Greenwood Lake Commission
Stump Reduction Project
2006-2007

(Stump with broken propeller blades impacted)

Prepared for

New Jersey Department of Environmental Protection

March 2007

GREENWOOD LAKE COMMISSION
Stump Reduction Project, 2006-2007

Commissioners

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Acknowledgements

The Greenwood Lake Commission appreciates the assistance on this project by:

County of Passaic, Elease Evans, Freeholder Director
Moosehead Marina
Passaic River Coalition,
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This project was funded under a grant from the New Jersey Department of Environmental Protection.

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Executive Summary

In 2000, the Governors and Legislatures of New Jersey and New York enacted legislation creating the Greenwood Lake Commission to protect the quality of the environment through the preservation of its natural and scenic resources. The Commission submitted a report to the Legislatures in 2006 listing critical issues to be addressed. One issue noted was to enhance the recreational boating uses of the southern portion of Greenwood Lake. Former New Jersey Department of Environmental Protection Commissioner Bradley Campbell provided $100,000 to undertake a stump reduction project to improve boating safety in the lake. The project was carried out in February and March of 2007 during the drawdown of the lake.

The County of Passaic provided the funds to hire a consultant to assist the Commission in the development of a Request for Proposal, which was distributed. The Commission hired Environmental Renewal Company, West Paterson. Because of concerns raised by the New Jersey Department of Environmental Protection, the Commission decided to cut stumps at ice level and grind them below ice level. When the project ended, over 2,000 stumps had been modified so that they are now no longer a threat to boating. In addition, weed harvesting will be more effective, since the weed harvester will be able to cut weeds at a deeper level. The lake bed habitat remained the same as before the project.

While at least two-thirds of the stumps were treated, approximately 1,000 stumps still remain. The Commission plans to deal with these at the next drawdown. In addition, the Commission anticipates the removal of floating islands during the next few years, depending on funding availability.

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Stump Reduction on Greenwood Lake, South End

1. Introduction

In 2000, the Governors and Legislatures of New Jersey and New York enacted legislation creating the Greenwood Lake Commission to protect the quality of the environment through the preservation of its natural and scenic resources. In 2006, the commissioners submitted a report to the Legislators of New Jersey and New York listing critical issues to be addressed. One problem related to enhancement of the recreational boating uses of the southern portion of Greenwood Lake. The Commission requested $200,000 for stump removal from the NJ Department of Environmental Protection. Former Commissioner Bradley Campbell provided a grant of $100,000. A request for proposal was written with the help of TRC Omni and was sent to 12 vendors. The Greenwood Lake Commission awarded a contract for the cutting and grinding of these stumps to Environmental Renewal Company of West Paterson, New Jersey. Even though funding fell short of the full project needs, a program was developed to maximize the use of the funds that resulted in two-thirds of the stumps being either removed or ground to be below five feet of the water surface. Additional stump reduction will be required in future years.

2. History of Greenwood Lake

Greenwood Lake is a 1,920-acre lake located in both Passaic County, New Jersey and Orange County, New York. The lake is highly valued as an ecological and recreational resource for both states. Originally known as “Quampium” (a name which translates to “long water”), it was purchased by European settlers from the Minsis sub-tribe of the Lenni-Lenape Indians in 1707 and renamed “Long Pond”. In 1765, a small dam was constructed to utilize the water power to run local mills. The lake was extended in 1836 by the creation of the dam located at Ringwood State Park, which raised the water level by 12 feet. The dam was built to supply water to the Morris and Essex Canal, which was used by Pennsylvania coal barges. The expansion of Greenwood Lake attracted tourists during the 19th and early 20th centuries; however, the tourism rates dropped post-World War II, and seasonal housing soon became permanent.

During the expansion of the lake in 1836, trees in the areas about to be flooded were cut with saws and axes, leaving stumps to decay naturally. In the cold, dark, oxygen-poor water, however, trees and wood will not decay for thousands of years. The stumps left behind below the water surface became a navigational hazard for boaters on the shallower New Jersey portion of the lake. In addition to the stumps, another hazard comes from propeller blades and outdrives of boats, which are embedded in many of the existing stumps. These propellers are broken off from boats hitting these stumps year in and year out. These sharp, broken propeller blades can and have caused serious bodily injuries to swimmers and water sports enthusiasts. (See Appendix A, photograph from 1900)

3. Recreational and Economic Value

Since the mid-19th century, Greenwood Lake has been a major site for recreational uses, but in the past 50 years, primarily local people have utilized this resource. One study found that 37% of the users of the lake were residents of lakeshore communities and that the average travel distance to the lake was 21 miles. The same study showed that the most popular uses of the lake were boating, swimming, and water skiing, typically on the weekends between April and October. The potential for the Greenwood Lake tourism industry is much higher than its current use. However, there are a number of environmental problems and issues that are currently hindering the lake's recreational potential. Along with its recreational value, the lake is a substantial contributor to the Monksville and Wanaque reservoir systems, which supply drinking water to approximately 3.5 million residential, as well as, commercial users in northern New Jersey. Greenwood Lake also has high ecological value as habitat for a wide variety of avian and aquatic species. Pine Island (also known as Fox Island) for example, contains a breeding rookery for the Great Blue Heron (*Ardea herodias).*

4. Stump Reduction on the South End of the Lake

During the 2006/2007 drawdown, stump cutting and grinding operations were performed by Environmental Renewal Company, a contractor hired by the Greenwood Lake Commission, with assistance from private citizens, the Township of West Milford, and local marina owners.

Stumps were cut and/or ground on approximately 70 acres, an area containing over 2,000 stumps. Many of these stumps were in excess of 3 feet in diameter. The cutting and grinding operations took eight days, with 8-12 workers per day using chainsaws, stump grinders, and all-terrain vehicles to cut off and transport stumps and chips to dumpsters that were located at Moosehead Marina and at Brown's Point Park. Eight 40-yard dumpsters were filled with stumps and chips, which were then trucked to a grinding facility in West Paterson. This work was done for the initial contract price of $100,000. However, funds ran out at 11:30 a.m. on the eighth day. The contractors continued working gratis until evening, when they felt everything that had been started that day was completed and cleaned up.

Since the Greenwood Lake Commission only had $100,000, the project had to end before all stumps could be treated. Although many more areas require stump cutting and reduction, the cutting and grinding of the stumps that have been completed have improved navigation and hazards for swimming, boating, and water sports activities. It is anticipated that the remainder of the stumps will be treated at the next drawdown.

4.1 Methods and Practices for Stump Reduction

When the project was first planned, the stumps were to be pulled out. However, the NJ Department of Environmental Protection indicated a concern with regard to habitat destruction. Thus, the Greenwood Lake Commission decided to utilize a more non-intrusive method, i.e., cutting stumps at ice level and grinding them below ice level.

Starting near Brown's Point, (See MAP-1 Important Greenwood Lake locations) the contractors initially attempted to cut stumps with chainsaws, but due to the sediment build-up inside the grains of the stump timbers, the chainsaw blades would dull and break quickly. Having to stop frequently to replace and sharpen chainsaw blades was not only costly but time consuming. Most of the time, grinders were used in conjunction with chainsaws to maximize the efficiency of the reduction, especially on the larger stumps that caused the chainsaws so much trouble. The two reduction methods had different strengths and weaknesses. The chainsaws cut the stumps at the ice level and did not cause much debris. On the other hand, the mechanical grinders did allow for the stumps to be reduced to a depth of six inches under the ice, but they required considerable cleanup to remove wood chips.

4.2 Working Conditions

Dr. David A. Robinson, New Jersey State Climatologist at the Center for Environmental Prediction, Cook College/NJAES, and Rutgers University stated on March 1, 2007: "Our record warm early winter was all but forgotten this past frigid February. Statewide, the preliminary average temperature of 26.7° was 6.2° below the 1971-2000 normal of 32.9°. This makes February 2007 the 15th coldest since 1895, and the coldest second month of the year since 1979."

Despite the generally bitter cold, the integrity and traction of the ice were often challenged by the sun, which caused the top layer of ice to melt, forming large pools on the surface that made maneuverability arduous. Workers were forced to be most active during the colder hours but still wound up wet from falling through the ice or from exposure to melt pools on the surface. Clothes had to be thrown out after the workers were done due to the odor of the sediment, mud, and ooze. The contractor performed well in difficult circumstances making sure that workers were on-site and working 100% of the time.

4.3 Work Completed

The duration of the work lasted for eight days from start to finish. During the first 4 days, the reductions near Moosehead Marina were completed. Here, a majority of the stumps were ground from Moosehead south to Rocky Point. During the last 4 days, 80% of the stumps were treated at Brown's Point Park and South Shore Marina. In total, two-thirds of the estimated 2,000 stumps within the project area's 70 acres were cut and ground.

Another important aspect of this project was the opportunity to perform a cleanup of the shoreline and lake area. Fallen trees at the shorelines were disposed of along Lakeside Road as well as the Pine (Fox) Island shoreline. In addition to the work at the Moosehead Marina and the shorelines, other areas were also cleaned. Navigation channels were also cleared, a path was cleared approximately 325 feet from Pine Island towards Lakeside Road as well as from Moosehead Marina north and past Sportsman's Marina.

This cleanup not only improved the scenic value, but the removal of debris on shorelines was also a safety concern similar to the stumps in the lake, as the boat lanes are very close to the shorelines near Pine Island. Other waste was also disposed of properly at this time, including trash, tires, car bumpers, glass and plastic bottles. Due to the proximity of the roadway, this waste is often contributed by passing motor vehicles.

5. Benefits of the Project

The greatest benefit to the Commission from this project will be enabling it to operate its weed harvester in a more efficient way. The weeds are invasive species that are extremely hazardous to boating and swimming. The removal of these weeds is essential for water clarity and quality. In past seasons, the weed harvester could only cut approximately three feet down due to the presence of the submerged stumps rather than five feet. Now that the stumps are reduced in quantity and with the ability of the harvester to cut deeper, boating will be safer and more pleasurable. (See Appendix B, article titled Boaters: *Greenwood Lake has improved*)

Another beneficial aspect of the project is the thousands of dollars boaters will save on propeller and outdrive repairs. People every season seem to spend more time and money fixing their boats than enjoying them on the lake. With a lot of these stumps cleared and debris removed, the boaters on the lake are less likely to hit something, preventing damage that is expensive and annoying to repair.

Above all, in addition to water clarity and quality and expenditures, the greatest value of all is keeping the public safe from the hazards that these stumps presented. Knowing that the stumps have been reduced, the public will be able to come back season after season to safely enjoy Greenwood Lake.

6. Future Proposal for Floating Islands

The water in Greenwood Lake is eutrophic with frequent algae blooms in the summer causing islands to be created by gases trapped in layers of the lake sediment along with root systems. They can appear in about 3-4 hours once gasses have been created and combined with plant matter. Once on the surface, the islands will move with prevailing winds or even a current, but will still mostly be tied down by a few root systems thus

creating a navigation hazard. They are often fairly large in length; some may grow to a size of a few hundred yards or greater.

As these islands form beneath the water, they rise and disappear depending on weather and water conditions. However, because of the uncertainty of location, a boater may not encounter a floating island in the morning and then find it surfaced in the afternoon, for example.

These islands are navigation hazards and could cause injury to individuals partaking in a variety of water activities. Since the islands are not limited to one area, there are no ways to protect the boaters and skiers with flags or sanctioned areas. Thus, the best alternative is to remove them when found.

6.1 Methods of Removal

Cables could be attached dragging the islands to the shoreline so an excavator could dispose of them properly in dump trucks.

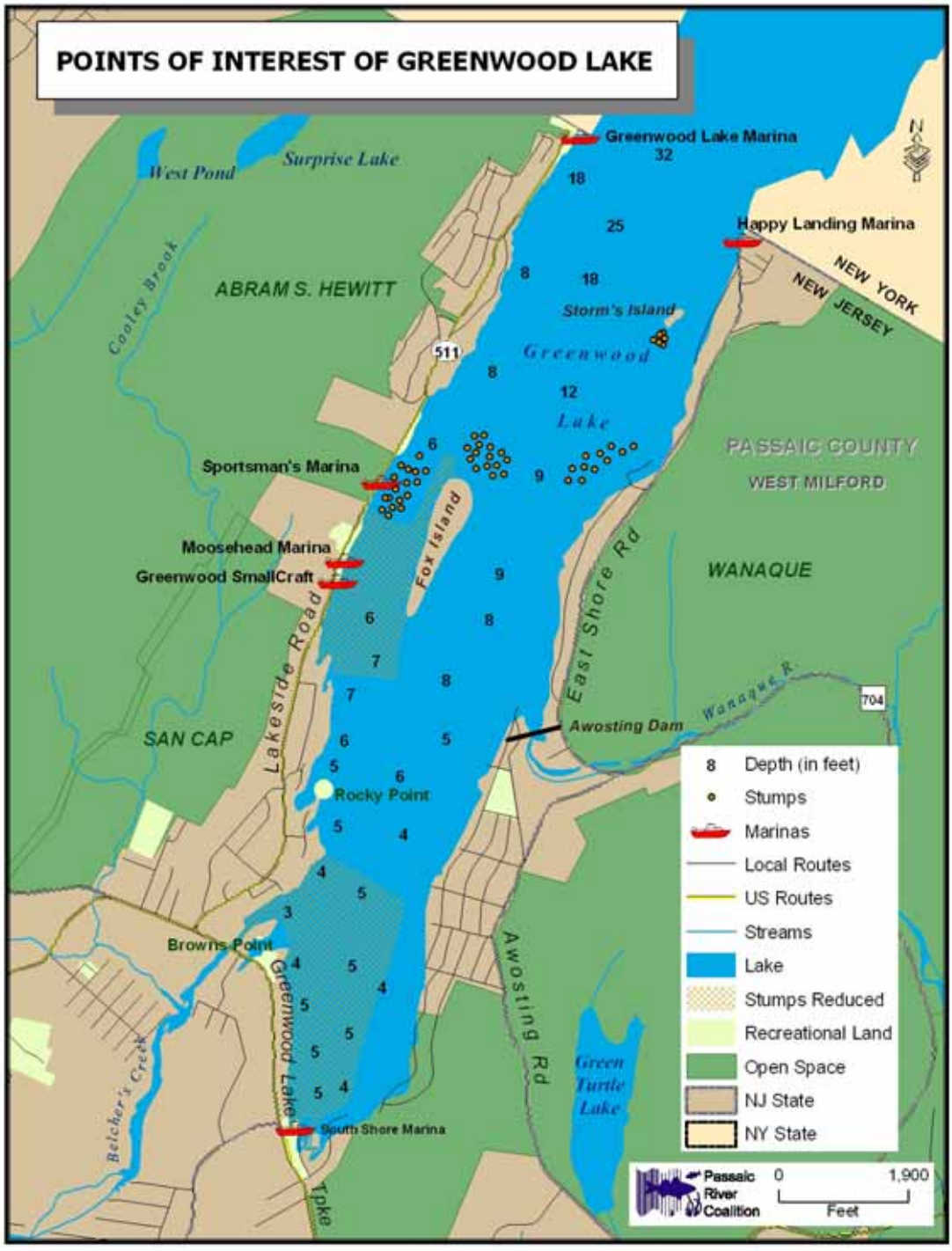
Barges on the lake with excavators on them could extract these islands when they surface. These on board excavators, would then dispose of the material to dump trucks or containers.

Amount needed: $80,000-$100,000.

7.0 Future Stump Reduction

Only two-thirds of the stumps were removed during the 2006-2007 winter season when a drawdown occurred. The Greenwood Lake Commission anticipates having another drawdown in three or four years when they plan to complete the stump reduction project.

Amount needed: $100,000.


POINTS OF INTEREST OF GREENWOOD LAKE
Greenwood Lake Marina
Happy Landing Marina
West Pond
Surprise Lake
Cooley Brook
ABRAM S. HEWITT
Storm's Island
NEW YORK
NEW JERSEY
511
Greenwood
Lake
PASSAIC COUNTY
WEST MILFORD
Sportsman's Marina
Moosehead Marina
Greenwood SmallCraft
Fox Island
WANAQUE
East Shore Rd
Lakeside Road
Wanaque R.
704
Awosting Dam
SAN CAP
Rocky Point
Browns Point
Greenwood Lake
Awosting Rd
Green Turtle Lake
Belcher's Creek
South Shore Marina
Depth (in feet)
Stumps
Marinas
Local Routes
US Routes
Streams
Lake
Stumps Reduced
Recreational Land
Open Space
NJ State
NY State
Passaic River Coalition
0
1,900
Feet