

Table 2


GREENS
Potassium and Sodium Soil Test Results Comparison
 "Chicagoland XYZ C.C."

GREEN #	Base Saturation % Basis				Absolute Lb/Acre Basis			
	5/6/05		9/28/05		5/6/05		9/28/05	
	K POTASH	NaCl SODIUM	K POTASH	NaCl SODIUM	K POTASH	NaCl SODIUM	K POTASH	NaCl SODIUM
6	2.00	1.45	2.32	4.62	196	84	266	312
8	1.81	1.51	2.20	4.74	166	82	246	312
14	2.00	2.55	2.36	5.59	170	128	282	394
Putt.	3.67	2.04	4.02	5.74	342	112	492	414

in the rootzones reaches its critical mass, it becomes quite devastating to turfgrass. In turn, one cannot expect to change the underlying conditions overnight.

Numerous experienced and progressive superintendents manage the Chicagoland golf courses and some of them have had to deal with

the sodium-contaminated irrigation waters for years. However, not many remember a drought like the one in 2005. Those turf managers who had the water and, subsequently, soils analyzed are ahead of the curve. Knowing exactly what their specific circumstances called for, they had already made appropriate adjustments

to leach excessive sodium from the soil profiles. As a result, they can look ahead with confidence. 

Vence J. Zolman of V. J. Zolman & Associates is a certified consultant for Brookside Laboratories Inc., specializing in turf soil since 1977.



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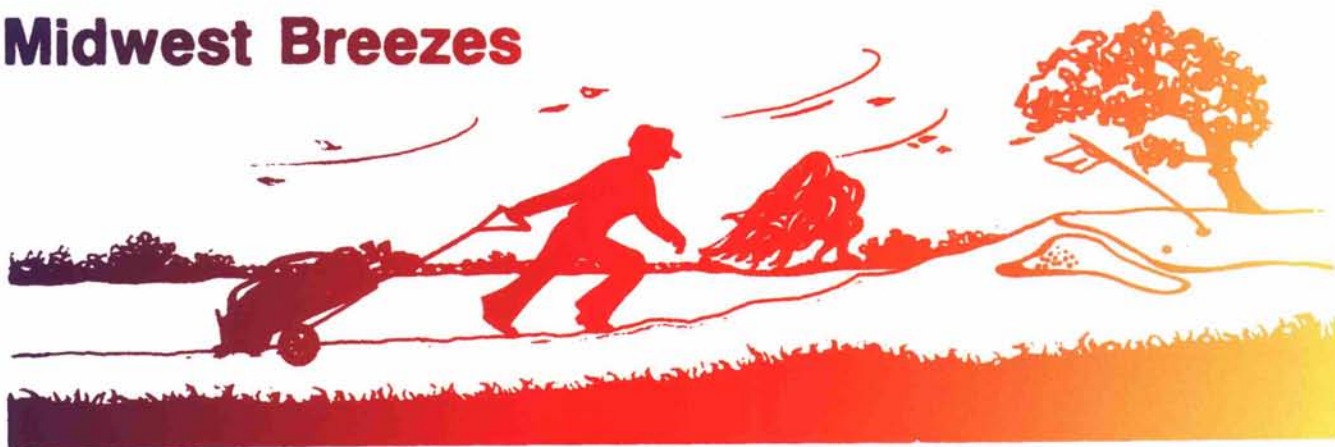


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Innovations at Biltmore Country Club

Several years ago, Biltmore Country Club rebuilt the main work area of their maintenance building. At that time, superintendent **Brian Thomson**, CGCS designed and constructed a new oil supply system into the area that any Jiffy Lube would envy. The new system is cleaner, better organized, and dramatically more efficient.

The supply system is comprised of ten 60-gallon tanks secured to two separate racks along one of the shop walls. The tanks contain every grade of engine oil, hydraulic oil, and antifreeze needed for the club's fleet of equipment. The fluids are gravity fed through individual hoses to a panel of ten valves located below the tanks. Every valve is assigned its own filling can. Each valve, its filling can, and the dipsticks from any piece of equipment requiring that fluid are spray painted the same color so that the operator or technician can quickly distinguish the type of fluid needed. This feature saves time by eliminating the need to look up oil types in equipment manuals and helps safeguard against the mixing of non-compatible fluids.

Each of the ten tanks has a sight gauge along the side to easily recognize when a tank needs to be refilled. Two air pumps are located below the tanks. One is for the refilling process. This pump has two hoses, an intake and an output. To fill one of the storage tanks, the intake hose is inserted into the drum, bucket, or other type of container the fluid is delivered in and the output hose is connected to the valve of the appropriate storage tank in the shop. The air pump is switched on, the valve is

opened, and depending on the type of fluid, in five to eight minutes the tank is filled.

The second air pump is used solely for waste oil. Throughout the week, all used oil is dumped into a 100-gallon waste tank that sits below the air pumps. The other air pump is used to move waste oil. This pump has one hose running into the 100-gallon waste tank and another that feeds to a 550-gallon tank located outside. With a flip of a switch, the discarded oil is pumped outside to the larger collection tank.

In past years, Brian would pay to have the waste oil picked up when the outside tank was full. This past winter, however, he purchased a waste oil heater that utilizes this oil to heat the shop. Oil is pumped from the waste tank up to the ceiling mounted waste oil heater. The oil is then converted into a fine mist by an air compressor that atomizes the oil. The oil is burned, heat is produced, and the exhaust is vented outside. The system is environmentally friendly and only uses up to 1 gallon of oil per hour. Brian reports that in addition to eliminating the need for waste oil pickups, he is saving a significant amount on natural gas charges because the existing heaters are only occasionally used to supplement the new waste oil heater.

*Brian Mores
Inverness Golf Club*



Biltmore's oil supply system—storage tanks above, valves to the right, and waste oil tank below.



Notice the color coding of each filling can and hose on the valve panel.



The new waste oil heater. Waste oil is pumped to the heater through the copper tubing to the left.

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The Benefits of a Remodeling Master Plan

Money, Time, and Emotional Travail Are All At Stake

If you think good design is expensive, the old axiom has it that you have probably never suffered from bad design. It's true. Just as you would not set out on a cross-country trip without a map, devising a long-term approach to making your golf course the best it can be—in contrast to a series of ad hoc decisions to address problems as they arise, in piecemeal fashion—is invaluable. The long-range master plan is especially appropriate to golf course management because, like any dynamic entity, the golf course evolves over time. A well-conceived master plan is an excellent investment that pays dividends in time, money, and headaches avoided.

This is true regardless of a golf course's overriding objectives, whether to attract outside play or simply to keep members happy; in other words, whether the course is private, resort, or public. Chances for year-in, year-out success of the operation are enhanced immeasurably by a comprehensive long-range master plan. In this context, the fee for such a plan, prepared by a professional golf course architect and generally costing \$15,000 to \$35,000, is negligible. The benefits of a thoughtful and properly executed master plan are as follows:

- Provides a systematic procedure, a “road-map”, for Club/Owner(s) to bring about change.
 - Protects a course's original design integrity – particularly important on classical designs.
 - Promotes good shot values on each hole and good variety on the course as whole.
 - Identifies problems and proposes solutions to aspects of a course needing revision.
 - Saves Clubs/Owner(s) thousands, tens of thousands, even hundreds of thousands of dollars in construction and maintenance costs.
 - Makes the most of a course's esthetic appeal.
 - Increases a course's playability for golfers at all ability levels.
 - Boosts rounds played and revenue on public venues, membership and morale in private clubs.
- Curtails unilateral or “unauthorized” design decisions by board members, greens committee members, stockholders, and others.
- Reduces tensions among Club personnel that are often the product of such design decisions.
- Minimizes disruption of play by establishing efficient staging models for construction projects.
- Allows for ongoing adjustments to accommodate longer ball flights that result from technological improvements in golf balls and clubs.

In my 20-year career as a golf course architect, I have seen nearly as many different problems arise from the lack of a long-range master plan as I have had clients without one. A common pattern, however, has been to designate the golf course superintendent the “fall guy” for failures of ill-considered course

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Routing on top shows existing golf hole. Rendering on bottom show proposed changes to golf hole including realigning tees, contouring fairway and adding bunkering around green complex.

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"improvements" instigated by board and committee members and/or owners who proceed without a professionally prepared master plan. Below are three cases describing travesties experienced by Clubs due to the absence of a comprehensive master plan to guide them.

CASE STUDY #1 **"If at first you don't** **succeed, try the same** **approach all over again."**

A well-known private Club in upstate New York (the name of which will remain confidential) called me in to create a long-range master plan, only after a recurring incident had understandably become the source of irritation for the Club's president. Specifically, having deemed that the tee complex on a par-3 hole was too small and consequently suffered unacceptable turf deterioration, the Club had three times undertaken to rebuild it in a four-year period, to no avail, at a total cost of about \$75,000. Typically, the superintendent shouldered the blame, even though he had acted on instructions from a board member. (As Robert Trent Jones Jr. once famously pointed out: "There are as many course architects as there are golfers. Everyone is an architect in his Walter Mitty dreams.")

In the club's first attempt to correct the problem, the new tees, although larger, were terribly misaligned and had uneven surfaces that retained excess water. Attempt number two corrected the alignment difficulties but, in the process, significantly reduced the surface area, thus compromising the original goal of the undertaking.

Two years later, a third attempt to fix these same tees proved worse than the first two: The tee mix became contaminated during this attempt resulting in soggy teeing surfaces that never dried out to the desired consistency.

This teeing complex was just one of the difficulties—and impending difficulties—that was addressed in a long-range master plan. As frequently happens, the immediate problem—in this case, just a teeing area that is not big enough—was tied to several other traffic and drainage issues that needed to be resolved

simultaneously. The condition of the tee box was only symptomatic of the difficulties at work.

CASE STUDY #2 **"Why didn't we think** **of this before we started** **construction?"**

The facts of this case study can be heartbreaking, but the sequence of events is by no means unprecedented. Again, as with the above example, this could have been prevented with a long-range master plan.

Here, a highly reputed public facility in the Midwest found it was losing rounds each year. Feedback from customers indicated that the course was perceived as a bit shopworn, particularly in relation to newer courses in the area that were eroding its market share. Management responded with a major initiative that included rebuilt tee boxes and a new irrigation system. Unfortunately, without oversight by a design professional and a master plan, these costly revisions resulted in money not well spent. For one thing, the new tee boxes were both misaligned and petrified as a result of improper construction; what's more, their placement failed to capitalize on the chance to appeal to players of varying skill levels—a point they eventually recognized upon review of a master plan.

More dire was the inadequacy of the new irrigation system, built at a cost of some \$750,000, much of which had to be dug up and reinstalled for reasons that would have been evident had there been a master plan. Specifically, these included the relocation or reconfiguration of green complexes, bunkers, and fairways, both to improve the course's strategic quality and to promote healthy turfgrass. In turn, the master plan included a tree plan that not only facilitated routine maintenance but improved the golf experience by eliminating excessively tight playing corridors and obstructed views of such course features as landing areas, bunkers, and even greens.

All told, poorly planned and / or constructed alterations to the course cost roughly

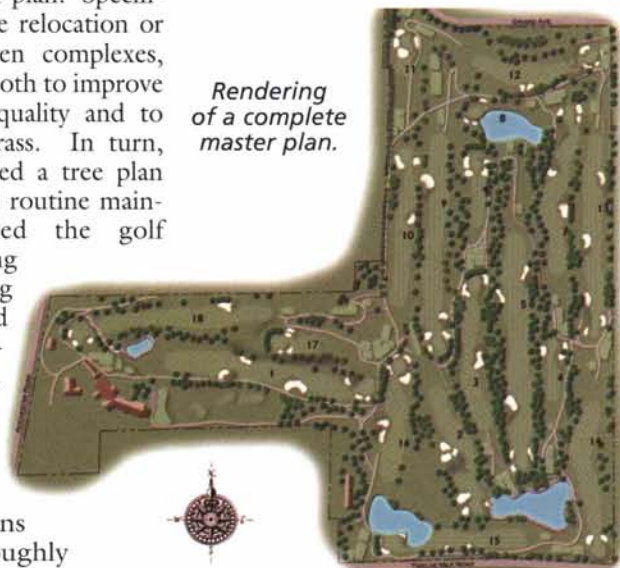
\$225,000 to redo correctly—an emphatic argument for a professionally prepared long-range master plan.

CASE STUDY #3 **"Our bunkers simply** **don't work."**

This case focuses on a popular resort on the East Coast. The case is an object lesson in the usefulness of ordering priorities for course improvements and began with a board member's dissatisfaction with the condition of the sand in the bunkers. He instructed the superintendent to remove all the existing sand and replace it with an expensive variety that had to be trucked to the site. Once again, this was done despite the expressed misgivings of the superintendent, who judged the deficiency was a consequence of the bunkers' subsurface drainage system, not the sand itself.

One year later, the club set out to improve shot values and strategic intrigue on a hole-by-hole basis. With these goals in mind, the club agreed to a comprehensive master plan for the entire golf course. One of the first and most important findings was that the positioning of bunkers was, almost without exception, obsolete. The original design dated to 1960, before the advent of longer balls and clubs. Thus, the bunker placements had become largely decorative and no longer strategic. The board member who had authorized the superfluous replacement

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*Rendering
of a complete
master plan.*

of the sand is no longer at the resort; regrettably, neither is the \$215,000 required to complete the job.

Bunkers and tee boxes have now been arranged so that the course is as enjoyable a golfing challenge in 2006 as when it opened in 1960. Still, a little consideration of the facility's long-term objectives would have gone a long way. Surely improved golf club and ball technology existed two years prior, when the sand was replaced.

Superintendents often ask me if their course needs a master plan. My answer is simple: If you plan to make any changes or improvements to the golf course—or you even think this is a possibility, and it almost always is—then you need a master plan. To

reiterate, good design is comparatively inexpensive. Construction, especially redundant construction, is expensive. Also, the benefits of a long-range master plan are many, and money is only part of the equation. A master-plan document is a significant tool for the golf course superintendent to make sure that everyone at the club is “on the same page” in terms of future improvements to the golf course. It's money in the bank from both a fiscal and a diplomatic point of view.

In order to ensure that the master plan is the best that it can be, contact a practicing golf course architect and secure a price to complete such a study. You and your club or course will be glad you did. True, the future is ultimately unpredictable, but there is much to be said for thinking past the present, not to mention doing it right the first time.



The author, Raymond Hearn, is a practicing golf course architect and a member of the American Society of Golf Course Architects. His office is located in Holland, Michigan.



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the Pulpit
(*Arisaema triphyllum*)



Virginia
Blue Bells
(*Mertensia virginica*)

Appreciation for flowers came at an early age. My father, a greenhouse owner and operator taught my sister and me a lot about growing plants. We grew cut flowers for wholesale distribution and bedding plants for the retail part of the business back in the '60s. We learned what it took to grow a crop of "mums" and turn those beds around for the next crop. My favorite job was planting the 150-foot beds with chrysanthemum rooted cuttings. It took over 2000 young plants to paint the bed green with new life. The sterilized soil smelled clean, was a wonderful texture, easy to rake, mark and plant. It was a great feeling of accomplishment and a memorable experience I think of often. We learned about syringing, watering, pruning, disbudding, aphids, red spiders and short day crop management. It wasn't long before the football mums and "pompoms" were harvested, wrapped and sold.

*All these spring
plants signal
the beginning
of another
growing season.*

Throughout it all, I never lost my appreciation for flowers and many of my friends know that was one of the reasons I chose the golf course for a career. The diversification in horticulture mimics golf course management. I must admit that my college degree in horticulture did not prepare me for what turned out to be my signature in golf; my love for native plants and habitat enhancements. However it produced wildlife beyond my expectations.

Throughout my golf course career, one of our family traditions was a woodland walk every Mother's Day. Everyone, young and old (three generations), walked the timber at Alta Vista near the Fox River and later the Nature Walk at St. Charles Country Club along Norton Creek. Each year, we witnessed the timber floor turn a carpet of wild flowers. The beauty was so phenomenal that it inspired us all to do a little research to identify and learn about these woodland plants. The list of our favorites include Spring Beauty (*Claytonia virginica*), Bloodroot (*Sanguinaria canadensis*), Dog-Tooth Violet (*Erythronium americanum*), May-Apple, (*Podophyllum peltatum*), Trillium, (*Trillium species*), Rue False Anemone (*Enemion biteratum*), Virginia Blue Bells (*Mertensia virginica*) and Jack in the Pulpit (*Arisaema triphyllum*). All these spring plants signal the beginning of another growing season. Spring Beauty literally covered the timber floor as it poked itself

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