

January 19, 2015

Felicia Tencza  
Lake Quality Improvement Chair  
Property Owner' Association of Lake Hayward  
PO Box 320  
Colchester, CT 06415

Dear Felicia,

All Habitat Services, LLC is pleased to present a final project assessment of our sediment removal operation in the Lagoon at the Second Beach on Lake Hayward.

The objective of this project was to remove accumulated sediment from within a 40' x 200' area to create a 20 foot wide enhanced depth lane to improve boat access through the lagoon to the lake. The work was accomplished using a small-scale cutterhead floating hydraulic dredge. The dredge was equipped with a horizontal auger type cutterhead and hydraulic powered pump that extracted the accumulated sediment from the lagoon bottom and pumped it to a dewatering containment structure located on the volleyball court. The sediment and water slurry were filtered through a geotextile fabric tube where the sediment was retained and the water was returned to the lagoon in a clarified state.

Upon completion of the sediment removal operation, we performed a bathymetric survey of the area to document the change of depth in the lagoon and the volume of sediment removed. The survey was conducted using dual beam down scan and side scan sonar in conjunction with a ground probe along GPS referenced survey points.

The lagoon dredge area has a total surface area of approximately 0.17 acres (7,456 square feet). Within that area there was an estimated total of 355.1 cubic yards (9,587 cubic feet) of sediment removed.

The in situ sediment volume removed in this project is not precisely stated as the majority of the survey area is in open water and we cannot accurately model the volume in areas where there is no shoreline boundary. After the completion of the pre-dredge survey, our elevation benchmark was also lost because the dock was removed, which prevents us from properly correlating our pre and post dredge survey data. Under these circumstances, we have provided our calculations to the best of our ability.



— Second Beach Dredge Area  
✕ Final Survey Points

**Figure 1. Second Lagoon Dredge Area and Survey Points**

We are estimating between 260 – 300 cubic yards (7,000 – 8,100 cubic feet) of consolidated sediment were captured in the geotextile tube. The actual in situ volume would be approximately 3 to 4 times greater than that.

The lagoon bathymetry overall is extremely variable. Prior to sediment removal, the depths in the lagoon near the boat ramp and the beach consistently ranged from 2 – 3 feet. Depth in the middle of the lagoon was around 4 – 5 feet.

After sediment removal, the depth of the project area in the lagoon ranges between 5 – 6 feet, up to where it interfaces with the natural depth of the lake at 4 feet. A graph of the depth profile for the dredge area in the Second Lagoon has been provided in Figure 2. Beginning from the boat launch, the depth profile is 5 feet. The depth of 5 feet remains until about 60 feet from shore, where the depth continually drops down until it reaches 6 feet deep at 85 feet from shore. The middle of the lagoon, between 90 and 130 feet from the launch, the depth remains approximately 6 feet deep. As you reach 140 feet from the boat launch until the end of the dredge area next to the beach, the depth ranges between 5.5 – 4 feet deep, where it meets with the natural lake depth.

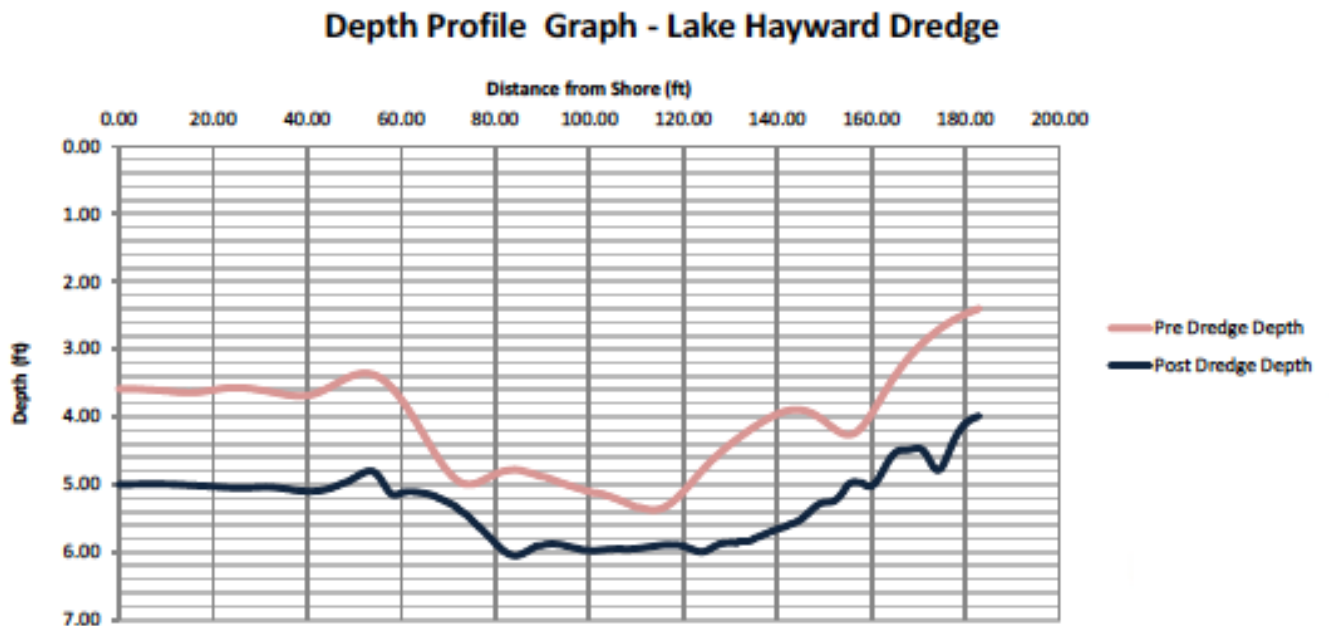
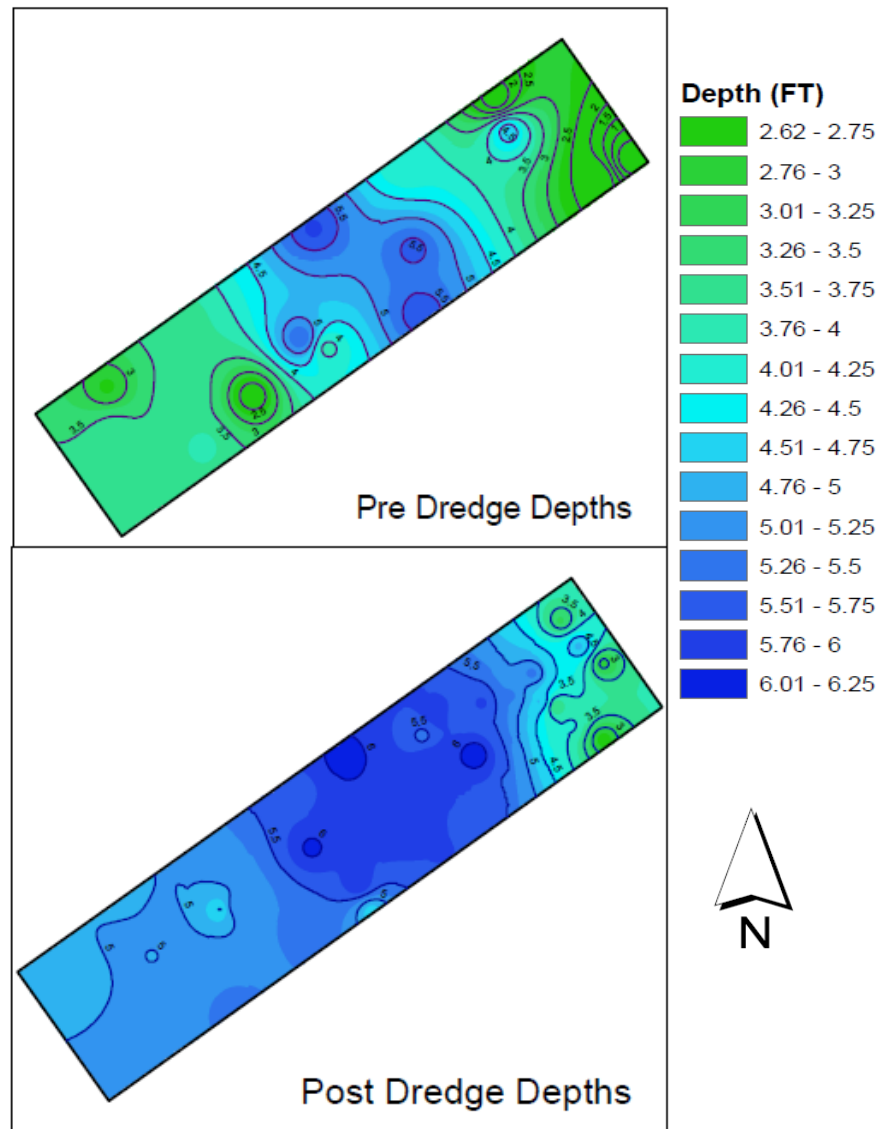


Figure 2. Lake Hayward Second Lagoon Dredge Area Depth Graph

Through this sediment removal project, the Second Lagoon has gained roughly 1.5 – 2.5 feet. Pre and post dredge depths in the lagoon can be compared in Figure 3. Our dredging depth protocol established the hard bottom as a limit to a maximum depth of 6 feet. There were also several abrupt features rising up from the natural hard bottom of the lagoon. Our diver removed a large concrete block and what appeared to be a car transmission from the bottom of the lagoon. We also encountered numerous tree stumps and shrub roots which significantly increased our operational time on this project.



Overall, the depth range produced from sediment removal has restored lagoon use and should allow for much easier boat access into the lake. We hope that the Committee is pleased with the results of this project.

Sincerely,

David Roach S-3538  
General Manager  
All Habitat Services, LLC