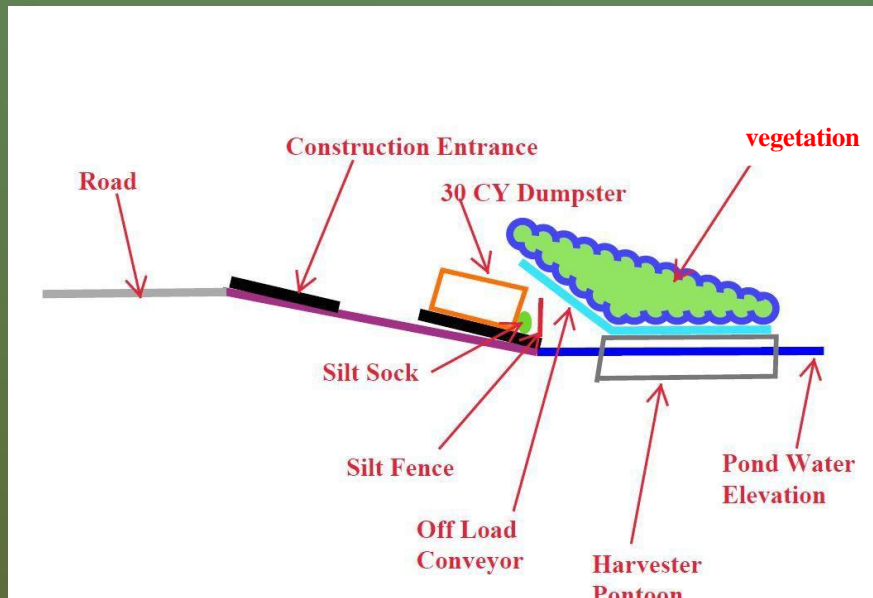


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PROJECT SCOPE

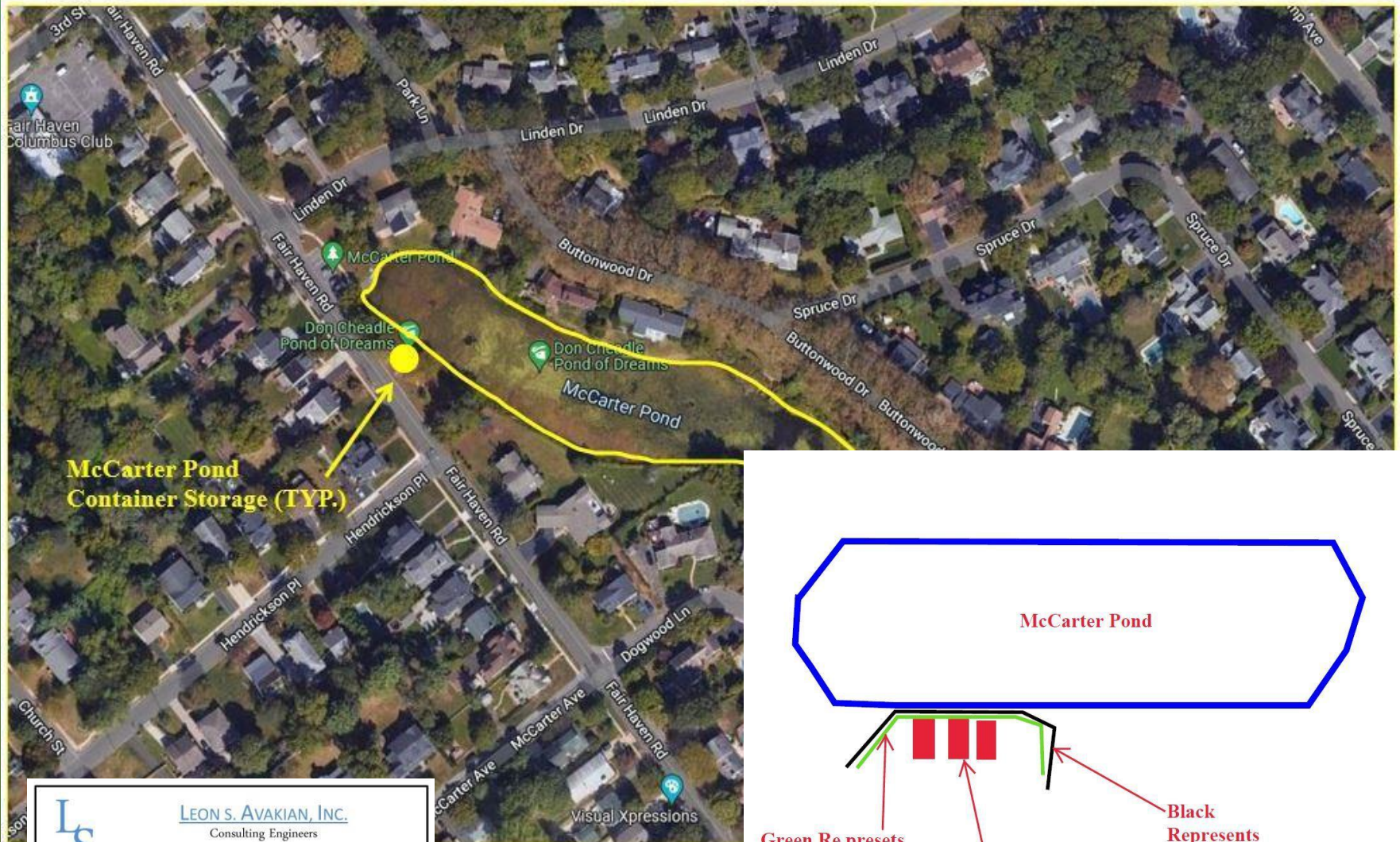
- ❖ *Hydro-raking 2,000 CY*
- ❖ *Disposal Transportation 650 Tons*
- ❖ *Disposal 650 Tons (\$85 per Ton – County Rate of Material)*
- ❖ *Topsoil 4” Thick 2,200 Square Feet*
- ❖ *Seeding 2,200 Square Feet*
- ❖ *Remove and reset aeration pods*



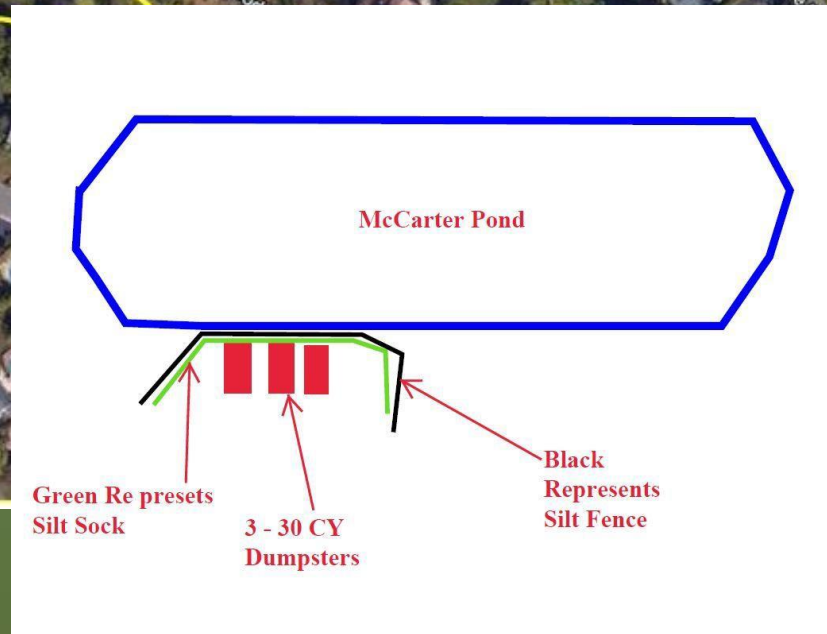
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WORK LAYOUT



**McCarter Pond
Container Storage (TYP.)**



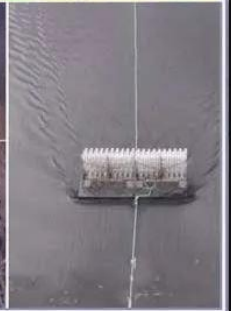
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EQUIPMENT TO BE UTILIZED

NEPTUNE RAKE

NeptuneRakeUSA.com



5701 International Pkwy, New Hope Mn, 55428



877-224-4899

PROJECT SCHEDULE

Spectraserv Inc
75 Jacobus Ave.
Kearny NJ. 07032

ID	Task Name	Duration	Start	Finish	Apr 10, '23						
					S	M	T	W	T	F	S
1	Mobilization	1 day	Mon 4/10/23	Tue 4/11/23		█					
2	Install Construction Entrance and other E&S	1 day	Tue 4/11/23	Wed 4/12/23			█				
3	Neptune Raking Start Date at Parking Lot Area	1 day	Thu 4/13/23	Fri 4/14/23					█		
4	Rake entire 700' of the pond	10 days	Fri 4/14/23	Thu 5/4/23						█	
5	Load vegetation and transport to offload zone	6 days	Tue 4/25/23	Fri 5/5/23							█
6	Transport and Dispose of Vegetation	6 days	Wed 4/26/23	Mon 5/8/23							█

Project: McCarter Pond Vegetation Removal
Date: Tue 2/14/23

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Progress	
Project Summary		Manual Summary		Manual Progress	
Inactive Task		Start-only			
Inactive Milestone		Finish-only			

Updated Schedule
Tue 2/14/23

BENEFITS

- ❖ *Hydro-raking can navigate shallow water and rotate in tight areas*
- ❖ *Rake mechanism allows for turtles and fish to escape when plant or organic debris is pulled from the lake or pond bottom*
- ❖ *Can remove plants, root systems, muck sediment and organic debris and sunken trash*
- ❖ *Greater dissolved oxygen for fish and other aquatic life*



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POND MANAGEMENT PLAN

- ❖ *Development of a lake management plan can be developed that provides seasonal management of submersed plants and at least 2-3 years of management for floating plants and emergent species*
- ❖ *Annual Fall leaf Foliage creates a new layer of soil material each year in the pond*
- ❖ *The leaf foliage provide rich source of carbon, nitrogen, phosphorous and potassium*
- ❖ *Lawn fertilizers likewise provide nitrogen, phosphorus and potassium*
- ❖ *These annual inputs lead to providing the catalyst for new water plant growth and the cycle of low dissolved oxygen, foul odors and algae blooms*
- ❖ *A hydro-raking maintenance plan can be developed to help keep the life cycle of the pond healthy*



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ANNUAL POND MAINTENANCE

- ❖ *Continue use of aeration system – system is adding dissolved oxygen to the pond*
- ❖ *Add a blue dye with acid yellow into the pond. Dye filters the sunlight to reduce growth of aquatic weeds and algae. Add on a monthly basis from April to September*
- ❖ *Hydro-raking – 2 to 3 year cycle depending on aquatic growth*
- ❖ *Reduce leaf litter and organic debris from entering the pond*
- ❖ *Consider lawn fertilizer ordinance to address runoff nutrients from entering into the pond*



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QUESTIONS?



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