

### Irrigation Pond Restoration

**Spring Brook Country Club**  
**Robert Carey, superintendent**

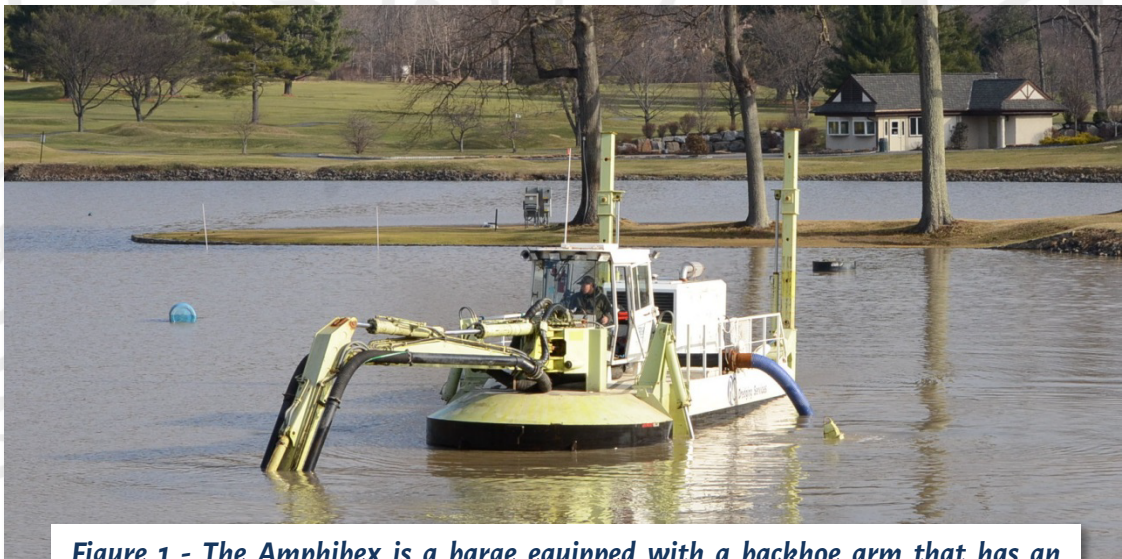
**Morristown, N.J. 07960**

#### Issue

Armstrong Pond encompasses approximately seven acres at Spring Brook Country Club. It is prominently located between several golf holes and forms the centerpiece of a terrific vista from the clubhouse. The pond is also used to collect and store irrigation water. Armstrong Pond is recharged from springs and surface runoff, so the water level is dependent on rainfall. During dry years, the pond did not have enough water holding capacity to supply water for the course without a significant drop in water level, causing a decline in both aesthetics and water quality. Low water levels also caused water temperatures to increase, leading to an explosion in aquatic weed growth. Given its prominent location, Armstrong Pond could be a focal point or an eyesore depending on the weather.

#### Action

The solution was dredging the pond and restoring its original depth, taking care to achieve this in an environmentally responsible manner. During periods of abundant rainfall, the pond overflows into a stream that ultimately flows into the Great Swamp, an environmentally



***Figure 1 - The Amphibex is a barge equipped with a backhoe arm that has an attachment similar to a flail mower with a pair of 6-inch pumps attached. The bucket slides along the bottom of the pond, the flail loosens sediment, and the pumps carry the slurry to previously arranged geotextile bags to collect the sediment.***

sensitive wetland area in Central New Jersey. Safeguarding the swamp added another layer of complexity to the project and required extra caution in the planning and execution of the dredging project.

To dredge the pond, Spring Brook chose a relatively new, hydro-dredging technique that had rarely been used in the area. Superintendent Robert Carey worked with a team of engineers who assisted in the site plan and permitting process. Spring Brook also engaged the local New Jersey Department of Environmental Protection (NJDEP) representative and various local officials for assistance in monitoring the project. The pond was dredged using an Amphibex machine, which pumped a combination of water and sediment from the pond into large geotextile bags that were laid out in an adjacent field. Sediment was trapped in the bags but water drained out and returned to the pond. Flocculants were injected during the process to help capture and dry the sediment

## Results

The dredging project at Spring Brook Country Club was an extraordinary success. Dredging the pond reduced the risk of water shortages without relying on a new water source. Deepening the pond improved water quality and aesthetics, and also helps prevent the growth of aquatic weeds. Perhaps most importantly, 18,000 cubic yards of sediment were removed from the pond without affecting the quality of water flowing into the Great Swamp. Local regulatory and environmental organizations closely monitored the project during implementation and were impressed that no appreciable amount of sediment escaped downstream during the process.

The project was completed without any significant problems and it raised golfer awareness regarding the importance of water issues. Spring Brook now implements voluntary water restrictions more quickly when dry weather patterns occur. This helps preserve their water supply and protects the pond's ecosystem during periods of drought.



***Figure 2 - Geotextile bags are used to trap sediment pumped from the bottom of the pond. Injecting flocculants into the slurry improves sediment collection and speeds the drying process significantly.***