

## DeVries Leaves Low Water Legacy at Reid GC

By **Bob Lohmann**, President, Lohmann Golf Design

**D**oug DeVries knows how to finish up on a high note. Doug has been the superintendent here at Reid Golf Course since 1981, and he'll retire from his position in the spring of 2014. After decades of dealing with flooding issues, he spent the last two years working with us to get that problem solved, while implementing some long-overdue course upgrades in the bargain.

"This has been in the works for five years and it's been pretty exciting to see it all come together," said DeVries, CGCS. "I did a renovation and grow-in back in 1977, but that was back-of-the-napkin stuff and we were always wondering where the money was coming from. This was a precision operation and it was great to be a part of it.

"We've already had two heavy rains and the system works just like it's supposed to — the water level in the new naturalized stream only went up about 12 inches instead of the 4 - 5 feet we used to experience in the concrete channel."

The stormwater-retention capability of golf courses is something that golfers, the larger community and even course managers themselves often fail to appreciate. It's not the most sexy, captivating notion in golf, but the project now concluded here at Reid may just change all that, and the details should be required reading for anyone who maintains or manages a golf course, public or private.

Reid GC is a municipal facility lying entirely within the Upper Fox River Watershed. Surrounded by urban development, the course for many years had already served a practical water management purpose in town: a concrete channel cut directly through a four-hole section of the course, gathering overflow from the course but also from the paved streets all around it, and ultimately delivering that water into the Fox River, which flows into Green Bay.

Two problems: First, not enough water was actually making it downstream efficiently, resulting in all sorts of localized flooding on course but mainly off course. Second, the water that did reach the Fox River did not meet new state standards for water quality.

It took two years, but the engineering firm AECOM and my firm, Lohmann Golf Designs — along with Doug, Ryan Inc. Central and several others — managed to solve this issue and upgrade the four affected holes, at basically no cost to the Appleton Parks and Recreation Department, which manages the golf course.



**Top: East Pond during construction**

**Middle: Ponds and project in October after grow in.**

**Bottom: South Pond during grow in.**  
(Photos by Lohmann Golf Design)

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"Two things drove this project," said Kelly Mattfield, the AECOM project manager who handled this job. "One component was putting in ponds at the golf course and naturalizing the channel within the golf course. The other was removal of total suspended solids and phosphorus from the stormwater, for compliance with the MS4 permit, and also for compliance with TMDLs at the new state and federal levels."

Allow me to translate: MS4 is a clever acronym for Municipal Separate Storm Sewer System. TMDL stands for "total maximum daily loads" of anything that "impairs" water quality, be they suspended solids, bacteria, phosphorus, or nitrogen.

Long story short, AECOM was hired by the city's stormwater division to sort this problem, and these engineers brought in Lohmann Golf Designs as consultants, because a) the golf course would clearly play a crucial role in this effort and would require significant renovation as part of the project, and b) we've handled a half dozen different stormwater retention projects on golf courses and thus have ex-

perience with the process.

Together, in work that finished this past summer, we naturalized the channel passing through the course and hugely expanded Reid's retention capacity by creating four acres of new ponds — or for you engineering types, nearly 50 acre-feet of new storage, enough to handle a 100-year storm. The key word here is "naturalized". By creating what is essentially a giant wetland, we also created a giant filtration system that cleans up that stormwater as it passes through the on-course system before heading downstream.

LGD has indeed done a ton of large-scale, stormwater retention projects: at The Bridges at Poplar Creek in Hoffman Estates, Illinois; at Deer Path GC in Lake Forest, Illinois; at The Traditions at Chevy Chase GC in nearby Wheeling. In each case, we increased retention capability and improved water quality through introduction of natural, wetlands-reliant filtration techniques. We also took the opportunity to greatly enhance course design as part of the process.

However, in each of the above instances, it was the course management entity

that instigated and ultimately paid for the project.

At Reid GC, the city's stormwater division was acting to comply with state statute, so it footed the bill. The city's Parks and Recreation Department operates on a completely separate budget. In essence, the golf course played a crucial role in enabling this communitarian effort — AND received significant design/aesthetic upgrades in the process, with no budgetary impact, save a few thousand for some grow-in materials. The stormwater division even factored in compensation for lost rounds and other pro shop revenues!

"Given the history of the course," explained Pete Neuberger, project manager for the City of Appleton's Engineering Department, "it's unlikely that these types of monies would have been available for course enhancement if there weren't this stormwater project as a source of funding."

Is there any reason this sort of situation could not take place on any course where the surrounding community is battling stormwater-retention and water-quality issues? Does it even matter whether that

### Hole 3 Before (Below) and after (Right) from the tee.

(Photos by Lohmann Golf Design)





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course is public or private? Not in my view, and Kelly Mattfield agrees.

"This is the first golf project I've personally done, and it was great working with Lohmann because they've got so much experience doing this sort of thing," she said. "Wisconsin is kind of ahead of surrounding states in terms of water quality aspects. But the EPA is pushing TMDLs across the country. Some states have more TMDLs than others, but these and other new EPA directives will definitely result in this sort of situation [in other communities]."

"If golf courses have the room, and they are in the right spot in the watershed, this makes sense. It's a win-win for everyone."

DeVries couldn't agree more: "It would behoove superintendents to approach the appropriate stormwater entities because golf courses are perfect for this. We would never have made these improvements without this opportunity. Supers should be aggressive. Talk to the right people. Call the DPW at the city or county level. Wisconsin is real aggressive on this stuff, but every state has stormwater management at that level. Lohmann and Ryan would be resources, too, because they've done it all before."

What did we actually do to the golf course, aside from creating

water capacity? Quite a lot, actually. You can't drop four new acres of water hazard in a 4- or 5-hole stretch of golf course and not impact the layout significantly, visually and strategically.

"We couldn't simply treat this as a typical pond project," said Neuberger. "We knew we had to respect the golf course by doing a good job of fully integrating these stormwater ponds as golf course features. It was Lohmann's job to find a way to enhance the course, and they did that."

Here's what went down:

- On the five directly affected holes, we rebuilt four greens and the equivalent of four fairways, moving them to maximize spatial relationships and improve risk-reward strategies at the edges of all these new water hazards. As Doug DeVries noted: "This whole property is only 108 acres, including the practice facility. That's really tight. It was a real challenge, putting 4-5 acres of pond and making it work. Lohmann made it work." We also effectively preserved the original green contours thanks to a thorough mapping exercise prior to construction. We even recreated some coveted pin placements: On the front right portion of the original 11th green, for example, there had been a very steep back-to-front

pitch. We duplicated that on the new 11th, while expanding the overall size of the putting surface. On the 2nd green, we more or less copied the original while again expanding its perimeters and making it tie in properly to the new surrounds.

- Reid GC will never be lumped together with the Midwest's collection of Golden Age Designs, but it is an older course with some fun, long-standing grooming traditions. For example, they mow a unique, 10-15 foot collar around their greens. Accordingly, when we rebuilt and reshaped the new green surrounds, we kept the features low profile and expanded the bentgrass collars to enable continuance of this style.

- Agronomically, the notable thing about the Appleton project is how we rebuilt the greens. Testing on the original soil profiles revealed a 3-4 inch layer of top-dressing build-up. Below that were 6-8 inches of native topsoil. In short, we replicated that profile on the new greens, using a 6:3:1 mixture that matched the top-dressing mix — allowing these new greens to behave more or less like the old ones, in terms of required maintenance practices. We also grassed them to Putter bent, an older strain whose name superintendents are probably surprised to hear after all these years. But Putter's color best matched the color of the holdover greens and is expected to perform well at the higher cuts (.120 to .130), with the conservative top-dressing program that Reid employs. For these reasons, we purposely avoided the newer, more aggressive bents that tend to get puffy when left at elevated heights of cut.



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An additional note on the greens construction: We've done similar soil matching elsewhere, deploying variations on this 6:3:1 theme. When watering in these new greens, however, we've found they are not equipped to absorb water like a USGA green might — after all, these greens are built with a heavier soil profile that retains moisture and has more limited ability to convey it like modern greens can, even with slit drainage installed in the subgrade. So the greens rely heavily on surface drainage, which exposes them to erosion potential while you're waiting for seed to germinate. Bottom line: They are tough to establish.

At Reid, we followed the advice of the USGA's Bob Vavrek, who recommended (several years back in a Green Section Record article: <http://gsr.lib.msu.edu/1990s/1999/990901.pdf>) that we use temporary, breathable covers for two weeks during germination. I know what you're thinking: That will overheat and suffocate the young plants! Not the case. These covers are breathable and never raised soil temperature more than 2 degrees, and that was during 90-degree July heat. Once the covers were employed, Reid's new greens came in like gangbusters.

- The removal of the old concrete channel is the last step in the reconstruction process, and that takes place this month. We are literally busting it up and burying it nearby. Good riddance. This project boasts enormous environmental and agronomic benefits, but there's no way around this fact: That channel was an eyesore. The aesthetic difference its removal will make at Reid GC — replacing it with an entire valley of wetland pools — cannot be understated.

The par-4 12th at Reid is a great golf hole whose basic routing was unaffected by all this work. You carry over the edge of a new pond to the top of a hill, then look right — across a valley — to a putting surface on the far hillside. Players used to fly that concrete channel with their approaches. Soon they will crest the hill and see a beautiful, winding, naturalized water feature. Yes, of course, that feature is part of a system that can now handle a 100-year storm, and the water exiting that system is 10 times cleaner. But the 12th hole will also be a more beautiful golf hole, and that should count for something. It's already counting for something.

"I'm excited to play more golf here at Reid in my retirement," said DeVries. "More time with grandchildren. More time fishing, but definitely more golf."



**Top: The concrete drain ditch would overflow during storms before construction.**

**Middle: The new natural stream takes the water without flooding.**

**Bottom: The natural stream to the left of the soon to be removed concrete ditch.**

(Photos by Lohmann Golf Design)





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**Top Left: Hole 11 During grow in**

**Top Right: Hole 11 after grow in**

**Left: Hole 12 before construction**

**Bottom: Hole 12 after construction**  
(Photos by Lohmann Golf Design)

