

# Ivan Visits Valley Brook Country Club

How we learned our lesson and how we will be ready next time.

BY JOHN SHAW



A creek that is normally 75 feet wide turned into a 1500-foot-wide torrent of water as 5.96 inches of rain fell on the golf course.

Valley Brook Country Club, in McMurray, Pennsylvania, is a 27-hole course originally designed by Jim Harrison and Fred Garbin and built in 1966. The Red Nine underwent a renovation in 1974, with the greens being redesigned by Robert Trent Jones.

During the summer and fall of 2004 we found out what it is like to experience the wrath of Mother Nature on our course. In June of that year a severe storm formed over our property, result-

ing in the destruction of 25 large trees. It took us two weeks to clean up the debris. Little did I know, however, that this storm event was just the tip of the iceberg with respect to what was to come. As we entered the summer of 2004, we were just 11 bunkers short of completing a major renovation project. Ironically, we started on the Red Nine bunkers because they were the largest and we wanted to get these features finished for the members first.

On Friday, September 17, 2004, Valley Brook Country Club received 5.96 inches of rain from the remnants of Hurricane Ivan, an amount that we found our course could not handle over such a short period of time. The golf course is divided by Chartiers Creek, with the Red Nine being protected by a dyke system that was part of the original design when the course was constructed in 1966. No one could have foreseen that the creek would rise



After the flood waters receded, our fairways looked more like the surface of the moon than manicured surfaces our members enjoyed.

Skid loaders hauled debris from the property. The leading edge of the loader bucket was fitted with a section of PVC pipe to reduce the potential for damage to the turf.



7 feet above the dyke, flooding 13 holes and causing major damage that would take months to repair.

Chartiers Creek is normally 75 feet wide, but during this storm event it turned into a 1,500-foot-wide rushing river encompassing most of the Red Nine and tearing one of our main bridges from its cement frame. The force of the water carried the bridge one mile downstream, depositing it on a neighboring golf course. As I stood watching the water run across our course, I couldn't help but think about the damage that was being done. What would I find when the water receded?

On Saturday morning, September 18, we started developing a recovery plan. We were very fortunate in that local superintendents were able to supply us with two 6-inch pumps, enabling us to begin removing water that was cover-

ing large parts of the course. The loss of the bridge made the recovery process even more difficult because the equipment we needed to initiate the recovery process was on the other side of the creek. We had to haul the equipment 4 miles around the outskirts of the course property on a back road that was used only for construction. After a few trips with the trucks, it was clear that we would need to hire a contractor to build a better road to access the golf course maintenance facility. It also became very clear that we would need to have two equipment staging areas, since work needed to be done on both sides of the creek.

On Sunday, September 19, the water level in the creek dropped enough to allow the backflow valves installed in the dyke to operate as designed. When open and operational, three 12-inch

valves ran at full output. We also had the two 6-inch pumps running, discharging 2,000 gallons of storm water per minute from the course to the creek. Even with these backflow valves open and borrowed pumps running at full tilt, it took almost 48 hours to move the water off the course and expose the underlying damage.

The first thing we noticed was a heavy accumulation of silt, tires, trees, and every form of debris imaginable. The smell from the decaying debris and dead fish was indescribable and was an obstacle for some of my crew members with weak stomachs. As a precaution, a doctor who is a member of Valley Brook Country Club administered tetanus shots to employees and volunteers.

We began cleaning off the greens using four 6-inch trash pumps to spread



One-inch hoses were used to move silt and debris off the course. Creating a slurry allowed us to move the material with little damage to the turf below.



Large trash pumps moved high volumes of water over silted areas of the golf course. Once a slurry was created, it was moved with plastic snow shovels.

water across the greens. This allowed us to create a slurry that made it easier to shovel and squeegee the debris. One of our first trials and tribulations was to figure out how to manhandle the 6-inch hose discharging the water. With the combined efforts of my staff, the club's staff, and numerous club members, we were able to clear the greens of the heaviest silt immediately. In this situation, everybody learned quickly that this was a joint effort and that no single person could be able to manage this monumental task. We needed to work together.

On Tuesday morning (September 21), my full crew returned to work, along with 25 volunteers from other clubs and businesses. Some of my fellow superintendents had been making phone calls to line up volunteers to help with the silt removal process. With

this kind of help we were able to start removing silt on the tees and fairways using Steiners fitted with snow blades, Toro Sand Pros with box blades, and track loaders fitted with PVC pipe attached to the front edge of the bucket. We also set up 20 1-inch hose attachments that we could insert into our irrigation heads. The hoses were used to produce a slurry, which allowed us to move the silt and debris away from in-play areas much more rapidly.

After working on silt cleanup for more than two weeks, the decision was made to hire a contractor to help get the remaining silt and debris off the course. We needed to accomplish this to have any chance of completing the necessary seeding programs before winter weather arrived. The contractor brought in two tractors with trailers, a skid loader with flotation tires, and a

small excavator fitted with a rotational grade-all bucket. The greatest benefit to using outside contractors was the skill and speed with which they performed their cleanup efforts.

We could not completely avoid damage to the course while cleanup was being performed, but once we completed removal tasks, it was surprising to see how little self-inflicted damage resulted. One of the decisions we made was to haul all of the contaminated bunker sand to a 10-acre site that the club owns, where a 10,000-square-foot turf nursery was made with the sand. At the time, it seemed like a waste to haul the material the extra distance, but I'm glad we did, since this nursery is going to be a great asset to the club for many years to come. Because of silt contamination, the nursery will be used only for fairways, approaches, and tees.



Superintendents from neighboring courses, their courses unaffected by the storm, volunteered to help move debris off the golf course.



Our crew and many volunteers worked long hours removing debris from the course.



We employed the services of an outside contractor to remove severely contaminated bunker sand. Unfortunately, the damage occurred only a few months after we had completed a major renovation of all of the bunkers.

While the outside contractor was busy removing silt, my crew began double-aerating and slice-seeding the damaged fairways. We also took the time to core-aerate the greens that were affected by the flood. We were able to do this because we could not seed the rough until the construction company completed the final stages of the clean-up process. As soon as they completed a section of the course, we were seeding behind them.

We were fortunate to have perfect weather in October, and we were able to have all of the seeding finished by October 15. Bentgrass introduced to the fairways germinated in about five days. Since we were already into October, we decided it was too late to seed the roughs with bluegrass. We opted to use turf-type tall fescue varieties and sowed them into the damaged areas with a Seed-o-Vator.

The cleanup process was tiring and emotional. It brought tears to my eyes seeing all of the combined efforts focused on saving turf at Valley Brook Country Club. In the end, turf on all of the greens and tees was saved, along with the majority of turf on 10 of the 13 fairways affected by the storm event. Three fairways had 60% turf loss, with the rough being completely devastated on these holes. Thirty-one of the newly built bunkers were a complete loss. The volunteers helped save a tremendous amount of turf, and for this I will be forever grateful.

We took special precautions during the summer of 2005 to help the new turf make it through extreme environmental conditions. Our first task was to get the club's board of directors to agree to restrict golf carts to paths on the affected holes. This restriction was in effect for the entire season. We roped off the most severely damaged areas from green to tee, and I can assure you that our rough mowing operators will be happy to see the ropes removed next year! We also aerated the areas most severely impacted by silt accumulation with an Aer-Way repeatedly throughout

the season. We needed to promote air exchange and did not want our seeding efforts to succumb to suffocation from silt that was sealing off the surface. We mowed by hand where necessary to reduce mechanical wear on juvenile grass. We even roped isolated areas so my crew would not drive through sensitive portions of fairways or rough. We planned on hand watering the recovering areas during the summer months of 2005, but it turned out to be one of those years when we hand watered most of the course for the entire season. I'm glad to say that we made it through the season without any turf loss on any of our main play areas, including the flooded holes that exhibited some of the best turf I have ever seen. Controlling traffic really paid off.

If you ever find yourself in this situation, don't be afraid to tear the grass up a little with plows, skid loaders, etc., since time is everything when you are trying to save as much grass as possible. The experience has allowed us

to develop a recovery plan just in case we are flooded again. The following is a list of things that we put into action when Hurricane Katrina came through during the summer of 2005. Luckily for us we did not receive much rain, but we were ready.

### VALLEY BROOK COUNTRY CLUB FLOOD CHECKLIST

- Remove from the course:
  - Tee markers
  - Ballwashers
  - Garbage cans
  - Pond fountains
  - Rope and stakes
  - Bunker rakes
- Screw down irrigation valve box lids
- Dismantle pump station (last resort)
- Take in satellite boxes (last resort)
- Secure above-ground diesel fuel tank
- Strap down the urea sulfuric acid tank
- Move equipment out of the trailers in the back parking lot
- Move the fertilizer to the pallet racks
- Move all trailers, plywood, and equipment from the back parking lot
- Move essential recovery equipment to the other side of the creek before flood level is reached
- Check the following:
  - 4-inch trash pumps — intake hoses, hoses, gaskets
  - 1-inch hoses, quick coupler attachments, and distribution nozzles
  - Electric generator
- Shut off power to the maintenance building
- Adapt skid loader bucket and Steiner blade — fit both with PVC pipe
- Back up computers
- Print out blank work schedules
- Close and lock doors at the creek pump pit
- Consider applying additional growth regulator to suppress growth prior to the flood

JOHN SHAW, CGCS, *became superintendent at Valley Brook Country Club in 2003.*



Ten of the 13 fairways covered by water and debris exhibited only minimal damage. Overall, the recovery program was a success.