A winner! That's what you get with the Penn bentgrasses from Tee-2-Green. From Penncross, to the A's & G's, to Penneagle II and PennLinks II, superintendents around the world know and trust the Penn bents. They're tried, proven, and easy to manage; a sure bet to provide legendary turf quality on your putting greens, fairways, and tees.

Why Use Anything Else?
FEATURES

Superintendent profile
20 A VIEW FROM THE TOP
A patient Robert Waller plans methodically at Marriott Golf.

COVER STORY:
Operations profile
26 THE RIGHT MATCH
Amelia Island Plantation partners with ValleyCrest to improve course conditions.

Turfgrass management
34 PASPALUM PROGRESS
With more experience and research, superintendents are improving disease management on seashore paspalum.

RESEARCH
65 CYCLING WATER SOURCES
Freshwater affects saline-irrigated bermudagrass' quality and soil salinity.

Personnel management
42 COPACETIC CREWS
Superintendents need good people skills to manage staffs effectively.

Course architecture
48 WHAT MAKES A GOOD GOLF COURSE?
It's not easy to define, but an architect's discretion has as much to do with the outcome as location.

Course management
54 PREPARING FOR THE UNEXPECTED
Simple steps to creating a plan that will minimize downtime in case of a disaster.

Course renovation
58 INJECTING LIFE INTO NORMANDY SHORES
A drainage solution improves conditions on a Florida municipal course.

Course management
62 DIVIDE AND CONQUER
Implementing section maintenance can increase operational efficiency, improve playing conditions and reduce costs.
A single grass plant grown under ideal conditions has more than 300 miles of roots.

ON THE WEB – GOLFCOURSEINDUSTRY.COM

Look for these articles on our home page and in our e-newsletter.

GIS COVERAGE
If you couldn't attend the industry's biggest trade show, visit our Web site to view archived video interviews with industry leaders from the trade show floor.

INTERNATIONAL FLAVOR
More U.S.-based architects and builders are building courses abroad. They offer suggestions for getting acclimated to working in foreign countries.

TOUGHNESS IN PARADISE
Tom Fazio's newest beach-front golf course, Corales, in Punta Cana, Dominican Republic, combines lush tees with difficult shots.

DISASTER PREP
Underprepared for a disaster? Download a superintendent's five-day checklist and read about five must-have components for every disaster plan. Visit golfcourseindustry.com/disasterprep.

GROWING A WINNER
Superintendent Will Heintz oversaw the grow-in of the scenic Pound Ridge Golf Club (pictured below) in New York, which was ranked one of the top new courses.
Introducing total disease protection in one container. DISARM® C is the first and only strobilurin and chlorothalonil premix with a unique systemic and contact formulation that provides the broadest spectrum control of thirty diseases, including dollar spot, brown patch and all major patch, spot, and snow mold diseases. There is simply no easier, more cost efficient or worry-free way to protect your entire golf course. To learn more about the best weapon against turfgrass diseases, contact Arysta LifeScience North America Support Services at 1-866-761-9397 or visit www.arystalifescience.us/disarmc.

Disarm® C
Double Protection™
TAKEING RESEARCH FOR GRANTED?

T he writer Aldous Huxley once said humans have an absolute and infinite capacity for taking things for granted.

In the golf industry, that's a justifiable allegation amid news the USGA Green Section and GCSAA suspended new research initiatives this year, cutting $300,000 and about $75,000, respectively. That's about 15 projects that won't be funded or will be delayed a year.

I'm not suggesting the USGA and GCSAA take turfgrass research for granted — the USGA will fund more than $1 million of ongoing research, and the GCSAA will spend about $100,000 on current projects. But because the impact of the research cuts won't be felt immediately, it makes you wonder if the GCSAA will spend about $100,000 on current projects. How concerned the rest of the industry is about the results of the projects in limbo. And about 150 and 200 researchers like him across the country.

Another downside to the research cuts is they've compounded the institutional cuts universities have experienced for years. What does that mean? There's a chance vacant turfgrass faculty positions will go unfilled and/or scientists will be conservative with their current efforts. Many projects they undertake come from superintendent suggestions; rigid budgets hinder their ability to be nimble and pursue these projects as they arise at a grassroots level.

The worst-case scenario is underfunded university turf programs may be cut altogether. Faculty members are pressed to obtain research funding because that's how state universities generate most of their income. For example, only 14 percent of the University of Wisconsin-Madison's income is tuition-based; half comes from research, says associate professor John Stier, Ph.D. With tight state budgets, universities are scrutinizing individual departments. Research programs that aren't being funded may be in jeopardy. If a university cuts a research program, then its education component (classes) and outreach component (assistant professors provide superintendents) are likely to follow, Stier says.

How often do you turn to state universities for turfgrass-related answers? Stier estimates he receives two to six requests per day from superintendents. He's just one person. There are between 150 and 200 researchers like him across the country.

Again, this is a worst-case scenario. There isn't going to be a mass exodus of turf researchers tomorrow. But we've all heard the Joni Mitchell lyrics, "You don't know what you've got till it's gone." No peer network, association staff, magazine or conference can replace the void created by a lack of research.

Thankfully, some groups are aware of the decline of traditional funding. Considering this year's cuts, the Carolinas GCSA new solution — a way to get golfers to subsidize turf research — comes just in time. Last summer, North Carolina State and Clemson University faculty told the CGCSA board that funding sources were shrinking and they needed more help. Soon after, the CGCSA began work on Rounds4Research, a program centered on an online auction in which golfers bid on donated golf packages. Facilities throughout the Carolinas have chipped in 250-plus rounds to date.

The CGCSA isn't sure how much revenue Rounds4Research, a concept spearheaded by CGCSA director of programs Tim Kreger, will generate, but the goal is to directly fund N.C. State and Clemson researchers' projects with all the proceeds. Paul Jett, CGCS at Pinehurst No. 2 and president of the CGCSA, hopes to begin that process as soon as the association tallies the earnings. The auction runs April 19 to May 6.

Programs with similar goals, such as designating a day when facilities donate $1 per round toward research, worked for a few years before losing steam. Let's hope Rounds4Research, and creative ideas in other regions, will be successful enough to prove the industry isn't taking turf research for granted.

Marisa Palmieri

Senior editor

Marisa Palmieri
Deer
Rabbits
Moles
Snakes
Geese

Good as gone.

Liquid Fence® animal repellents.
From the nation's number-one selling Deer & Rabbit Repellent to guaranteed effective Mole and Goose Repellents - Liquid Fence products will do for you what they've done for millions of satisfied customers... really work!

The Liquid Fence Company
Call (800) 923-3623 www.liquidfence.com pro@liquidfence.com

Always read and follow label directions.
Irrigation accuracy

After reading Jeff Brauer’s article ("Wet approach areas," December issue, page 14), I’ll comment about a couple points he made.

1. I agree sprinkler heads need checked for malfunction and angle of sweep; however, contrary to his statement, any commercial golf sprinkler manufactured after 1995 doesn’t lose adjustment if installed properly. Furthermore, adjusting sprinklers too often causes damage to the gear drive and adjustment gear.

2. His statement that irrigation needs vary enough only during summer heat and fall overseeding to warrant using double heads may be true to a less-detail-oriented superintendent. However, we practice changing irrigation heads are a necessity almost year around for us.

Brauer should be certain of his facts by consulting a professional of the trade before they’re published in a magazine destined to wind up on many superintendents’ desks, where you’ll possibly find agitated club members as a result of misinterpreted information.

Jay Leturno
Golf course superintendent
Santa Lucia River Club
Port St. Lucie, Fla.

Jeff Brauer’s response:
My intent is to inform, not to give the occasional agitated club member ammunition to demand more from a superintendent.

There are many different conditions throughout the country, and no general 800-word column can convey any superintendent’s situation accurately. For many subjects, I’ve written multipart sections to cover a subject more completely. However, I consulted some irrigation designers and superintendents. The bulk of the column came from research conducted by Jim Moore of the USGA and his son Travis, who’s a superintendent. USGA reps have noticed that problem on many courses, enough to warrant the research. And they specifically noted problems on newer systems, at least new enough to have double sets of heads.

They allowed me to present their preliminary findings, figuring it might help superintendents spend the winter tweaking their systems. In many cases, the design of systems, in conjunction with the way they’re used, caused problems.

Constantly tweaking irrigation use to minimize water use and improve presentation, as you apparently do, is also a pet subject of mine. I’ve written about it before, so if you have any ideas to share, they may find their way into a future column.

Too worried
Pat Jones’ Chicken Little article ("Chicken Little mentality," December issue, page 50) accurately assessed the presidential election situation.

Michael D. Jones, CGCS
New Mexico Tech Golf Course
Socorro, N.M.

Does organic = good?
I liked Pat Jones’ comments about the Golf Digest article concerning organic golf ("The road to hell is paved with good intentions," golfcourseindustry.com/news/news.asp?ID=4806). It bothers me quite a bit that some people seem to believe that if something is organic it has to be good. I tell them all the time that pig manure is organic, but it sure can pollute water.

Ron Dodson
Board president
Audubon International
Selkirk, N.Y.

Pat Jones’ online column, "The road to hell is paved with good intentions," (golfcourseindustry.com/news/news.asp?ID=4806) is one of his best. I can’t think of a superintendent who doesn’t consider all inputs placed on his golf course for economic, as well as environmental, reasons. Most keep their jobs by playing to their golfers’ demands first and foremost. Player expectations rule the day, and until the dynamics change, superintendents will use whatever tools are necessary to maintain their employment. To imply they’re unwilling, unconscious or unskilled is an insult.

Jack MacKenzie, CGCS
North Oaks (Minn.) Golf Club
By the time you read this, your height-of-cut could have been adjusted.

New Quick Adjust Reels. Yes it's now this easy to adjust the height-of-cut. Just click in a power drill on either side of the cutting unit, hit the trigger, watch the gauge, and you're done. No wrenches, and no need to double-check both sides. (Thanks to SpeedLink technology, they match perfectly every time.) But don't just read about these reels. See them for yourself by calling your John Deere Golf distributor for a demo.
Consider us part of your crew.
ASSISTANT'S VIEW

Dan Schuknecht is the assistant superintendent at Talons of Tuscany Golf Club in Ankeny, Iowa. He can be reached at dsschuknecht@msn.com.

DO YOUR HOMEWORK

It's no secret the economy is in tough shape, and golf is a want, not a need. As you prepare to take the next step in your career, understand the context in which your future employers are operating. Finding ways you can bring value to an operation and help cut unnecessary costs or generate revenue from unexpected sources can help you go a long way in your career.

Whether you're a student, an assistant superintendent, or somewhere in between, what you're getting into. Superintendents who take an active role mentoring their staff, involving them in the decisions they'll make one day, will become employers of choice. It's also important to understand a superintendent plays an important role in all areas of an operation's success, including player development, marketing, finance, membership communication, etc.

As you prepare to interview, look for resources such as Interviewstream.com, a site that allows you to practice your interview skills in front of your computer (you'll need a webcam and microphone). The site provides a comprehensive list of interview questions to choose from. Once the questions are selected, you're given two minutes to respond to each question. Your responses are saved and promptly e-mailed to you. You can go back and watch your responses and improve your answers. The site is a great tool that allows you to practice real-life interview questions and improve your communication skills and body language.

I've had the opportunity to climb Mount Rainier in Washington and complete the Des Moines Marathon. Both took many hours of training and preparation, but they are memories that will last a lifetime.

The importance of a mentor can't be overstated. Mentors are those who've been through good times and bad, who've made mistakes, and are willing to share their expertise and experiences with you. Mentors know you and your situation and many times what's best for you. Often, their message supersedes whether you agree with what they say or not. Seek them out as you prepare to take the next and biggest step in your career.

You may have to work harder than your peers who came into the business a few years ago. It may take patience to get the job you're seeking. Keep in mind, there will always be a job for the candidate who has the skills and willingness to work hard and produce results.

Whether you're a student, an assistant superintendent, or somewhere in between, each of us can benefit from understanding the financial performance of an operation in 2008.
“I’m not surprised by much. But I’m surprised by this fungicide.”

—Bob McIntosh—
Tourney Believer

See it. Believe it. Tourney™ Fungicide controls a broad spectrum of diseases including brown patch, anthracnose, dollar spot and many more. All with exceptional turf quality and low use rates. See the proof at TourneyBelievers.com.
Golf course mounds always have been around. I see what appear to be "built" mounds even at the Old Course. Donald Ross included a chapter in “Golf Has Never Failed Me” called Solid Mound Work. But, modern golf course architects expanded earthmoving as artwork compared to their predecessors, until the past few years, when it’s fallen out of favor.

Owners and golfers are tired of 1990s style golf course mounds, and they’re vilified now because of overuse and misuse. Even I’m tired of them and have become a reformed mound-a-holic.

Believe it or not, golden age architects used mounds similarly to modern architects – to support bunkers and frame greens. They built at smaller scales with horses and scoops, creating subtle slopes that looked natural and artistic. Time has helped mounds season, as tree planting and changing grass lines keep them from looking artificial. After World War II, mechanized earthmoving evolved and so did mounds – they became bigger and more prolific. But, they looked more repetitive and less natural for many reasons:

- **Paper-designed mounds** related too strictly to greens or fairways, typically fitting repetitively on most inside mowing curves, rather than following random patterns.
- **Philosophy.** With bulldozers, mounds were built to stand out as man-made, not blended in as natural.
- **Repetition.** No golf course architect or shaper is as varied as nature. Many mounds start looking alike. The tendency is to build mounds of similar height and slope no matter how much we try to emulate natural contours. Even when a green site has a gentle side slope, the backing mounds are often built to one height, rather than having the highest mounds on the higher natural side of the green.
- **Steepness.** When economics became more difficult, architects saved fill and construction costs by building steeper slopes. Robert Trent Jones and others built 5:1 to 7:1 slope, which looked natural in rolling terrain. Later, to get higher and more dramatic, mounds were often built at 3:1 slopes – the maximum slope most mowers can handle – or even steeper on Scottish links courses.
- **No feathered slopes.** Even steeper slopes can look good if the toe of slope ties naturally into natural grade at 6:1 or greater, even if the bulk of the mound is fairly steep. Many architects lost sight of this.

However, mounds can be built to look good, and they have many practical, visual, strategic and speed-of-play uses. They:

- Create a sense of enclosure on fairways and frames for greens to defined spaces. Trees do this, but on open land, mounds and ridges separate holes more cheaply and immediately than immature plantings.
- Hold approach shots without sufficient back spin near the green, a problem for average players. With faster greens and flatter slopes, those shots roll further, making small backing mounds more necessary.
- Encourage good players to play more aggressively at back pins.
- Contain shots on fairways or doglegs.
- Artificially create a valley fairway, which is always a comfortable shot.
- Help with distance judgment.
- Create variation in fairway landing areas and lies, especially in landing zones beyond 300 yards, where building bunkers for the few long hitters isn’t justified.
- Test the short game around greens.
- Create shadow patterns for aesthetics.
- Screen objectionable views.
- Provide safety from adjacent fairways or practice areas.
- Give landscape plantings a good head start on achieving a desirable height and show off plantings by allowing back plantings to be higher than front ones.
- Hide cart paths.
- Create drainage.

While mounds solve some problems, they create others:

- They take longer and are more dangerous in some cases to mow.
- They require more irrigation and/or often dry out.
- While they contain off line tee shots, wild shots clearing the mounds have a blind approach and potential safety problems.
- When hot approach shots land wide of the mounds, they result in a difficult pitch.

Hopefully, mounds will find favor again, at least if used where they serve one or more valuable purposes and are built to fit the site, rather than being the be-all end-all of design. They deserve a better reputation than they currently have. GCI
You Trusted Us Then...
You Still Do Today.

If you're a golf course superintendent, chances are you grew up using Ryan products — sod cutters, dethatchers, aerators and overseeders — trusted since the 1940s to provide long-lasting, dependable service. And whether your Ryan is one year old or older than you, it's there when you need it, ready to tackle any job. That's why superintendents have counted on Ryan products for more than 60 years.

To find your Ryan dealer, visit www.RyanTurf.com or call 866-469-1242.
IT'S TIME TO BUY

Because of the industry’s difficult state, I gathered information about buying opportunities in the irrigation segment. The hurricanes of 2005 impaired our ability to receive raw materials needed to manufacture irrigation products, as well as the refineries needed to fuel the extruding, causing prices to skyrocket.

Allied products (pipe, wire, fittings, etc.) constitute between 30 and 40 percent of the total cost of an irrigation system budget. Therefore, the hurricane-related price increases and global demand for allied products have caused increases as much as 100 percent for goods in a short period. These increases, along with the workload contractors were carrying in 2005 and 2006, made projects extremely expensive and created challenges to purchasing quality goods and scheduling installations.

But that’s not the case now. We’ve seen incredible buying opportunities related to irrigation system renovations or new installations that are the opposite of what was happening four years ago. Here’s what various experts in the manufacturing and distribution segments are encountering.

With about 200 miles of wire on an average 18-hole golf project, the copper market’s volatility has a significant impact on the irrigation industry. In the middle of 2008, according to the London Metals Exchange, the world copper inventories were about 120,000 tons, and copper was at about $4 per pound, says Vince Nolletti, vice president of irrigation and lighting operations at Paige Electric Co. By the end of 2008, the inventory levels had increased to 340,000 tons, and copper dropped to $1.29 per pound. The copper market, like other commodities, responds to supply and demand.

“Right now, there’s never been a better time to execute a construction project,” Nolletti says.

Like copper, piping (which can equate to about 25 miles on an average 18-hole project), was hit hard by the hurricanes of 2005 and world demand; plus, it’s affected by petroleum costs.

Raw material pricing has stabilized finally, says Jack McDonald, president and chief executive officer of Lasco Fittings. With continued declines in the housing market and recent reversals of energy pricing, material costs have returned to normal again.

“Since 2005, procurement of steel, concrete and plastic has been a nightmare for the golf industry,” McDonald says. “Gone are energy surcharges, material shortages and capacity constraints that forced suppliers to quote products at the time of shipment. Right now is a great time to construct an irrigation system because courses can secure materials at favorable rates without the fear of un预算ed price increases and costly overruns.”

Before, quotes for irrigation projects expired quickly, and delivery dates couldn’t be secured. These two issues gave contractors and owners heartburn. Those days are over. Like copper, prices have stabilized and declined, and you can receive materials in a timely manner.

Regional product distributors have had an enormous challenge packaging all the components — allied and whole goods — necessary to install an irrigation system. Distributors know firsthand about the price increases from 2005 because of the challenges related to warehousing and transportation costs.

“Based on projects quoted last summer, we’re realizing an across-the-board cost decrease of 26 percent, seemingly from stabilized overhead costs and drastically decreased PVC and wire costs,” says Craig Jerome, golf irrigation sales manager for MTI Distributing, which covers seven states throughout the upper Midwest.

John Goetz, vice president and manager of Hector Turf, a southwest distributor, says the company compared costs, and if it uses a bill of material of $1 million from a project 8 to 12 months previously, that same bill of material would be decreased by about 26 percent, or a difference of $260,000.

“I’ve been in this business for 41 years, and this is the most drastic change in material cost over such a short time frame,” Goetz says. “This is a great opportunity to save large costs.”

The other factor is the labor cost and how contractors are willing to make reductions.

“We just went through a major renovation bid, and this is the first time the architect saw bids come in $1 million below budget,” Goetz says.

The cost of money is conservatively 2 to 3 points lower than 12 to 18 months ago. The cost of goods has declined as much as 25 percent, and contractors have great incentives to keep their people working. For any golf course considering a 25- to 30-year irrigation investment, it makes business sense to take advantage of the environment we face today and secure a healthy future.
When Performance Matters,™
The NEW AR-522™ is the Rough Mower of Choice!

The bar has been raised. Today's golfers expect all mowed areas, including the rough, to look exceptional. The New AR-522™, with its superior climbing ability and highest quality of cut, delivers the finest rough conditions. It has the highest horsepower per width-of-cut than any mower in its class. Coupled with the new Jacobsen® TrimTek™ cutting system and superior traction, the AR-522 leads the category in climbing and cutting performance.

Call your local Jacobsen dealer today to see for yourself how the AR-522 outperforms the competition.

1.888.922.TURF • www.jacobsen.com

Revolutionary new TrimTek™ deck with exclusive down-draft blade keep clippings suspended longer for exceptional mulching results.

Exclusive three-tiered discharge opening distributes clippings more evenly for a superior after-cut appearance.
THE UPSIDE OF A RECESSION

The day I've been anticipating came on Dec. 31, 2008 — the day I retired. After 36 years at the same golf club, another six years as an undergrad and grad student in turf, and two years as a draftee soldier in the Army, it seemed to be a good time to do so. I've been dreaming for quite a while of an endless string of unstructured days to do as I please.

I'm 62 years old, in good health and have had notebooks full of things I've wanted to do for years. What could be fairer than to hang up my cup cutter at this time?

For the past two years, club officials helped me develop a plan to bring my rewarding career to a close. For more than a decade, my wife and I have worked closely with a financial planner. We had a plan, goals, discipline and the opportunity to be in great shape for retirement. We are savers and have avoided impulse purchases — imagine living in Wisconsin not having a boat or a snowmobile.

Our three children are grown, educated and married. Our house has been paid for. We own our vehicles and don't owe anyone anything. I vote in all elections, keep my lawn mowed, shovel snow from the sidewalks immediately, follow rules and attend church on Sundays.

I was prepared and ready to move on to the next era of my life at a time when others were sort of sorry to see me go rather than wonder how they were going to get rid of me. I was a happy man.

And then the massive economic tsunami hit, seemingly out of nowhere. Few have escaped damage from what has turned out to be a global financial crisis. The Dow is down about 40 percent from its high point in 2007, the country has lost nearly 500,000 jobs a month since September, there's a home mortgage crisis of huge proportions, and the credit markets are in turmoil. The auto companies are hanging on, by a thread and asked for an enormous handout from the taxpayers.

These are uncertain times for our coun-

try and downright scary for those who are already retired or, like me, newly retired. My wisecracking brother jabbed me, saying, "You sure know how to pick a prime time to retire!" And yet, at the risk of being called a Pollyanna, I can't help but feel optimistic. I'm sure the beginning of a new year helps, as does a new president. A look at history offers the reassurance I need.

Since my birth in 1946, the U.S. has experienced 10 economic downturns — recessions, if you will — before the current one. Half of them occurred before my first day as a golf course superintendent, Jan. 1, 1973, so I can't relate to them.

Superintendents have proven themselves to be excellent, practical and sensible managers... almost all will come through stronger, savvier and perhaps even more imaginative...

The other five recessions happened during my career, and, honestly, I have only a vague recollection of each one's impact on our golf course budget. Those recessions were in 1973, 1980, 1981, 1990 and 2001. Granted, none were as deep or as severe as the current recession, but it's worth noting each was followed by a period of recovery and expansion that lasted several times longer than the preceding recession. I looked back through my file drawers full of budget counts for anything, my experience in golf has to offer some consolation.

The real issue today is that the current economic mess comes at a time when golf is already struggling nationally with decreased interest and fewer rounds played. It's a tough environment made worse by the economy.

Predictions are that we'll come out of this in late 2009 or 2010. The optimist will conclude that if we can tough it out for a year or so, we should be in for an extended period of prosperity after that, a time when retirees especially can again enjoy the fruits of their lifelong labor. Let's hope so for golf too.

There are many positives we can take from our current economy, if willing. Course maintenance can be reduced without reducing the enjoyment or camaraderie for players, at least for the short term. I ask myself every once in a while why we ever mowed fairways seven days a week with baskets and triplex greensmowers. And did we actually need those 25 cards in the timecard rack? There are untold questions like those we can all ask.

Material inputs can be reduced somewhat. There might not be a better time to get golfers to reconsider the definition of quality playing conditions. More careful borrowing, stretching machinery life a little longer, and considering a joint ownership arrangement with other courses of some specialized pieces of equipment could all be helpful. We can remind ourselves there's a difference between what we want and what we need.

Superintendents have proven themselves to be excellent, practical and sensible managers. Put in the circumstances we now face, almost all will come through stronger, savvier and perhaps even more imaginative than in the past.

And from old John Wordsworth comes this poetic advice he offered in 1807: "The world is too much with us; late and soon, Getting and spending, We lay waste our powers; Little we see in Nature that is ours; We have given our hearts away, A sordid boon!"
Kestrel® MEX fungicide helps you RAISE THE BAR on healthy turf.

New university testing proves that NexGen products outperform traditional formulations—and make your pesticide dollars go farther.

The grades are in, and NexGen products are at the top of their class. With only the best active ingredients and improved manufacturing, NexGen reformulations provide unbeatable performance—and results prove it. Kestrel® MEX propiconazole delivers long-lasting control of Anthracnose, Dollar Spot, Spring Dead Spot and many other troublesome turf diseases, all with low odor and only a "Caution" label.

To make the grade on your turf, call 888.240.8856 or visit www.PhoenixEnvCare.com.
A glimpse of how golfers' behavior affects the business of facility maintenance and management.

BElOW THE EQUATOR

Although the game of golf appeared in South America about the turn of the 19th century, its popularity has grown significantly only during the past 10 to 15 years. Recent growth can be attributed partly to growing economies and the success of players such as Angel Cabrera, Eduardo Romero and Camillo Villegas.

As the elite image of the sport decreases slowly, the game is becoming more accessible to a larger share of the population, facilitated by the opening of new driving ranges and public and semipublic golf courses. The promotion of several South American areas as golf tourism destinations also has helped the game's popularity and golf resort development.

There are about 120,000 golfers in South America out of a population of about 380 million. The 0.03 percent golf-participation rate is very low, but the number of registered golfers is increasing – at more than 10 percent annually in recent years.

The average membership base of an 18-hole golf course in South America is about 550. It's less than half at nine-hole facilities. The average membership size at 18-hole courses is almost 50 percent higher than in the Caribbean but lower than most European regions.

Golf courses in Argentina reported a lower average membership base than the South American average – 363 versus 423, considering facilities of all sizes. This number may be because of the country's larger golf course supply. On the other hand, some 18-hole courses reported more than 1,000 members.

The average number of rounds played on the continent's 18-hole golf courses was about 13,500, which is very low compared to other surveyed regions, especially with such favorable climate conditions. Golf can be played almost year-round in South America. The region's top-performing facilities recorded 26,600 rounds on average, with some courses reaching 30,000 to 35,000 rounds.

The majority (74 percent) of recorded rounds was played by club members, while green-fee rounds represented a quarter of the total rounds played. As expected, the share of member rounds and green-fee rounds were correlated to course location. Eighteen-hole courses located in country clubs and residential communities reported a high percentage of member rounds (between 70 percent and 80 percent), while facilities located in tourist resorts and in parks, which mainly operate on a pay-and-play basis, recorded a higher percentage of green-fee rounds – 58 percent and 78 percent, respectively.

Source for text and charts: KPMG's Golf Benchmark Survey 2008
You've got enough things to worry about. But the proven performance of Pendulum® AquaCap™ herbicide means weeds aren't one of them. Its water-based formulation gives you long-lasting, broad-spectrum preemergent grass and broadleaf weed control, with reduced staining and odor, plus easier clean-up. So don't worry about weeds popping up. Use Pendulum AquaCap.

betterturf.com | 800-545-9525
Despite a high-flying career, Robert Waller's family—his wife, Heather, and children, Haley, 9 (right), Emma, 6 (left) and Jack, 2—keeps him grounded.
If you’re like most superintendents or course operators, you wake up in the morning worrying about how your 18 little babies have fared overnight. Robert Waller wakes up worrying about more than 1,000 putting surfaces around the globe. Gulp!

Waller is senior director of golf grounds operations and development for Marriott International, the hotel and resort giant and longtime player in the world of corporate golf management. Waller and his colleagues oversee maintenance for 45 Marriott properties in 13 countries, including nine at plush Ritz-Carltons. The company’s holdings range from marquee facilities such as Doral in Miami and Starpass in Tucson, Ariz., down to one that’s essentially a city-owned course in Tennessee.

Like many, Waller started at a local mom-and-pop place with a blue-collar customer base and plenty of work opportunities for a kid who loved to be outside. He was a night watchman, worked in the golf shop, life guarded and rode a mower at a course in Austell, Ga. While there, the owner hired a new general manager who was a certified superintendent.

"That blew me away," he says. "I couldn’t believe this was actually a career path. I just figured the superintendent was always the owner’s son."

That superintendent, Roger Cagle, became Waller’s first mentor and helped set him on the path that led him to the top of one of the nation’s biggest golf organizations. From there, he went to Florida’s Lake City Community College and earned a degree in 1992 after completing internships with Cagle at Eagle Watch Golf Club in Atlanta and at Pinehurst’s No. 6 and No. 7 courses under Todd Biggers.

At that point, he met another superintendent who would shape his career and much of his management philosophy.

"Ken Mangum of the Atlanta Athletic Club came to Lake City to interview for assistants, and he was just amazing," Waller says. "I ended up working for him for five years and learned so much – not just about managing a course but how you should carry yourself. Plus, he showed me how to treat people. He had the same demeanor with the president of the club or Rees Jones as the guy he’d just hired to rake bunkers. He’s such a great example."

Waller calls his experience at AAC priceless, but after the club secured the 2001 PGA Championship and he fielded a few offers, he connected with Herman Vonhof, the developer of The Georgian Resort in Villa Rica, Ga., and became superintendent there in 1997. Vonhof had hired Marriott to oversee the project, so Waller joined the staff. He enjoyed working with Tom Schlick, his predecessor as senior director, and Claye Atcheson.

“They basically gave me a master’s degree in golf course management and a bachelor’s in business administration at the same time,” he says.

Waller took the Frog Golf Club at The Georgian from ground breaking to grow-in and oversaw the course for three years, all the while learning about the Marriott way of operating. In 2001, he jumped to the company’s corporate headquarters in Orlando and, eight years later, finds himself running the show.

Why should superintendents fear or embrace the typical management company?
I’ll answer that in two ways. First, at Marriott, we’re not a management company, per se. If XYZ Club opens, we’re not submitting a proposal to run it. Our mission is to support Marriott International. We’re an operations group, and we typically don’t do short-term agreements at stand-alone facilities.

Second, what’s different in corporate golf from other management models is we operate more methodically. We have more processes in place with regard to budgets, hiring, hierarchy and so forth. You have to be more patient and have a greater capability for planning. We’ve had superintendents who came from those other worlds who like that and embrace it, but some don’t. We can’t turn on a dime like they can, but more single operators are moving to our model more. It’s evolving our way.
There's a lot more to an effective crop protection product than just an active ingredient. That's why Nufarm invests more resources than any other post-patent company in developing and refining formulations. From the active ingredient to the inerts, we constantly develop ways to bring higher performance and more value to our customers. It's another way Nufarm provides better choices for better business.


© 2009 Nufarm. Important: Always read and follow label instructions.
What drew you to Marriott?

I came to the corporate office when Tom Schlick (longtime head of maintenance for Marriott) was in charge. I looked at it like a doctorate degree in golf course management. It's a chance to touch so many golf operations. I've worked on construction projects in seven countries. It's broadened my horizons in terms of business, turf types, learning the operations side, retailing – you name it – and I've worked with so many experienced operators. I'm beginning to feel like I understand operations as a whole.

I'm a capitalist at heart. We shouldn't apologize for that in the golf business. You used to hear, "My expenses are fixed, and I can't change the way I maintain the course." You can't operate that way. It's about being profitable. That's the reality of every other business in the world. Anyone who thinks differently isn't going to survive long these days.

Everyone says money is tight in the corporate golf business. How do you deal with that?

We've gone to great lengths to build a structure around budgets. What's the competitive set, what are the core components – acreage, geography, etc. – and internal needs based on revenues and sales. That creates a window – or a template – for the budget. We have five or six general models based on those things and then, like always, it becomes an art based on other factors – water costs, local expenses, etc. Then, we have the purchasing programs that give us cost leverage, which helps us do more with less.

What should superintendents understand before going to work for a corporate golf organization like Marriott?

What we probably do most differently is require a higher degree of planning and justification. You have to have more patience than you would in a private structure. But that process produces more consistent, excellent results. Having the ability to plan, put it on paper and zero-base a budget is critical. Just because you spent $X dollars last year doesn't mean you need to do that this year.

What drove Marriott to make the environmental commitment it has made?

Our superintendents are like most – we do an excellent job protecting and enhancing the environment – but we wanted a third party to validate our programs. And, because we're Marriott, we wanted the gold standard. So, we went with Audubon's certification program. It's a comprehensive program in terms of wildlife management, chemical usage, water conservation, native areas ... you name it. The biggest thing is that we've done an organizational outreach program to communicate all the work we've done.

It was the easiest sale of all time internally because Marriott is already so committed to green policies. The company jumped all over it. It grasped the benefits of Audubon International program immediately. Frankly, it's great brand recognition that's meaningful to most people. It means something positive environmentally.

We just completed our mandate, achieving certification for 25 of our courses in 2008. That includes all of our domestic facilities plus one in the Caribbean. In 2009, we'll extend the program to the rest of our international operations (another 17 facilities) in places such as the Bahamas, Costa Rica and Spain. The Cooperative Sanctuary principles make sense everywhere on the planet. And it's good business because it's a cost-saving program. You can show year-over-year savings financially.

Describe your average week.

My typical week includes a lot of travel. I logged about 130,000 miles in the air last year and was on the road 115 nights. Usually, it's Monday in the office, leave on Tuesday morning, visit a few facilities and come back later in the week. I spent 30 days in Tucson last year working on our Ritz-Carlton Dove Mountain project. Most people would be overjoyed about the idea of spending 30 nights in a Ritz-Carlton in Arizona, but even the nicest place grows old compared to home-cooking and family after a while.

My office is in a five-story office building that's not directly connected to a golf course, so I don't get to spend as much time on green grass as I'd like. I do a lot of internal education within the group, such as conference calls with our clustered operations (Caribbean, Florida, etc.) comparing properties and best practices and new ideas. I've learned that whatever challenge you're facing, someone else has faced it before.

Communication between our superintendents is critical, and it's a big advantage. Superintendents by nature share information, and that's one thing that's great about our organization. We can do that internally regularly instead of sporadically over coffee or a beer at a chapter meeting.
SUPERINTENDENT PROFILE

What would you prefer to do be doing instead of sitting in an office or on a plane?
I love what I do. I may be the last person on the planet who still gets up excited to go to work every day. That said, playing center field for the Braves would be nice.

What advice do you have for young people considering a career in the business?
First, make sure you’re truly passionate. Be prepared for incredibly long days and years in this business. You can’t fake the passion that great superintendents have for what they do. From a resume standpoint, earn a B.S. degree in turf but think about a minor in a business discipline. In 15 years, you’ll be using that minor more than the major. Intern with the most respected club and superintendent you can find and focus on maintaining those relationships for the rest of your career. That’s the key.

Also, intern or take your first job in the climate you intend to live in. Location matters. There’s a huge learning curve otherwise. If I’m picking from two equal candidates, I’m going to lean toward the candidate who has experience in that region.

Next, play golf. I don’t care how good you are, but you have to be knowledgeable and able to communicate about what’s going on with the game. Never lose sight that golf is the business we’re in. Be seen as an expert in all things golf.

Internally, it’s important to become fluent in real Spanish – not just golf course Spanish. Build relationships with the whole team – no matter what language they speak – rather than dictating to people.

Finally, get experience in new course construction, renovation or a grow-in. At some point, it will make the difference and pay off.

Final thoughts?
I constantly focus on the idea that we need to transform our image from maintenance experts to all aspects of club operations. I use a baseball analogy. We had a pitching coach in Atlanta once – Leo Mazzone – who was a tremendous teacher, but he never became a manager because he was viewed as a specialist.

The same is true for us. Too many of us hit a clog in coming up through the industry because we are viewed as too specialized. We have to change that perception, because superintendents have tremendous skills in all areas of operations if they’re given the chance.
THE ADVENTURES OF

DG Man

Vol. 1, No. 6

DG Man returns to his lair and gets right down to business...

Next Day...

Thanks again DG Man. I knew I could count on you!

To be continued...


To find out more about Contec DG® dispersing granule products, or to download the TNT turf nutrition tool, visit www.ContecDG.com or contact your Andersons Golf Products distributor.

Available outside the United States as NutriDG.

www.golfcourseindustry.com/readerservice - #22
Amelia Island Plantation partners with ValleyCrest to improve course conditions

The right match

Amelia Island Plantation partners with ValleyCrest to improve course conditions

BY JOHN WALSH

Kenyon Kyle (left), CGCS, regional superintendent for ValleyCrest Golf Course Maintenance, and Robert Dugger, director of golf at Amelia Island Plantation, are working together to improve conditions of the resort's four golf courses.
A
mid stiff competition, Amelia Island Plantation wanted – and needed – to improve the conditions of its four golf courses. Years of focusing more on real estate took its toll on the playing conditions.

"The Poa annua population, from years of overseeding, exceeded anything I've seen before," says Kenyon Kyle, CGCS. "The Poa was everywhere. It was like Visa."

After networking and researching, ownership and management decided to partner with ValleyCrest Golf Course Maintenance to achieve desired improvements. In 2007, Amelia Island signed a contract with ValleyCrest to manage its golf course maintenance operation. Halfway into a three-year contract, conditions are improving, although they haven't reached their goals yet.

"We had brought Billy Fuller out before to consult on a side basis," says Robert Dugger, director of golf for Amelia Island. "The fact Billy was associated with ValleyCrest helped."

Fuller, a former golf course superintendent at Augusta National, launched Atlanta-based Billy Fuller Golf Course Design in 2003.

"We needed a cultural change, a new way of thinking," Dugger adds. "Amelia Island will embark on a $65- to $70-million lodging expansion, and we need to make sure the golf product matches that. We're an independent resort looking to take the golf courses to the next level."

Dugger received approval to hire ValleyCrest from the privately owned resort's executive team, which consists of the president, general manager and executive vice president.

"We're going to be a flagship property for ValleyCrest," he says. "We were one of the first resort courses for them. They wanted us, and we wanted to leverage the high profile they would give us."

John Crowder, the director of business development and marketing for ValleyCrest, approached Amelia Island after he attended a conference there three years ago. He acknowledges the course conditions had a bearing on his introduction.

"Robert Dugger didn't know contract maintenance was an option," Crowder says. "He had an open mind and another way of doing things."

"We look at people to see if there's a match," he adds. "We saw a fit. We saw potential. They were aware of who they were and their competitors. Amelia Island competes with the big boys (high-end courses from Hilton Head to Daytona Beach), and they wanted to step up their commitment to golf."

During initial discussions, Dugger was impressed with ValleyCrest's employees and clients.

"John Crowder and his team have impressive experience," he says. "We have a core membership group who is vocal and was skeptical about the ValleyCrest move at first, but after communicating to them, it's been nothing but positive. ValleyCrest has changed members' expectations. The ValleyCrest move is out of the box, but I want the best thing for us."

James Wathan, golf course superintendent at Amelia River Golf Course (formerly Royal Amelia) who has been there since November 1999 when the course was under construction, didn't have a problem with ValleyCrest's involvement.

"My first thought when I heard ValleyCrest was taking over the maintenance operation was that if they were like Kitson & Partners (a real estate company that managed the resort before), I'd have no problem because Kitson paid their bills," Wathan says.

The 35-year-old property's owners wanted to position it as a preferred golf destination.

"Amelia Island has been successful in the resort destination market and wanted to position itself up," says Kyle, who's a regional superintendent with ValleyCrest Golf Course Maintenance and serves as director of golf course maintenance at Amelia Island Plantation. "It was looking for a stronger correlation between the resort and golf courses. Twenty-five percent of the people who used the resort used the golf courses. Ownership wanted to increase that to 50 or 60 percent. The challenge to me was to develop consistency among the courses' conditions, obtain the best value for products and services, and help refine and develop the staff."

Crowder makes a distinction between ValleyCrest, which is a contract maintenance company, and a management company. The company has a portfolio of partners, not properties, he says.

"One difference between us and a management company is that we're maintenance specialists," he says. "We're not responsible for driving rounds or marketing. We're there to position the property so they can sell it. We're part of the maintenance budget. We're subject to budget changes. We're not an outsourcing company. Amelia Island isn't handing something off to a third party. We offer an intimate service."

One of ValleyCrest's significant challenges is to define control.

"We're not branding our maintenance," Crowder says. "If you feel like you're branding the golf course, it's the wrong idea. We get our partners to understand their properties better, allocate their resources better, understand their financial commitments and gain control of their operation. We have one person working on property with a point person from the club. All labor are our employees. Our intention is to hire all people that work there."

A LITTLE HISTORY
For a while, Amelia Island, which has 1,700 members, focused more on real estate than the golf courses, says Dugger, who has been at Amelia Island for eight and a half years, starting as a head golf pro at two of the resort's properties and then becoming director of golf in 2004 when the position was vacated. As a result of that focus, the conditions of the golf courses slipped.
The fast visual response of Gordon's ProForm® products virtually eliminates customer call-backs concerning weed control. Precision performance products may cost a little more up front, but they make up the difference in savings on your bottom line.

- **SpeedZone®, PowerZone®** and **SpeedZone Southern** are precision tuned for the fastest cool-weather weed control - ever!

- When the weather heats up, water-based **Surge®** takes the heat off the weed pressure, including yellow nutsedge.

- When the problem is crabgrass, nutsedge AND broadleaf weeds, get the multi-purpose fast performance of **Q4, the "Army Knife of Turf Herbicides"**!

**Find Out Why..... Nobody knows your turf like we do!**

[pbi/Gordon Corporation](http://www.golfcourseindustry.com/readerservice - #23) An Employee-Owned Company
"There's a lot of history here before me," he says. "The golf courses weren't the main focus – real estate was for a number of years. Golf got pushed to the side. It was an amenity. That was the culture. So we said, 'What's the carrot that brings people here?' The golf courses are the most valuable asset and need to be the asset that draws people here."

Wathan says conditions at Amelia River have been consistent since the course was built, although the resort has gone through some difficult economic times and two private owners. The property went into default, the previous owner went into Chapter 11 bankruptcy, and the Bank of South Carolina took over the property for one year during which time Kitson & Partners managed the property. Amelia Island Plantation, which leases the property from the city, took over the property in 2005.

Since 2004, Long Point Golf Course has improved, Dugger says. The Ocean Links Golf Course peaked and became OK, then it transitioned and deteriorated. The facility acquired a fourth course, Amelia River, which was in good shape and has been taken up a notch since ValleyCrest came on board.

GETTING BETTER
ValleyCrest approached Kyle, who has been involved with golf course construction and multicourse operations for more than a decade in the Naples, Fla., area, to take the position at Amelia Island. Dec. 26, 2007, was Kyle's first day.

"Anytime you walk into a golf operation that existed for two or three decades, you'll run into a lot of cobwebs," Kyle says. "There was Poa annua and other weeds that were problems, along with the density of the bermudagrass base. Our goal was to improve conditions and eradicate weeds. Right now, we're focused on the playing surface. Eventually, we'll move toward outlying areas to improve aesthetics, but that depends on the economy."

One of the beauties of working for ValleyCrest is the depth and breadth of experience, Kyle says. For example, he sat down with Jeff Higgins, the company's agronomist, to address the improvements needed at Amelia Island. To do that, Kyle implemented a basic integrated pest management program that includes applying a postemergent herbicide followed by a calendar-based preemergent program.

"It will be two years before our goal is met," he says. "Before I came on board, the owners decided not to overseed two of the golf courses, which gave us time to work on the weed population. It was a bold move because people come down from the North and want to see green."

"We were brown and tan," Dugger says. "This year, we'll overseed. It's taking time, but we're seeing changes."

The overall age of the facilities was another issue. Kyle and his staff have done a lot of work to improve the pump station and repair the irrigation system in the field. They've replaced or repaired a significant amount of the cart paths, too.

One significant challenge is the maturity of the live oaks, which create a lot of shade. The crew is making lists to remove and thin trees to open up the course without losing the ambiance.

"They started removing the trees before I got here," Kyle says. "It's ongoing, and I'm not sure we'll ever be done, but we need more sunlight on the turf."

Kyle dealt with members and golfers overreacting about tree removal, but the complaints about it have subsided.

"Once residents and members saw the improvement and look of the golf course, it was difficult to argue the results of tree removal," he says.

One of Kyle's goals is to develop more consistency among the golf courses via bunker maintenance and the height of cut on greens.

"Ideally, I want to rake all bunkers the same way every day, but it's difficult to achieve consistency with old and new bunkers," he says. "I want golfers to have a consistent, good experience throughout all the golf courses. We want to create the same experience whether it's the member course or resort courses."

Part of the goal to becoming a preferred golf property is expanding the facilities, Kyle says. In tune with that, ownership is planning to build a new golf lodge.

"Once the lodge is complete, expect the facility to be transformed and be equal to or better than facilities in the competing markets from Daytona Beach to Hilton Head," he says.

The golf courses of Amelia Island Plantation
Amelia Links, designed by Pete Dye and Bobby Weed, is a 36-hole configuration including two courses, Oak Marsh and Ocean Links. Ocean Links is the primary resort course, and doesn't generate much member play. Oak Marsh is a resort course, and also generates a fair amount of member play. Most residents live around the Oak Marsh course.

Long Point, a Tom Fazio design, is an 18-hole layout that serves as the private member-only club. It takes some resort play on occasion.

Amelia River, formerly Royal Amelia, is a Tom Jackson-designed 18-hole layout that supports the resort, receives a significant amount of member play and some daily-fee traffic.
Know the Sign.

You can't afford anything but the best results.

That's why more professionals are turning to the quality and value that only Quali-Pro® can deliver.

That's a good sign.

Quali-Pro puts you in control of both pests and costs with proven products featuring the newest formulation technologies.

That's Quali-Pro.

QUALI-PRO
Professional Turf & Ornamental Products

Learn more at quali-pro.com.
AN EFFICIENT OPERATION

Since ValleyCrest’s involvement, there have been staff changes — at Kyle’s discretion — from top to bottom, but they weren’t necessarily widespread, Kyle says. At every position, from entry level to superintendent, changes were made. Some were voluntary and some involuntary.

“I have respect for all who work and have worked here,” he says. “Change is difficult. I’m like a coach. I put the best players on the field, empower them and let ‘em play.”

Each crew is assigned to a specific course, but they share responsibilities when it comes to projects such as aerification, renovation, verticutting or broad-based applications of fertilizer and pesticides.

“We try to make those projects efficient as possible,” Kyle says. “If each course has a sprayer, we’ll use all three on one course to get a task done. We’ll combine the staff and equipment to use economies of scale.”

Regardless of working for ValleyCrest or directly for Amelia Island, Kyle says the list of goals would be the same: improving customer service, safety, staff development, course conditioning and asset management.

There’s no downside to having the agreement with ValleyCrest, Dugger says, citing the improved maintenance practices.

“It’s the small things that don’t cost much that make a difference,” he says. “We used to talk about those type of things but never got around to doing them.”

COST SAVINGS

Finances have changed a little since ValleyCrest took over course maintenance, but the company has been successful providing resource allocations. It has achieved cost savings by maximizing staffing levels and using its purchasing power. (Amelia Island declined to provide specific numbers.) Additionally, members voted for a dues increase, which passed by 85 percent.

“Everyone’s excited by the progress,” Kyle says. “But we didn’t throw a million dollars at the problems. We try to find the best economies of scale.”

Kyle, proud of the staff he has, says their development and performance have been outstanding.

“There are no egos, and that’s rare,” he says. “Empowerment is good when people can operate inside that bubble without going to either extreme.”

Even in difficult economic times, ValleyCrest continues most cultural practices, Wathan says. They’ll save labor, say by not edging along cart paths as frequently, and put that money toward a pesticide or fertilizer application. Then, when times improve, they can return to edging the cart path more frequently.

“ValleyCrest doesn’t want to skip any cultural practices because it will come back to bite you later,” Wathan says. “Their hearts are in the right place. These guys will lose some money to make sure some things are done right.”

AVAILABLE RESOURCES

Wathan found ValleyCrest to be a good company with dedicated people that have 250 years of combined experience on the management team.

How ValleyCrest contract maintenance works

The history. Calabasas, Calif.-based ValleyCrest Cos. started its golf course division about four and a half years ago, but it has been providing course maintenance services for many years, says John Crowder, the director of business development and marketing for ValleyCrest. About two years ago, ValleyCrest had 40 golf course partners. Now there are 65.

The structure. Each regional superintendent, like Kenyon Kyle, has course superintendents reporting to him. The regional superintendents, who are responsible for about a half dozen properties each, report to one of two general managers — Terry McGuire on the East Coast and Dan McIntyre on the West Coast. “We’re pyramidal in our approach,” Crowder says. “Our company is extremely dependent on strong on-site leadership because we’re decentralized.”

The approach. As is the case with Amelia Island, ValleyCrest typically initiates the relationship with potential partners. “We won’t ever go back to a superintendent’s back,” Crowder says. “Life is too short. We like going in the front door. If a club is uncomfortable, we don’t go forward.”

The contracts. The company’s proposals are based on a three- to five-year plan or commitment that includes fixed costs. All of ValleyCrest’s contracts have been renewed during the past three years, Crowder says.

“The consultants and advisors who work with ValleyCrest are top-notch guys,” he says. “They go into depth, and they want your opinion. You can pull from a lot of resources, including regional superintendents. They’re better than I expected. They’re upfront with everything. There’s accountability all the way up the chain.”

The biggest difference Wathan sees working for ValleyCrest is the broad base of vendors the company works with.

“You get whatever you need whenever you need it,” he says. “One of their pluses is that they can get discounts. They’re just like Wal-Mart because they buy in such volume. Vendors are happy to bend over backward to help you because they get paid on time.”

LONG-TERM PARTNERSHIP?

The maintenance staff will probably never achieve the expectations they have, Dugger says.

“In superintendents’ eyes, there’s always something to improve,” he says. “A golf course is always evolving. Kenyon has only been here one year, so as we hit year three, we’ll be pretty close to where we want to be.”

ValleyCrest created tremendous respect and credibility among members, Dugger says, adding that members who are also members at St. Ives Country Club in Duluth, Ga., were instrumental in hiring ValleyCrest there.

A year and a half into a three-year contract, Dugger doesn’t see any change.

“I see ValleyCrest as a long-term partner,” he says. “They’re vested.”

Amelia Island, which pays ValleyCrest a monthly fee for its services, will evaluate extending the contract shortly before it’s scheduled to expire.

Kyle and Dugger, who have a close relationship, have the same goals and objectives.

“He doesn’t presume to be an agronomist and he supports us, and we support him,” Kyle says about Dugger. “I meet with Robert once a week. We go through the up-and-coming schedule two weeks out and discuss any problems we might be experiencing.”

Kyle does everything he can to make Amelia Island successful, and just because the current contract ends in three years doesn’t mean he acts or thinks differently.

“We want the best of everything that we can provide,” he says. “I have never looked at a job in terms of when the contract expires. There has never been a reason to look at it that way.”

GCI
YOU WORRY ABOUT BUDGETS, GRUBS AND GREENS.
WE’LL WORRY ABOUT RAKES.

Today, you have to present your budget to the board. We’re guessin’ the last thing you’ll talk about is the finer points of a bunker rake’s business end. Luckily, we’ve put a lot of thought into those finer points, creating a complete line of golf course accessories and tools designed to be relied on, day after day.

Hey, somebody’s gotta think about this stuff.

Like talking to real people? So do we. Call us direct for anything you need at 1-866 SG EXPRESS. Also visit us at standardgolf.com

www.golfcourseindustry.com/readerservice - #25
With more experience and research, superintendents are improving disease management on seashore paspalum

Since its introduction to the industry in the 1990s, seashore paspalum has made significant inroads to replace bermudagrass and other varieties on golf courses in the southeastern United States. Because seashore paspalum is a perennial turfgrass indigenous to tropical and coastal areas, it's highly tolerant of the environmental stresses in those climates. Seashore paspalum can provide high-quality turf in reduced-light and waterlogged conditions, as well as in soils with wide pH levels. It also requires a lesser amount of nitrogen fertilizer to keep it healthy. But one of paspalum's most powerful attributes is its ability to tolerate elevated salinity levels that would affect other turfgrass types much more negatively.

"It's slowly but surely taking over the bermudagrass market for golf courses," says Jarrett Eledge, golf course superintendent at King's Cross Golf Club in Corpus Christi, Texas. "Its drought tolerance is amazing, and the color is stunning."

Superintendents who maintain paspalum advise keeping mowing heights low to help prevent thatch buildup, which can create an environment conducive to disease. One of the benefits of paspalum is that it can be mowed to extremely low heights with little risk of stressing the plant.

At Hammock Bay Golf Club, superintendent Rodney Whisman is concerned about pythium on the paspalum greens, which seem to hold more moisture.

Jim Brown, CGCS, at Newport Dunes Golf Club in Port Aransas, Texas, mows fairways at five-thirtyseconds of an inch to create a firmer surface.

"It's almost like you're treating it like a cool-season turf from the standpoint of mowing heights, the frequency of mowing and aerification," Brown says. "Something akin to bentgrass or ryegrass."

Arneman concurs, saying paspalum seems to be a warm-weather grass with some cool-season characteristics.

"You need to keep the paspalum at a lower height, but remember paspalum likes to be brought down slowly," he says. "If you don't keep it low, it'll get clumpy."

Low mowing heights create the possibility of scalping the turf, and that can invite disease. Helminthosporium seems to be a problem if the turf is injured because of salt, drought, scalping or another disease, after which Helminthosporium can occur, says Robert Carrow, Ph.D., professor of turfgrass science in the department of crop and soil sciences at the University of Georgia. Curvularia is a disease that can be a secondary problem after initial injury by another factor. These two diseases can be alone or in complex with one another.

It's also advisable to verticut aggressively to prevent thatch and allow the tightly knit and deep roots to breathe and receive nourishment.

"I've had to be regimented about verticutting and topdressing," Arneman says. "I'll do light verticutting every two weeks during the growing
Superintendents should keep in mind fungicides or herbicides that aren't labeled for use on seashore paspalum can damage the plant. Increasingly, more fungicides and pesticides are being labeled for seashore paspalum, which is the type of turf Jim Brown manages at Newport Dunes Golf Club in Port Aransas, Texas.
Brown warns against deep verticutting, which can be detrimental. When he did heavy verticutting initially, there was an extensive recovery period.

“We now do light but frequent verticutting,” he says. “There’s been an increase in mechanical maintenance with the paspalum, but we’ve seen a decrease of spending on fertilizer and chemicals.”

Superintendents recommend verticutting greens and fairways at least two to four times a year. Areas that receive more foot traffic, such as tee boxes, should be verticuta more frequently.

**UNDER PRESSURE**

A benefit of seashore paspalum is that it doesn’t need much fertilizer once it becomes established. Annual fertilizer rates between 5 and 8 pounds per 1,000 square feet of turf except greens and between 3 and 6 pounds per 1,000 square feet on putting surfaces are recommended. The plant can be susceptible to disease if too much fertilizer and irrigation are used.

“Initially, when seashore paspalum cultivars were released and the species came into wider use, the disease concerns were primarily take-all and brown patch, which are promoted by excessive soil moisture,” Carrow says.

Since management practices for paspalum have become more refined, there’s less concern about disease pressure, Carrow says.

“The reasons for problems was that applications of too much nitrogen and too frequent irrigation leads to build up of excessive organic matter in the surface zone, which retains excessive moisture and results in low oxygen,” he says.

This predisposes the plant to disease. But turf managers who’ve reduced nitrogen applications and adjusted their irrigation practices rather than following a bermudagrass management regime have reported much less disease pressure, Carrow says.

Because seashore paspalum develops a deep root system and can tolerate drought conditions, it needs less water. Along with using less nitrogen, reduced watering prevents the accumulation of excessive organic matter in the surface zone of the plant, which protects the grass from the onset of disease.

Reports of dollar spot and brown patch have surfaced on some courses with seashore paspalum, although incidences of the annoying turf problems seem to be irregular, a result of poorly draining soil and localized weather conditions.

“Dollar spot has been observed but doesn’t seem to be all that frequent or serious,” Carrow says.

Dollar spot caused by *Sclerotinia homoeocarpa* and large patch caused by *Rhizoctonia solani* are two common diagnoses given to seashore paspalum through the Rapid Turfgrass Diagnostic Service at the University of Florida, says Philip Harmon, Ph.D., associate professor of plant pathology. Generally, cultivars of seashore paspalum are more susceptible to the two diseases than cultivars of bermudagrass. Paspalum is less susceptible to dollar spot than bentgrass and less susceptible to large patch than zoysiagrass cultivars. Other common diagnoses include fairy ring and leaf and sheath spot.

Increasing nitrogen fertility can help manage disease. But at inappropriate times of year – such as late fall – it can lead to other disease problems such as large patch, which results in a discolored ring or patch ranging from a few inches to several feet across at the first occurrence, Harmon says. As the patches expand, thin turf is left in the center. These areas may thin and continue to decline until spring and better growing conditions occur.

The disease doesn’t kill paspalum in most cases, so it’ll recover.

“There’s always diseases in the soil,” says Lee Bladen, golf course superintendent at Old Palm Golf Club in Palm Beach Gardens, Fla. “It’s finding the right balance of growing the grass to the point where it doesn’t stress. Paspalum isn’t any different from bermuda in that regard.

“We’ve seen some spotted patch and dollar spot, but it’s because we’ve been riding a fine line with fertilizer and trying to find the right levels to apply,” Bladen adds. “And we’ve learned to manage our irrigation program to cut down on the incidences of disease.”

Hammock Bay Golf Club in Naples, Fla., was one of the first courses in the country to use seashore paspalum (Sea Dwarf) wall to wall. Rodney Whisman, golf course superintendent, says he and other superintendents have dealt with a learning curve when managing paspalum.

“Disease control is always our No. 1 issue because of climate – the heat and the humidity we have here,” Whisman says. “There’s a multitude of things weather conditions are conducive to. One of the issues I’m concerned with is pythium on the greens, which seem to hold more moisture. But I don’t lose any sleep over it. Certain times of the year we’re also seeing yellow patch pop up here and there.”

---

*Certain times of year, Rodney Whisman sees yellow patch on the paspalum greens at Hammock Bay Golf Club.*
Throughout the history of the turf management industry, professionals who develop innovations in equipment, products and methods have eagerly handed down their wisdom and experience to the next generation. That's why SePRO Corporation is proud to establish its legacy in the form of the latest advancement in turf growth regulation.

The Legacy has been passed on

New Legacy Turf Growth Regulator incorporates patented synergistic growth regulation technology resulting from its dual sites of action and absorption. No other product can match Legacy’s combination of enhanced growth suppression, extended spray intervals, improved turfgrass color and quality, suppression of Poa annua and more uniform growth regulation on mixed turfgrass stands. The next generation of turf growth regulators is here in the form of an innovation that will be passed down for years to come.

Make it a part of your golf course’s tradition by visiting www.sepro.com or calling 1-800-419-7779 to learn more about Legacy or any of SePRO’s products, services and technologies.

*Trademark of SePRO Corporation. Always read and follow label directions. Legacy is pending registration in some states. The synergy derived from the combination of Type IIA and Type IIIB PGRs is covered under U.S. Patent No. 7,135,435. ©Copyright 2008 SePRO Corporation.
Treatments

Whisman treats his problem areas with various fungicides, such as Daconil, and herbicides. "I've never been a big believer in preventive programs," he says. "I treat when and where needed. Basically, you have to stay on top of things."

Most superintendents managing seashore paspalum rely on some level of fungicide use for preventive disease management. Fungicides are excellent tools for this task but are expensive and aren't usually feasible on all areas of the course, such as fairways and roughs, Harmon says.

Other factors affecting disease are fertility programs, irrigation quality and schedule, height of cut, growth regulator use and rates, and course construction.

Sweet remains vigilant during the summer months when the weather conditions make the paspalum most vulnerable to disease if left unguarded. He's been on a preventive program with greens during the summer when he's noticed there may be more potential for disease. He'll use chlorothanil and thiophanate and curative rates of Compass and/or Heritage where needed to prevent and treat brown spot.

Arneman treats his greens preventively every 21 days with fungicides, including Insignia and Compass. He rotates fungicides when the temperatures call for it.

"I've never put fungicides on the fairways, even though I get my fair share of dollar spot and brown patch," he says. "The grass will thin a little, but the problem runs its course, and the turf replenishes itself quickly."

Superintendents should keep in mind fungicides or herbicides that aren't labeled for use on seashore paspalum can damage the plant. Increasingly, more fungicides and pesticides are being labeled for seashore paspalum, Carrow says, adding that the limited number of labeled pesticides was a problem initially.

There are numerous fungicides on the market for control of diseases such as dollar spot, leaf spot, take-all patch and fusarium blight labeled for use on paspalum. Most three-way mixtures of 2,4-D, MCPP and diacamba herbicides are labeled for use on paspalum and provide postemergent control of many broadleaf weeds.

DMI fungicides aren't new but have been used sparingly on bermudagrass because of the potential to burn turf, Harmon says.

"Some of these products are among the best performers for dollar spot, take-all, root rot and large patch management," he says. "These offer good rotation or tank-mix partners for Qol products. I've tested many products in repeat, off-label research programs, and my data suggest these are safe for use on seashore paspalum turf if used as directed."

John Torsiello is a freelance writer in Torrington, Conn.
When It Comes To Turf Quality, Ask Those Closest To It.

“\"I heard Nitroform® fertilizer gets really high scores in tests by independent labs—that includes me.\"

— Angus, Randy Moody’s Black Lab

Slow-release Nitroform® fertilizer has made quite a positive impact on Superintendent Randy Moody and his dog, Angus, at Georgia’s Longshadow Golf Club. “It’s consistent, with no surge growth or flushes, so we save time and labor,” says Randy.

To please the players on your course—both the two- and four-legged kinds—ask your Agrium Advanced Technologies rep or call 800.422.4248. Tell us what your dog thinks at agrumat.com/dog and win great prizes for you and your pooch!
Speaking of bailouts, we have one for the turf industry.
Tournament Ready® Soil Surfactant performs as well or better than our competitors' top selling brands, including Revolution® for up to 35% less. Now you can get the most from water, without being dragged under by the cost.

KALO
The Science of Common Sense.
Part Dr. Phil, part turf doctor, golf course superintendents are more than just keepers of the green. As leaders of large crews, good people skills are just as essential as agronomic expertise.

"I’m not just growing grass," says Brian Nettz, superintendent at Presidio Golf Course in San Francisco. "I’m growing people who will move on and be successful in whatever they choose."

Superintendents need good people skills to manage staffs effectively

BY DAVID MCPHERSON

So, how do superintendents succeed at "growing" good crews and earning their respect? It’s all about knowing how to treat people and recognizing the human capital that maintains the course, Nettz says.

"I tell my staff I could get monkeys to do most of the jobs out here and pay them bananas, but I want people who will think about what they’re doing and will make more good decisions than bad decisions," he says. "I’ve been lucky always being able to surround myself with quality people who feel about the golf course like I do. It’s more than a paycheck … it’s a labor of love and a reflection of who we are."

Nettz’s enthusiasm rubs off on others.

"I always try to point out when people are doing things right, and I try to do it in front of the entire staff," he says. "I make sure my staff knows I’m here to help them succeed as contributing members to the world. I’ve helped them through credit woes, alcohol addiction, immigration issues, etc. We spend more than nine hours together each day, so we’re a family."

On average, a superintendent manages a staff of 21 or more people, according to GCSAA’s most recent compensation and benefits survey. Many are seasonal part-time workers, while a few, such as head mechanics and first and second assistants, are full time. Workers range from teenagers to retirees and come from various socioeconomic backgrounds, so superintendents need to be sensitive to these differences.

In many ways, the skills required to be a successful leader in the golf course industry are no different than leading employees in an office setting. Many of the same management 101 skills apply. A superintendent must motivate and gain workers’ respect through listening, communicating, empowering and rewarding.

PEOPLE SKILLS

Jim Husting, CGCS, at the private, 27-hole Woodbridge Golf & Country Club in Woodbridge, Calif., agrees with Nettz that managing people is the most challenging aspect of a superintendent’s job.

"Other than outside forces you can’t control, such as budgets and wages, the biggest challenge to motivate your crew is managing personality conflicts," Husting says. "It’s almost impossible to think when you get 17 people together they’re all going to get along."

Husting jokingly says he should’ve taken more psychology classes in college.

"You’re part referee and part psychologist," he says. "People
Turf can be damaged by everything from a golf cart on a wet day to fungus and disease. The Turf Essentials™ combination fungicides, along with Daconil®, provide a streamlined approach to preventing a broad spectrum of turf diseases. Like you, Syngenta understands the impact no matter what’s affecting your course. We take conditions personally.

1-866-SYNGENTA • TurfEssentials.com
have personal matters that follow them to work, whether it’s divorce, health problems or other family matters. You have to be a good listener. When someone is feeling down, you need to ask him what’s going on and listen. When they’re having family problems, give them time off to be with their family … the golf course will still be there.”

Another key to motivating a crew is leading by example, says Shane Wright, CGCS, at Vero Beach (Fla.) Country Club.

“You can’t expect them to work hard if you’re only working 20 hours a week,” Wright says. “When the crew knows you’re willing to sacrifice to make the course the best it can be, they’ll follow suit.”

One of the biggest sacrifices any crew member has to make is his sleep – getting up before sunrise is half the battle.

“It’s not easy to motivate 40 people at 5:30 a.m.,” says Scott Bowman, golf course superintendent at Glen Abbey Golf Club in Oakville, Ontario, host of the 2008 RBC Canadian Open.

“I tell them as long as you can get here by 5:30 a.m., the rest is easy.”

Bowman agrees with Wright that leading by example is a proven way to inspire workers right from the moment a superintendent arrives.

“I like to be out there and work hard with the staff,” he says. “I try to be here every morning before they are. If they see the boss is here on time every morning … for the younger crew, that’s half the battle. I try to be here 45 minutes before start time and open the shop up. If they see you doing that, they see you’re focused on your end of the job as well, so it makes them get into it.”

Bowman also tries to spend a little time with every employee. He may stop to ask one of the older fairway cutters how he’s doing or ask one of the university students how his weekend was. He also may jump in a bunker or two with the crew.

“For them, to see a boss jump in and take a bunker … that goes a long way,” he says.

Bowman’s leadership and ability to motivate his crew were crucial to the success of last year’s PGA Tour event, held at Glen Abbey. The week of the Canadian Open, Mother Nature dumped 9 inches of rain on the course. Without the dedication and teamwork of his regular crew of 40, plus an additional 20 volunteers, Bowman says the event would have been a flop.

A LITTLE REWARD GOES A LONG WAY

Recognition also goes a long way to gaining respect from crew members. Bowman doesn’t believe in employee-of-the-month programs but emphasizes the importance of praise. He likes to treat everyone equally.

“I try to paint everybody with the same brush as far as staff events and recognition,” he says. “Obviously, there are people who step up and go above other employees, but I try to give that recognition personally. All my incentives – staff barbecues, staff functions – I include everybody from high school students to the second assistant to the retired fairway cutter. That goes a long way because everyone sees they’re on the same page.”

Husting agrees with Bowman that recognition is paramount and helps gain more respect from a crew.

“They need to be recognized for the work they do,” he says. “Some of the tasks are repetitive and menial, but they want to be praised as much as possible. I find verbal praise helps a lot.”

Husting says Woodbridge hosts an annual salsa contest, complete with judges, which is a fun event his staff enjoys. Throughout the season, Husting also has departmental barbecues and an employee day where staff from all departments can play golf, swim and partake in other contests.

Phil Scully, golf course superintendent at the Granite Golf Club, a private course just north of Toronto says extracurricular activities – staff appreciation days or nights – are great ways to keep his team motivated, whether it’s going bowling, playing paintball or the annual staff golf tournament in August.

“We shut the course down,” he says. “Members aren’t allowed on the property and senior staff from the Granite Club downtown come up and cook the meal. Many of my staff never go in the clubhouse because it is just for members, so this is their one time to go in there and be treated like a member.”

SPEAK THEIR LANGUAGE

At Presidio, Nettz employs mainly Hispanics, so he speaks fluent conversational Spanish to relate better.

“I understand the language nuances and their inflections,” he says. “I can automatically use phrases they can readily identify with, and this creates a greater level of understanding.”

While literally speaking a crew’s language isn’t always immediately possible, what’s more important is finding common conversation and making time to connect on a more personal level.
Shift your business to the independent distributor members of PrimeraTurf® and tap into the power of a wide range of high-quality PrimeraOne® products.

You'll find the products and the name of the distributor in your area at primeraone.com.
"Young kids like to see a boss who’s human,” Bowman says. “I like to talk to everyone in the morning. It doesn’t have to be business related. It could be something that happened in the news. Just because I’m the superintendent doesn’t mean I’m above and beyond.”

Being a superintendent doesn’t mean one’s perfect.

“Everybody makes mistakes, myself included,” Bowman says.

Husting shares what he learned from a memorable mistake he made early in his career.

“The one mistake I will never make again is to promote a staff member to assistant superintendent,” he says. “There was a lot of resentment toward me and the individual promoted. That person was a member of the crew, a ‘buddy-buddy’ type thing, and then he was telling his ‘buddies’ what to do. It was a no-win situation. Since then, I’ve always gone outside and brought someone in.”

THE BIG PICTURE

Scully believes it’s essential to make employees aware of the bigger picture, another factor that helps motivate staff. Every new season, the Granite Golf Club begins with a staff orientation, but it’s not just for Scully’s team. Rather, it’s conducted over the course of three days each April by the human resources department for all new hires. This way everyone gets to see how the whole staff works together as a team.

“I’ve always said to my staff the reason I got into this business was because I hate assembly-line mentalities … just doing a job for the sake of doing a job,” Scully says. “What I try to instill in my staff is the big picture. You aren’t just cutting grass. You aren’t just raking a bunker. What’s the big picture?”

One of those moments of truth comes down to what members and guests see when they come onto the property, Scully says.

“I empower my staff to make them feel they’re directly responsible for how great this property is,” he says. “It has nothing to do with me. I’m just the one who puts all the puzzle pieces together. They’re the ones who go out and do all the work every day, and they’re the ones members appreciate and love.”

David McPherson is a freelance writer based in Toronto.

PENN STATE | ONLINE

Learn from a leader in turfgrass education

Bachelor's Degree in Turfgrass Science
Certificates in Turfgrass Management

- Employer-recognized and accredited
- Flexible, convenient, and entirely online
- Financial aid options available

www.worldcampus.psu.edu/GCI

www.golfcourseindustry.com/readerservice - #34
WE'RE CHANGING THE GAME. FOR THE BETTER.

Introducing CIVITAS™—a breakthrough in fungus control technology.

Turn on the natural defenses of your turf and drive away fungus.

CIVITAS is unlike any other fungicide you've ever used. That's because—unlike conventional chemistry—CIVITAS does not kill anything. Its unique mode of action activates the natural defenses of your turf enabling it to effectively defend itself against dollar spot, brown patch, anthracnose, snow mold and other fungi. Without the resistance headaches. Embrace CIVITAS and change your game for the better.

www.civitasturf.com
To paraphrase an old saying, “I can’t define good golf course architecture, but I know it when I see it.” This comment reveals how difficult it can be to define the merits of a good golf course.

What is it that destines a course to be considered a top 100 or even an example of good golf course architecture? Is it the setting (Pebble Beach)? Is it the beauty (Augusta National)? Is it the challenge (Pine Valley)? All magazine rankings aside, there must be a reasonably objective framework that distinguishes a well-designed golf course. For those of us in this profession, the basic principles of golf course design are fairly evident, or they should be.

Is the success of a design the result of following the basic principles and applying them to each current project? Simply put, yes. However, as in the game of golf, there lies the rub of golf course design. Assembling these principles to create an original, quality playing field, while dealing with unforeseen conditions and ambiguous details that the books rarely mention, is the challenge. Countless choices must be made. Each architect—whether it’s A.W. Tillinghast, Alister MacKenzie, Pete Dye, Robert Trent Jones Jr., Tom Fazio or Tom Doak—has a signature framework with which he assembles the choices that determine the golf experience.

Providing a Personality
Golf is like no other sport. The dimensions and characteristics of an individual golf course change from day to day, week to week and throughout the span of its lifetime. And the differences between golf courses are infinite. Like human beings, each is separate and unique with distinct personalities and characteristics. Each reacts to different golfers, varied weather or different times of the year.

An average golfer sees the course as a sequence of par 3s, 4s and 5s that total a par of about 72. Tee locations, green sizes, depth of bunkers, turf types and water hazards provide the personality of a golf course. That personality is the result of the architect’s vision. Generally, golfers can sense the atmosphere of the golf course or feel the dread of a hazard but rarely understand why.

A good architect will use existing site features to develop the character and flavor of the course.
Some Heads You Want...
Much like a good meal or enjoyable music, the strategic, visual and textural golf experience lingers with a golfer long after the event, leaving him fulfilled and satisfied, neither wanting nor overwhelmed. A golf course is the product of an architect’s ability to integrate his artistic creativity, scientific knowledge and golf acumen into the landscape.

THE ART OF COURSE DESIGN
A golf course should be considered a work of art because it has a unique and discernible theme, structure and style. Artistic design theory is one of the reservoirs of knowledge from which an architect draws. Unity and variety; line, form and color; scale and composition; foreground and background are all considerations of the designer. However, a work of art must be composed within the framework of golf theater.

The trick is to make the parts fit the whole. An architect may have the desire to create a feature to enhance the aesthetic of the golf landscape or the challenge and playability of a particular golf hole. It’s easy enough to have good, solid, individual ideas, but the real challenge is creating a coherent, well-integrated experience. Taking clues from the site and its surrounds makes an architect’s job more effective, efficient and inspirational.

THE ROUTING PLAN
Great golf courses are the result of positive landscape management. The aim is continuity of an experience. Robert Trent Jones Jr. said, “Like a good tailor, a routing plan must fit well to wear well. If it’s cut wrong to begin with, the garment will never wear well.”

The routing plan should reflect and expose the best of the site features without theatrics and convolution. Golf holes should have variety, but also should feel like they belong within the family of 18. Changing bunker styles, drastic or distracting topographic features, inappropriate locations for water or improperly sized tee surfaces can ruin the aesthetic and systematically detract from the beauty of the golf experience. The outcome will be better if an idea springs from the landscape, rather than affixing an idea or image to it.

Site characteristics, client objectives and budget, and the target market will determine how a project will evolve. A larger budget will allow more bells and whistles. A great site dynamic will allow more efficient use of materials and a better routing plan. Natural systems of the site such as woodlands, wetlands, floodplains and watercourses, will affect the physical layout (routing plan) of the golf course and the impact on the functional elements of the design.

CONSTANT STATE OF REFINEMENT
An architect is constantly gauging the site resources with the client’s objectives and budget while offering plan and detail alternatives. An architect is in a constant state of plan refinement, seeking solutions and alternatives to reach the goals. Choices must be made, often dozens at a time, affecting the budget, strategy and function of a golf course.

For example, relocating a green by 30 yards may save thousands of dollars while adding to the golf experience. But, at the expense of a stand of mature oak trees, is it worth it? Adding a bunker may cost money, but it stimulates the golfing public visually and strategically. Should it be included? A water feature is proposed at a far corner of the site but offers little strategic or aesthetic value. Should it be constructed? The architect faces these and many other questions daily during design and construction.

Architects require a basic understanding of numerous related professions: Hydrology, drainage, agronomy, turfgrasses, physics, geometry, civil engineering, soil sciences, botany, psychology and natural systems are all part of the training. Decisions in each of these disciplines are linked inherently to other parts of the golf course, giving it its personality and life.

For example, existing soil conditions will determine the extent of drainage systems and soil amendment requirements. Weather patterns and topography will determine the necessity for irrigation requirements and turf types. Turf types will be determined by soil conditions and available water. Available water and a budget will determine grassing limits and the pumping station requirements. And so on.

The quality of a golf course is affected equally by the materials underground as it is by the visible portions of the facility.

DRAINAGE AND HYDROLOGY
If the maxim of real estate is location, location, location, then the maxim of golf course design is drainage, drainage, drainage. Poor hydrology can be the greatest shortcoming of a golf course. If the course lacks a sound drainage network, then, at worst, there will be areas of standing water making the course unplayable, or at best, soil conditions that cause weak or diseased turf.

Quality drainage systems and shaping can never be compromised. The value of positive at grade drainage isn’t measurable. Directing water to the appropriate locations for collection and ultimate release is generating a great deal of attention because of more stringent environmental factors and regulations.

These protective environmental issues have forced golf course architects to integrate golf holes into the landscape more sensitively. Wetlands, floodplains and mitigation are terms that are surfacing during design and development more regularly. While golf courses have been blamed for environmental problems in the past, on balance, golf has been an environmental benefit far more than a detriment. Golf courses can solve a host of environmental problems with buffer zones, stormwater management and wildlife habitat establishment.

EARTHWORK AND GRADING
As Ben Hogan once said, “It’s in the dirt”. To adequately create the features that must be created for greens, tees and bunkers, earth must be moved. All architects attempt to reduce the amount of mass earthwork (removal and placement) as much as possible. So, what’s appropriate? What’s good design? That’s as tricky as a flop shot over a creek from a hardpan lie.

Earthwork movement should reflect the intent of the architect balanced by the site needs and landscape environment. A golf course architect has to assess earthwork quantities constantly to create a mound or raised area in one place to, in turn, create a hollow or swale in another place to balance the movement of earth, all the while making it look as natural as possible.

Furthermore, it’s important to balance earthwork to smaller, adjacent areas to reduce hauling costs. An architect may be creating a low spot or pond in one area of a site, but, if that excavated earth has to be trucked to a far corner of the site, the balance of cut to fill is more costly.

Then there’s the possibility that, when creating a depression in one area, an architect inadvertently causes a drainage problem (i.e., wet area on the golf course where water collects) and then must install underground drainage infrastructure, which also can prove costly. Again, shaping and grading must accomplish the direct golf-specific goals, while providing...
Some Heads You Want . . . Some Heads You Don't.

The golfers on your course don't want Poa seedheads. Embark® is proven to be the best – and the most economical – Poa annua seedhead suppression available. Get Embark and prevent unsightly Poa seedheads on your course!
for the functional movement of overland and underground drainage systems.

IRRIGATION

Irrigation is a costly item and should be designed with the ultimate intent for water distribution to be adequate and consistent. However, it's widely understood that irrigation systems are designed with a worst-case scenario in mind. An irrigation system must be developed to provide water during the most difficult times of the year – July and August. Pumping systems and head distribution are determined with an extended dry period in mind.

THE GREAT CHALLENGE


Is it the game, the camaraderie or the interaction with nature? It's all of the above. The most compelling aspect of golf is the infinite variety of possibilities during play. The personality of a golf course is determined greatly by the architect with the routing plan, as well as the details of the functional and golf-specific matters.

The game was meant to be enjoyed with friends, recreating more than competing and enjoying nature. It can rejuvenate our senses. It's a gentleman's game with a proud legacy. It should be accepted as a difficult game to be enjoyed. Therefore, it's incumbent upon architects to make the game as enjoyable as possible for as many people as possible. This is a great challenge and a dilemma.

Clearly, there are exceptions. Some courses need to be more difficult and others less devious. However, the great golf course design debate isn't about risk and reward; rather, it's about playability and difficulty.

Architects spend just as much time determining the balance of challenge, the budget and the degree of difficulty as they do contemplating the details of the grading, drainage and bunkers, the subtleties of the green contours, the widths of the fairways, the tee positions, the hazard locations, etc. Why? Because these items have a direct impact on the fun factor of a golf course.

A golf course without features or challenges won't engage the better golfer. Therefore, it's the architect's goal to create a valuable golf experience that will challenge every golfer to a degree equal to his ability. Each project and site requires distinct choices and a different tact to implement the appropriate level of challenge, recreation, quality and beauty. Good golf architecture isn't swiftly identifiable, but it's most certainly felt.

Cameron MacKellar, a member of the USGA, is a golf course architect with Martin Design Partnership. MacKellar, who's based in Batavia, Ill., can be reached at c-mac@mdpltd.com.
Hi Performance Sand daM™ for slopes as steep as 60°

Sand daM™ MR is ideal for projects where high performance and low costs are required

Install Sand daM™ Lite in greenside bunkers with low angle slopes, or flat bottomed fairway bunkers to eliminate contamination

The easiest to install and most effective of all bunker blankets.

Now available in three great options

1. Hi Performance Sand daM™ for slopes as steep as 60°
2. Sand daM™ MR is ideal for projects where high performance and low costs are required
3. Install Sand daM™ Lite in greenside bunkers with low angle slopes, or flat bottomed fairway bunkers to eliminate contamination

Professional Turf Products LLC

TOLL FREE 866-726-3326 PHONE 724-929-2111 FAX 724-929-0282 EMAIL info@proturfproducts.com WEB www.proturfproducts.com

www.golfcourseindustry.com/readerservice - #38
Preparing for the unexpected

Simple steps to creating a plan that will minimize downtime in case of a disaster
By Marisa Palmieri

Despite Eric Bauer’s host of experience as a golf course superintendent – including completing grow-ins, serving as a project manager and working on Jack Nicklaus’ home practice facilities – he discovered one area where he lacked skills as director of grounds at the Club at Carlton Woods in The Woodlands, Texas. “There was always a possibility for a tornado when I worked in Memphis. But you tend to get wiser as you get older, and I didn’t think of those things then. Even when I first moved to Houston in 2000, I didn’t think of hurricanes.”

Though the impact of Hurricane Rita thankfully didn’t devastate the Club at Carlton Woods, it did leave Bauer feeling vulnerable. “Being my first hurricane, you see how little time you have when you’re actually in that situation,” he says. “It made me realize I wasn’t prepared. If it had hit, we were probably 70-percent ready.”

Bauer and his crew learned from that experience and developed a plan of attack, including a checklist to begin preparing for future disasters five days before they’re expected to hit (see “Disaster preparation checklist” on page 56).

“If you just have to execute a checklist, it makes your job that much less hectic,” he says.

Bauer’s plan paid off. This year, when Hurricane Ike hit, he and his team were prepared. Despite the 263 trees that were damaged – some of them blown over completely, exposing the root balls – the facility’s Fazio course was back in operation within days, and its Nicklaus course was running within two weeks. Many of the area’s courses took weeks to reopen.

Thanks to the five-day plan, the facility had tree service within 24 hours, fuel within 72 hours and a generator within 36 hours.

But more than anything else, a quick recovery was possible thanks to Bauer’s staff.

“The day after the storm I had four employees show up,” he says. “Within 36 hours, we had 85 percent, and we were fully staffed within 72 hours.”

Bauer attributes staff preparedness to the plan, which tells employees to contact him within 24 hours during a disaster. After determining no one needs assistance and everyone’s families are safe, Bauer shares the game plan for returning to work.

“When they see you’re calm and prepared, that’s going to make it less stressful for them, and they’ll be at work,” he says. “Your employees respect the plan. They look at you to be the leader, be prepared and think of these things. They’re not paid to worry about these kinds of things; that’s what you’re there for. If you show them that, they’ll respond the way they do every day. If they see you changing your mind and being indecisive, then they’re not going to respond well.”

WHERE TO START
If a golf course doesn’t have some type of general disaster plan, it’s behind the times, says Mitchell Fenton, a security consultant and executive security director for Baltusrol Golf Club in Springfield, N.J.

“Katrina was the biggest lesson for the golf industry,” Fenton says. “It woke up a lot of managers and superintendents because of what happens when a natural disaster hits.”

Unfortunately, many facilities are vigilant shortly after a disaster, but attention to the issue wanes before long, Fenton says. It’s common for managers to create disaster recovery plans and let them fall out of date, collecting dust on a shelf.

“Instead of having a giant book that never gets updated, consider more of a flow chart to provide employees so they can look at what they can actively do,” Fenton says, adding that all disaster plans should be updated annually.

“It needs to be reviewed regularly and exercised by all staff,” says Ken Koch, owner of the disaster recovery consulting firm Business Resource Management in Eagan, Minn., noting this task can be particularly challenging in the golf industry where temporary and seasonal employees are common. “They need to know where copies of the plan are and what their duties are if a disaster occurs.”

All disaster plans should start with a threat assessment.

“Ask, what are the risks to the golf course, and then you can identify ways to mitigate the risks and have a plan in place,” Koch says.

When identifying risks, look beyond the obvious. A club in the Midwest may not seem like a candidate for hurricane damage, but every state in the continental U.S. may be affected by hurricanes. Last fall, Hurricane Ike blew down trees and knocked over a TV tower at Valhalla Golf Club in Louisville, Ky., just days before the club hosted the Ryder Cup.

In addition to hurricanes, fires, tornadoes, earthquakes and nonnatural disasters, such as civil disturbances and gas leaks, there are other circumstances to consider. Whether a facility is a public, private or a resort course may affect the plan’s details and who's involved creating it.

While the superintendent will have his own agenda for the maintenance department, it’s important he considers how that will work within the scope of the entire operation. Most importantly, senior management has to buy into developing the plan.

At Brasstown Valley Golf Club, a resort course in Georgia’s Blue Ridge Mountains, the golf course maintenance staff takes part in the resort’s disaster plan. The worst-case scenario involves evacuating guests.

Thankfully, golf course superintendent Steve Gonyea hasn’t had to do that yet, but he says he’s always in touch with the resort manager about how many guests are in house.

No matter the type of facility, it’s important maintenance departments consider how their own disaster recovery plans work within the scope of the entire operations’ plan. They should focus on the safety of guests, golfers and staff first and on minimizing down time and damage to the course second.

GATHERING INFORMATION
Because, as Bauer’s experience shows, employee preparation is central to recovery efforts, no plan is complete without a current list of staff contact information. Don’t forget area codes.

Also, provide details for what to do in case phone lines are down. Cell phone numbers, e-mail addresses (cable Internet may still be available during a disaster), home addresses for door-to-door notification or establishing a rally point are all other things to consider.

“This is where the little things count,” says Paul Sullivan, vice president and general manager with Agility Recovery Solutions, a disaster recovery planning company. He suggests man-
agers print all the pertinent details on a card employees can keep in their wallets so they know exactly what's expected of them.

Creating a list of complete contact information for vendors is essential, too.

"Sometimes disasters are frustrating because the facility is fine, but you might not be able to get any supplies," Sullivan says. "In the golf course world, if you can't maintain your grass, you could end up with a bad reputation in the marketplace."

Having a generator supplier on call was essential to the recovery of the Club at Carlton Woods. The irrigation system ran on a generator for two weeks.

Facilities should ensure they're equipped to run a generator; typically, a transfer switch is required, Sullivan says.

In addition to staff and power concerns, Sullivan provides other questions to consider when developing a recovery plan:
- Space - if the maintenance facility were destroyed, what would serve as the central point for staff?
- Off-site or digital backup of critical files - budget, irrigation schedules, etc.
- Technology/connectivity - how many and what type of computers/servers are needed to continue operations?

Because downed tree limbs and those that are vulnerable to falling can be a safety hazard, it's critical to have a tree service on standby, says Chris Hughes, superintendent at Old Corkscrew Golf Club in Estero, Fla.

"Safety is the foremost concern when you're

The maintenance crew at the Club at Carlton Woods wasn't prepared for Hurricane Rita, which didn't devastate the club but left superintendent Eric Bauer feeling vulnerable.

Disaster preparation checklist

Eric Bauer, director of grounds at the Club at Carlton Woods in The Woodlands, Texas, shares the checklist he developed after being unprepared for his first hurricane in Houston in 2005.

"You can retrofit this plan to any kind of catastrophe," he says. "It doesn't have to be a hurricane. It could be flooding or tornadoes - anything that can impact the operation at a golf facility. The more prepared you are going into it, the better and faster you're going to come out of it."

Five days away
- Contact tree companies to be put on their list for clean-up work following the storm.
- Contact a generator rental company for an industrial-sized generator to run the pump house in case of an extended power outage.
- Purchase a battery-powered or manual pump to remove fuel from tanks to fill up equipment.
- Ensure all chain saws are in working order and have plenty of spare chains, bars, bar and chain oil, and mixed gas on hand.
- Ensure onsite generators are operational.
- Ensure all pumps used to move water are operational.
- Ensure operation of a water cart or modified spray rig with a hose to hand-water if the pump station is down.
- Have extra hoses and quick coupler connections for hand-watering.
- Check inventory of safety supplies including work gloves, rain suits, ear plugs, safety glasses and order more if necessary.
- Purchase flashlights and batteries.
- Purchase two-by-fours and landscape timbers to stand up any trees worth saving and plywood to board up exposed windows on the maintenance building.
- Update list of employee phone numbers to contact them after the storm.
- Inventory all chemicals and ensure MSDS sheets are current.

To learn more about what every disaster plan should include and get a downloadable version of Bauer's five-day plan, visit golfcourseindustry.com/disasterprep.

Unmatched Performance

Put the Gandy Dethatcher Overseeder to work on your course, and you'll be amazed at its performance. Here is unmatched quality, precision and economy in one machine.

The Category 1, 3-pt self-leveling hitch model is PTO-driven for tractors above 18 hp. The unit is 48 inches wide with 24 blades of 8-inch diameters to create slits on 2-inch centers. The overseeder has a stainless steel hopper bottom and slides and holds 100-125 lbs of seed. Material flows through a separate opening disc or shoe assembly for excellent seed-to-soil contact.

The Gandy Slice 'n Seed™ walk-behind Overseeder allows the operator to evenly and accurately place seed in smaller areas.

Talk to your Gandy dealer about how these Gandy Detatcher Overseeders can work for you. Or call us. This year, look to Gandy turf equipment to bring more performance to the job. Gandy has been a name you can trust for over 72 years.

www.golfcourseindustry.com/readerservice - #39

800-443-2476
www.gandy.net
custsrv@gandy.net
trying to reestablish your business,” says Mark Iwinski, the general manager at Old Corkscrew. Maintaining a supply of inputs is necessary, too, in case of any supply chain disruptions. For Bauer, wetting agents were key. “You’re typically not thinking of the grass right away — it’s more about course cleanup — but you want to be confident your grass is going to make it two or three days while you’re not there,” he says. 

• Schedule a fuel delivery to fill up gas and diesel tanks, preferably after all of the equipment and fuel containers have been topped off.

Three days away
• Remove any course accessories not essential for daily play that have the potential to be flying objects.
• Purchase any fungicides, wetting agents, fertilizers or other chemicals that you may need following the storm that may become temporarily unavailable.
• Top off all vehicles and fuel containers and refill main tanks.
• Save all pertinent files to a disc including a back-up copy of the irrigation database.

Two days away
• Spray greens with a preventative fungicide application if necessary.
• Remove remaining course accessories that have the potential to be flying objects. This includes, but isn’t limited to, tee markers, tee signs, flagsticks, rakes, ropes and stakes, water coolers, trash receptacles and bag stands on the driving range tee.
• Remove any satellites and/or lower any antennas from the roof of the maintenance building.
• Clean out all drains on the course.
• Board up exposed windows on the maintenance building.
• Store all possible equipment inside. Park all of the rest of the equipment against the building in a protected area away from potential flying debris.

One day away
• Depressurize the irrigation system and shut off power to all satellites and the pump station.
• Open weirs to drop level of lakes if possible.
• Turn off power to all computers. 

See all the innovative features of the new WideSpin 1540 EC.
Call 800-679-8201 for a FREE DVD or to schedule a DEMO.

www.golfcourseindustry.com/readerservice - #40
At Normandy Shores, stormwater collects in ponds before being pumped into wells and injected more than 100 feet below ground.

Drainage solution improves conditions on a Florida municipal course

By Peter Blais

Beauty may be skin deep, but meaningful course renovations usually delve deeper. The recent renovation of Normandy Shores Municipal Golf Course in Miami Beach, Fla., delved even deeper. Normandy Shores reopened Dec. 12 after lying fallow for the past five years.

The far-reaching refurbishment plan at Normandy Shores, directed by the architects at Arthur Hills/Steve Forrest and Associates, called for reimagining and rebuilding every course feature, installing a new irrigation system, and replanting the bermudagrass playing surfaces with seashore paspalum.

But one of the significant issues at Normandy Shores lay deeper. The 18-hole layout sits largely on man-made Normandy Isle, which consists of clay soil originally dredged from the bottom of Miami’s Biscayne Bay 70 years ago. Historically, the clay underpinning made it difficult for stormwater to percolate. When heavy rains struck the municipal layout – where some areas protrude just 3 to 4 feet above sea level – rain water pooled on fairways and greens. Depending on a storm’s severity, runoff could ride atop the heavy clay soils for days, weeks and even months.

Further complicating drainage issues, the 12 on-course lakes were connected directly to the bay without an outlet. Consequently, a typical South Florida summer rain turned the course into a mosquito bathtub. Pumping the stormwater directly into the bay or allowing the flooding to carry it into the Biscayne Bay to reduce salt content and then injected more than 100 feet into the underlying limestone bedrock.

To reduce the chance of any potential environmental, drainage or insect issues, Hills/Forrest and CH2M Hill partnered to design a system of injection wells fed by stormwater collected in the lakes (that have been disconnected from Biscayne Bay to reduce salt content) and then safely removed well below the island’s surface, the system doesn’t harm the surrounding beaches, bays and waterways. And it leaves the course dry enough for play to resume quickly following a rain event. Basically, water drains into catch basins and then into the ponds, says David Duffy, golf course superintendent of Normandy.

Together, Hills/Forrest and CH2M Hill Engineering devised a solution believed to be the first of its kind used on a golf course, according to Hills/Forrest senior design associate Ken Williams and CH2M Hill principal technologist Mitchell Griffin.

INJECTION WELLS

To reduce the chance of any potential environmental, drainage or insect issues, Hills/Forrest and CH2M Hill partnered to design a system of injection wells fed by stormwater collected in the lakes (that have been disconnected from Biscayne Bay to reduce salt content) and then injected more than 100 feet into the underlying limestone bedrock.

Safely removed well below the island’s surface, the system doesn’t harm the surrounding beaches, bays and waterways. And it leaves the course dry enough for play to resume quickly following a rain event. Basically, water drains into catch basins and then into the ponds, says David Duffy, golf course superintendent of Normandy.

Injecting life into Normandy Shores

Drainage solution improves conditions on a Florida municipal course

By Peter Blais
2009 Beginning of Year Specials!

Your #1 Source for Pre-Owned Turf Equipment
All machines refurbished with warranty!

We Ship Anywhere!
We Carry All Major Brands.

AUTHORIZED
Husqvarna DEALER

More inventory than we can list...
Call for details!

678-296-0822
Two Locations: Lake City, SC • Woodstock, GA

www.AbellTurfandTractor.com
Shores. From the ponds, it feeds into a collection area where it’s pumped into one of three underground injection wells.

The island technically has no natural water table or aquifer because it’s man-made, Williams says. The underlying limestone bedrock acts as a natural sponge, filtering impurities out of the injected drainage even if some migrate up into what passes for a water table. Having the ponds sealed off from the bay further reduces any impurities in the injected water.

THE RIGHT CONDITIONS
What made the injection-well system possible was the course’s proximity to the coast and the fact it’s an island in the middle of Biscayne Bay, Griffin says. The island’s geology allows for the injection of stormwater down the 120-foot-deep wells into the porous subsurface bedrock, well below the island’s shallow aquifer. Doing so maintains surface-water quality and doesn’t hurt the already low-quality groundwater.

Few places in Florida allow for this technology, says Griffin, a Gainesville-based engineer who has designed three systems and has another dozen in the planning stages — all primarily in urban areas. It’s possible only where the aquifer has greater than 10,000 milligrams per liter of total dissolved solids, where the groundwater is salty.

Florida regulates what’s put into the ground because of ground-water contamination concerns. But when the groundwater is already salty and has no users, then one is simply adding stormwater to it at worst, Griffin says. Miami-Dade County gets its drinking water from inland sources because the groundwater along the coast is too salty. No one is using the groundwater along the coast, he says.

“You have to have the right underground conditions,” he says. “You need porous layers of rock or old seabed that accept the pumped water as you pump it down into the ground. Normandy Shores has that.”

PUMPING THE WATER
The first order of business with injection wells is finding a good place to collect stormwater, usually a central spot that minimizes the number of needed wells because drilling wells can be expensive, Griffin says. At Normandy Shores, water is collected in ponds. Debris settles out of the water bodies; although in other situations, some type of screening may be needed to filter debris that could clog pipes.

The pump station receives water piped from ponds located east and west of the station. The station has three pumps leading to three separate wells, which are interconnected so the pressure is stabilized between them. Only one pump operates most of the time. During a large storm, all three pumps may operate simultaneously for a short time. The pumps are necessary to move the mostly fresh drainage water through the underlying salty water table. Gravity alone won’t do it, necessitating the pressurized drainage well system.

The 24-inch-diameter wells are encased by metal pipe to depths of 50 to 60 feet and grouted in with cement. The grouted casing keeps the water from percolating up.

Beyond the metal casing, the well is drilled another 50 to 75 feet into the bedrock to reach a permeable, geologic layer that will accept the water.

Test wells are needed beforehand to determine the geology of the site. Most of the stormwater pumped into the wells remains below ground where it doesn’t harm the environment or course conditions.

“No other golf courses I know of use this tech-
At A Glance:
Normandy Shores Municipal Golf Course

<table>
<thead>
<tr>
<th>Location: Miami Beach, Fla.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of facility: Public</td>
</tr>
<tr>
<td>Type of project: Renovation</td>
</tr>
<tr>
<td>Cost: $6.5 million</td>
</tr>
<tr>
<td>Construction started: Sept. 2007</td>
</tr>
<tr>
<td>Construction ended: Nov. 2008</td>
</tr>
<tr>
<td>Length: 6,465 yards</td>
</tr>
<tr>
<td>Architect: Ken Williams of Arthur Hills/Steve Forrest and Associates</td>
</tr>
<tr>
<td>Golf course superintendent: David Duffy</td>
</tr>
</tbody>
</table>

Golfers may never know about the unique water injection system at Normandy Shores. To them, the reopening of the course is a small miracle because Hills/Forrest’s year-long, $6.5-million renovation resuscitated a course that had been buried beneath the weeds of the island since 2003.

“The term ‘hidden gem’ has been beaten to death, but Normandy Shores is the real thing: a gem of a course once loved, once hidden, but now open to the public again and better than it ever was,” Williams says. “The best part is that visitors can play without beating up themselves or their wallets – like they might at one of the $200-per-round resort courses in this neighborhood.”

Originally designed by architect William Flynn and partner Howard Toomey, the facility was dedicated officially by the city in December 1941. Retaining the original Flynn/Toomey routing, Mark Mahannah redesigned Normandy Shores in the 1950s, but most of Flynn’s bunkering influence and green contours disappeared. It then became a stereotypical Florida course – slightly elevated tees, flat fairways and bunkers, elevated greens and a lot of water.

Eventually, Normandy Shores faced the same decline experienced by South Beach in the late 1960s, ‘70s and ‘80s. Courses such as Links at Crandon Park (previously The Links at Key Biscayne) and Doral took over the spotlight. Budget cuts and lack of maintenance eventually led to Normandy Shores’ closing in 2002.

The closing was never meant to be permanent, however. Miami Beach City Commission already retained Hills/Forrest to orchestrate its revival. Work finally began at Normandy Shores in September 2007. Like Mahannah, Williams retained the original Flynn routing, although he flipped the two nines. The result is a 6,465-yard layout that locals may have trouble recognizing.

ANEW LOOK

The redesigned par-71 track represents a return to a more traditional approach to strategy and visuals. In contrast to the modern trend of expensive water bodies and enormous sand features, Normandy Shores is a picturesque, straightforward golf experience distinctly lacking ostentation. In an era of 7,000-plus-yard behemoths, it may be the only newly renovated course that kept its original yardage. It’s a medium-length course with 70 bunkers and a handful of ponds on 89 acres, compared to 120 acres or more for most modern layouts. Most of the landing areas are bordered by bunkers or water.

The new bunkers are deeper than those they replaced. Many are grass-faced, and some have fairly steep walls. Ponds were combined and new ones dug, creating the fill Williams required to add mounding and contour.

The new turf, seashore paspalum, can be irrigated with brackish or salty water and requires few chemical inputs.

“It survives better underground standing water, which is still an occasional issue here,” Duffy says. “We received 5 inches of rain one day on top of the new paspalum during construction. We had standing water for quite awhile. If we had planted bermudagrass, we probably would have had to replant that section of the course. But the paspalum came through the flooding very well.”

Construction started in fall 2007 and was completed mostly in a year. “The soil conditions were bad, the turf was old and the course was weed-infested,” Duffy says. “Ken overcame those challenges and the job went smoothly.”

Peter Blais is a freelance writer in North Yarmouth, Maine.
Implementing section maintenance can increase operational efficiency, improve playing conditions and reduce costs.

The current economic downturn is pressuring golf course superintendents to scrutinize all maintenance operations to improve efficiency. Because labor represents the largest part of a maintenance budget, it's often targeted for reductions.

"Staff reductions range from 10 to 30 percent, with even more cuts possible later this year," says Larry Gilhuly, director of the Northwest region for the USGA Green Section. "Superintendents may need to look at a complete change in management philosophy, and that's not easily done."

Gilhuly has visited hundreds of golf courses throughout the Pacific Northwest and Hawaii, providing advice and guidance through the USGA Green Section's Turf Advisory Service. Hawaii seems especially hard hit by the reduction in play at resort courses that depend on tourists from the mainland and Japan. Facilities on the islands are using an alternative type of maintenance called section maintenance successfully, Gilhuly reports. He believes section maintenance is an excellent option to improve efficiency, create better playing conditions and, in some cases, reduce maintenance costs. Converting from a conventional maintenance operation to section maintenance is a practice Gilhuly has been promoting for years since he first wrote about it in the USGA Green Section Record in 1991.

Maintenance methods among superintendents vary widely, and it’s almost impossible to say there’s a universal system everyone should use. Superintendents who use all or part of the section maintenance concept are often surprised more superintendents don’t implement the practice.

The core idea of section maintenance focuses on individual responsibility, accountability, efficiency and a more astute attention to detail. A significant difference between conventional maintenance and section maintenance is how tasks are assigned and carried out. Conventional maintenance assigns a task to an individual that must be completed throughout an entire golf course. Section maintenance assigns an employee multiple tasks to be completed in a limited area or section. Many superintendents use varying combinations of both methods, but there are fewer that use section maintenance as their primary form of maintenance.

BORN OUT OF FRUSTRATION

Located just outside the city limits of Asheville, N.C., the Biltmore Forest Country Club is rated one of the top courses in the state. One thing that makes Biltmore Forest unique is the money it doesn’t spend maintaining the course. Even though the club has the means to spend more, Bill Samuels, CGCS, holds the purse strings. He believes section maintenance is the most effective, cost-efficient method to maintain a golf course to achieve the high-quality results worthy of a high-end private club.

Samuels doesn’t remember how, or exactly why, he started using section maintenance. But he does know it was born out of frustration with the lack of accountability in maintenance and evolved throughout time.

"I started experimenting with different ways to improve maintenance efficiency in 1993 and found my staff morale improved and maintenance costs could be decreased by about 30 percent using section maintenance," he says. "I’m surprised more superintendents aren’t using this method."

While experimenting with ways to improve efficiency, Samuels found it took too many people to complete a job.

"I would send three people out to do a job only to find it wasn’t done properly," he says. "I couldn’t tell who was performing at a low level."

Biltmore Forest’s staff consists of 12 full-time and two part-time workers. The full-time staff is divided into five categories:

- Section team – seven people
• Mechanic – one person
• Assistant superintendent – one person
• Rough and fairway mowing – two people
• All-purpose rover – one person.

Each section team member is given three holes (includes practice areas) and a personal equipment inventory that consists of:
• A work vehicle for hauling and transportation;
• A Jacobsen 22-inch walk-behind greensmower;
• A Jacobsen 22-inch walk-behind tee, collar and approach mower;
• An Allen hover mower with a Honda four-stroke engine;
• A Stihl leaf blower;
• A Shindaiwa power string trimmer;
• A Honda push rotary mower for trimming around greens and tees; and
• Various hand tools for raking bunkers and other light maintenance.

Rough and fairway mowing is a daily operation using a Toro 4500, 5400 and 5510. On days when one of the section team members is off or sick, the rover and other team members pick up the slack. The staff meets early every morning to review the day’s work schedule and prepare for the occasional special event. Table 1 at the right shows the tasks and assignments for a typical week. The staff members are familiar with the routine that needs to be completed before the golfers arrive and have become proficient at staying out of their way. It takes time, experience and training, but Samuels says the members are pleased with the form of maintenance and interruptions haven’t been an issue.

TABLE 1

Biltmore Forest Country Club golf course section maintenance schedule
At Biltmore Forest, Bill Samuels, CGCS, defines section one as holes 14, 16 and 17. Section two is defined as hole 13, the practice green, nursery green, driving range tees and mowing the front circle on Mondays. Section three includes holes three and 10 and the chipping green. Section four is defined as holes one, nine and 12. Section five includes holes four, five and six. Section six is defined as holes seven, eight and 11, as well as mowing along Stuyvesant Road below the tennis courts and mowing by the pool on Mondays. Section seven is defined as holes two, 15 and 18.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mow greens</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cut clean up</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>SAT</td>
</tr>
<tr>
<td>Mow tees</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mow collars</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mow green / tee surrounds</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Trim bunker faces</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty trash cans</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hand rake greenside bunkers</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Check fairway bunkers</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hand rake fairway bunkers</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SAT</td>
</tr>
<tr>
<td>Check number and condition of bunker rakes</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sand tee divots as needed – green sand</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sand fairway divots as needed – white sand</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Check placement / condition of tee markers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Trim yardage markers-apr即便 heads – valve boxes as needed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Edge cart paths and sweep as needed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change ball washer water</td>
<td>#1</td>
<td>#2</td>
<td>#3</td>
<td>#4 #5</td>
<td>#6 #7</td>
<td></td>
</tr>
<tr>
<td>Check tee towels – change if dirty</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

BETTER DETAIL WORK
Another superintendent that espouses the benefits of section maintenance is Steve Kealy, CGCS, at the private, 18-hole Glendale Country Club in Bellevue, Wash. Kealy has been using his tailored maintenance program for about 10 years. For him, the advantages of section maintenance include pride in ownership, attention to detail, healthy competition and improved employee accountability.

“I found details – such as cleaning bathrooms, edging ball washer stands, trimming and cleaning out the bottom of garbage cans – were missed regularly, and conditions weren’t meeting my expectations,” he says.

Kealy uses a slightly different work schedule with his full-time staff of 14 and seasonal staff of 10, but the philosophy is similar to Biltmore Forest’s (see Table 2 on page 64). Kealy gives each of the five section members a comparable area in terms of time and workload. Workers balance an equal numbers of greens, bunkers, trimming areas and tasks.

RESULTS AND COST SAVINGS
Developing a section maintenance program requires acquiring tools and equipment. Each crew member needs a stable of equipment, and it may take several years to build the inventory. But once built, the benefits of section maintenance can be seen in many areas of the golf course operation.

At Biltmore Forest, the average age of the Jacobsen greensmowers is 20 years and is a testament to the individual care each crew member gives to the machines. Biltmore and Glendale have low staff turnover and a high level of experience among crew members. Glendale has a combined 63 years of experience among its five crew members.

Maintenance budgets can be reduced using section maintenance, too.

“l would be spending at least 30 percent more if I used the old method I used to use,” says Samuels, who describes his operation as lean and mean with the benefits of an immaculately maintained golf course worthy of praise.

Kealy, rather, focuses more on the results he can achieve rather than a cost savings between the two forms of maintenance.
TRUST IN OTHERS' PERFORMANCE

The increasing demands on a superintendent to maintain excellent conditions while reducing maintenance costs is a stiff challenge. Maintenance operations require constant evaluation of staff performance and accountability. Delegating responsibility and demanding accountability is just one of the advantages of section maintenance. The flaw of many superintendents and the primary reason for job burnout is adopting the axiom, "If you want something done right, do it yourself."

Developing a performance level you can trust, resulting in high morale and accountability, is one way to reduce a superintendent's stress level and achieve employee satisfaction. Section maintenance deserves a closer look for maintenance programs and may be an excellent way to achieve goals set for the year.

Jim Connolly, a former USGA agronomist, is president of JCC, a Spokane, Wash.-based consulting firm.

TABLE 2
Glendale Country Club golf course section maintenance schedule

At Glendale, Steve Kealy, CGCS, defines section one as holes one, five, 15 and 17. Section two is defined as holes two, 12, 13 and 14. Section three includes the putting green on hole 6 and holes 10 and 18. Section four is defined as holes four, seven, eight and 16. Section five includes holes three, nine, 11 and the practice area.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mow greens</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change holes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Flymow around bunkers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Trim bunker faces</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty trash cans</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hand-rake greenside bunkers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hand-rake fairway bunkers</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Weed around trees</td>
<td>As needed</td>
<td></td>
<td>all week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint hazards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sand tee divots</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sand fairway divots</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Set up tee markers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Trim tee and fairway yardage markers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Edge cart paths</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Check tee towels - change if dirty</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Cycling water sources
Freshwater affects saline-irrigated bermudagrass’ quality and soil salinity

Water conservation is on everyone’s minds these days. Proper water management ensures freshwater for human needs, the protection of ecosystem integrity and the sustainability of products (e.g., aquaculture) and services (e.g., recreational) provided by freshwater ecosystems (Richter et al. 2003). Considering less than 1 percent of the world’s freshwater is accessible, according to the World Health Organization, and the world’s increasing population (the World Water Council expect a 40- to 50-percent increase within the next 50 years), if water conservation isn’t taken seriously, we’re in trouble. Subsequently, strict water regulation and restrictions are inevitable and on the horizon.

Using alternative water sources is one conservation mechanism that’s becoming more popular. These sources include reclaimed wastewater, tidally influenced streams and rivers, reclaimed stormwater runoff and saline groundwater aquifers. In a national survey taken in 2007, 15 percent of all surveyed golf course facilities began using an alternative water source since 1996 (Lyman et al.).

While this is by far one of the most innovative and practical techniques to reduce freshwater use, using alternative water sources can be challenging to manage. For example, the No. 1 problem superintendents typically face when using reclaimed wastewater is salinity (Dion and Ray, 2008; Cisar et al., 2005). Actually, most of the alternative water sources mentioned above have some amount of solutes that must be controlled to maintain quality turfgrass. Even reclaimed stormwater runoff can have high amounts of salts (because of salt that’s applied to roads to melt ice and other factors).

Past field-scale research about the potential and management of using saline water sources to irrigate golf course grasses has been conducted primarily in the Southwest with relatively little research conducted elsewhere in the U.S. This focus is most likely because of the arid conditions of the region. The research that has been conducted in the Southwest documents that the success of using saline water sources is dependent on turfgrass species (and cultivar), degree of salinity, the texture and structure of the underlying soil and management method. Ultimately, saline water can be used in many cases.

In one study, scientists maintained turfgrass by cycling saline water with freshwater for irrigation (Schaan et al., 2003). The freshwater helped dilute and leach deposited solutes from the intermittent saline water irrigations. Compared to the Southwest, irrigation in the Southeast is used only to supplement the somewhat regular rainfall that occurs throughout the year. If using saline water for supplemental irrigation, perhaps these natural freshwater irrigations (the rainfall) can act in a similar manner as what was documented in the Southwest. If so, water conservation from
using saline water for irrigation documented in the Southwest may be conservative for the Southeast.

To test if rainfall was enough to supplement saline water irrigations in the Southeast, an experiment was conducted at Clemson University's Pee Dee Research and Education Center in Florence, S.C. The experiment was conducted for eight weeks during the summer, which is the time of least rainfall, high water demand for plants and high potable water demand along the South Carolina coast. The experiment was conducted twice, August through September 2007 and July through August 2008.

METHODS AND MATERIALS
A field-scale facility was constructed on the native loamy sand soil (Bonneau series). The facility and experiment were constructed to investigate multiple factors at any one time. This article addresses only the facility’s use for investigating the influence of irrigation water source on bermudagrass quality, growth and soil salinity.

Sixteen 9.8-feet-by-12.1-feet plots were delineated and sodded with Tifway (419) bermudagrass (Cynodon transvaalensis Burtt-Davy x C. dactylon (L.) Pers.). The two irrigation treatments were freshwater (mean: 0.08 dS m⁻¹, range: 0.07–0.09 dS m⁻¹) and saline (mean: 3.19 dS m⁻¹, range: 2.59–3.52 dS m⁻¹) randomized with four replications. The freshwater source was from the Florence County municipality. The saline treatment stock solution was based on the salt composition of salt water off the South Carolina coast (35 dS m⁻¹).

Salts were mixed in a 30-gallon mixing tank and then emptied into a 6,000-gallon holding tank in which the solution was diluted with freshwater. Each plot was irrigated using a subsurface drip irrigation system buried between 6- and 8-inches deep and spaced 32 inches apart. Irrigation was applied three times a week (Monday, Wednesday and Friday) to replace 100-percent potential evapotranspiration (ET) based on three years of pan ET data collected from a weather station located on site. If a rain event occurred resulting in greater than 0.33 inches of precipitation, the following scheduled irrigation was voided.

The bermudagrass was managed under fairway conditions, mowed three times a week (Monday, Wednesday and Friday) at a height of 1 inch. A complete fertilizer (Harrell’s 18-4-6 SLR) was injected into the irrigation system at a rate of 0.25 pound of nitrogen per 1,000 square feet every two weeks to the bermudagrass.

OBSERVATIONS AND MEASUREMENTS
Every Monday, turfgrass quality was assessed visually on a scale of 1 to 9 (9 = dark green turf, 1 = dead/brown turf, and 6 = minimally acceptable turf). To assess turfgrass growth, clipping samples were collected from a 16-square-foot area from each plot before every mowing. Clippings were combined throughout the week after drying at 140°F to measure dry-weight yield (pound per 1,000 square feet).

For each year, 2-inch diameter cores were taken to a depth of 12 inches at zero and eight weeks after initiation. The pelt was removed, and stolons were counted as a quantitative means to determine density. The remainder
Effluent Water
Dirty Never Sounded So Good

Reclaimed, or effluent, water is an alternative water source. It has been very popular and even mandated for our drought-stricken friends in the South and West. But with increased water restrictions, higher water and energy costs and increased political pressures by environmental groups, superintendents throughout North America may eventually be forced to consider this option.

Effluent water is domestic wastewater that has been treated to urban re-use standards at a state approved water treatment plant. It is then pumped to a re-use water holding pond at the golf course until it is needed for irrigation.

Effluent water:
• Offers a potentially endless irrigation supply, even during periods of drought. It is less expensive than potable water - even free in some areas, as long as you pay to pump it.
• It can also provide a free source of fertilizer since nutrients remain in the water.
• Research shows that turf can thrive the same with effluent water as it does with potable water (although this may require extra attention on your part), and your golfers will most likely not notice a difference.
• Use of reclaimed water shows your club and community members you commitment to water and environmental conservation.

Converting to effluent water is not without its challenges. For instance:
• Preparing your facility to accommodate effluent water can be time consuming and costly.
• Some effluent water has high pH and sodium levels that will need to be corrected with soil amendments and wetting agents, as well as aerification and topdressing.
• Effluent water portals must be clearly marked to separate them from potable water sources. In addition, potable wells and dining facilities must be a fixed distance from irrigation heads.
• Soil and water chemistry must be closely monitored, particularly carbonates, bicarbonates and salt levels.
• You may be forced to take a specific amount of water every day, even if you don't need to use it. This means that you'll have to have a holding pond or other option for storing effluent water on your course.
• Spray fields may also be necessary. These are designated areas (pastures, woods, etc.) that have irrigation heads for the sole purpose of discharging excess supply.
• The public should be notified of the use of reclaimed water at a golf course by posting signs at the holding pond and/or clubhouse, as it is not safe for consumption.
• Operating costs can vary. They are mostly associated with the power and maintenance of the pumps, which wear out more quickly than with potable water. Installation of a good filtration system is also required to help protect your irrigation system.

Converting to effluent water may seem like more trouble than it is worth; but when faced with dwindling water supplies, increased water restrictions, higher water and energy costs, and increased political pressures, it doesn't seem so bad. It is actually a smart irrigation choice that can help you to keep your course green and help you secure water no matter what drought conditions or regulations are in your area.

The above information is a snapshot of the pros and cons of using effluent water. The money and water you'll save, as well as the positive environmental accolades you will get from regulators and your neighbors could make it worth your while. Maybe effluent water isn't so dirty after all.

Thanks to the Metropolitan Golf Course Superintendents Association and the Georgia Golf Course Superintendents Association for their editorial assistance.

Article written by Kathleen Conard. Conard is the Market Manager for Aquatrols, leader in soil and water quality services and products since 1955. For more information please contact Aquatrols at (800) 257-7797 or visit us at www.aquatrols.com
of the core was partitioned into two samples (0 to 6 inches and 6 to 12 inches), then washed of the mineral portion leaving just roots. Washed roots were ashed and weighed to evaluate below ground growth.

To monitor soil salt accumulation, 2-inch diameter cores from the 0 to 4, 4 to 8 and 8 to 12 inches of the soil (depths A, B, and C, respectively) were collected at zero, four and eight weeks after initiation. Cores were brought into the laboratory and soil electrical conductivity (ECe) was measured from a 1:2, soil/water mixture. Irrigation and rainfall water samples were collected periodically for electrical conductivity determination.

Significant means for all measurements and observations were identified by analysis of variance using the general linear model of SAS Software (Ver. 9.1, SAS Institute, Cary, N.C.).

RESULTS AND DISCUSSION

The two summers during which this experiment was conducted represented two different types of weather patterns in the South Carolina Coastal Plains (Figure 1, page 66). Low rainfall, higher than normal temperatures and ET dominated the 2007 experimental period. According the U.S. Drought monitor (http://drought.unl.edu/dm), the beginning of the 2007 experimental period was characterized as abnormally dry. By the end of the experimental period, it was characterized as an extreme drought.

These drought conditions made for a great time to examine what would happen under a worst-case scenario. During the 2007 experimental period, an irrigation event was voided only once. In contrast, the 2008 experimental period was more similar to the region's typical weather (Figure 1). Rainfall was plentiful, and 10 out of the 24 scheduled irrigations were voided.

Although some individual plots in the 2007 experiment were rated below the minimal acceptance criterion of 6, average quality was always above 6 for both water source treatments. Generally, quality increased throughout the experimental period from an average of 7 to 7.9. Only for weeks two, four and five, did freshwater-irrigated turfgrass have greater quality (7.8, 7.3 and 7.5 for weeks two, four and five, respectively) than saline water irrigated turfgrass (6.8, 7.1 and 7.0 for weeks two, four and five, respectively). The week before these ratings, minimal to no rainfall occurred.

Weekly composite clipping yields were the same regardless of water source and ranged from 0.88 to 2.15 pounds per 1,000 square feet. At the end of the experiment, shoot density and root mass in the upper six inches were greater from saline-irrigated bermudagrass (77.5 stolons 10 in-2 and 0.051 oz 100 in-3 for shoot density and root mass, respectively) compared to freshwater-irrigated bermudagrass (54.8 stolons 10 in-2 and 0.038 oz 100 in-3 for shoot density and root mass, respectively).

This result may sound counterintuitive, but this positive response from irrigating with low level saline water can be attributed to the adaptive mechanisms bermudagrass commences once recognizing the solutes. Bermudagrass blades have salt glands to excrete saline ions, thus the more blades the more salt glands available for solute excretion (Marcum and Pessarakli, 2006). To increase water uptake, roots elongate creating more surface area, ultimately increasing mass, too (Dudeck et al., 1983).
As expected, E\textsubscript{Ce} increased during the experimental period at each depth (Figure 2). However, even the highest of E\textsubscript{Ce} value (0.30 dS m\textsuperscript{-1}) was below the threshold values of 9 and 12 dS m\textsuperscript{-1} in which problems begin to occur.

While the 2007 experiment was conducted during drought conditions, the 2008 experiment was conducted during more typical weather patterns (Figure 1). Although rainfall was abundant and reduced the need for supplemental irrigation, irrigating with saline water resulted in weekly average quality scores to be 0.1-0.5 points (an average of 0.2) lower than when irrigating with freshwater. Quality from individual plots was always greater than 6, and was less variable week to week during the 2008 experimental period compared to 2007's experimental period.

As in 2007, clippings weren't influenced by water source. Neither were shoot density and root mass at the lower depth. However, root mass in the upper six inches was greater in saline-irrigated bermudagrass compared to freshwater-irrigated bermudagrass (0.053 and 0.038 oz 100 in\textsuperscript{-3} for saline and freshwater, respectively). Mostly attributed to the abundance of rainfall, E\textsubscript{Ce} was similar for the two water source treatments.

**CONCLUSIONS**

Using saline water sources for irrigation during times of high freshwater demand can considerably reduce the pressure on freshwater resources. Based on Westcot and Ayers (1985), irrigation water sources greater than 0.75 dS m\textsuperscript{-1} can begin to cause problems for soil structure and plant use.

In this experiment, bermudagrass was irrigated with a saline water source that on average was 3.19 dS m\textsuperscript{-1}, thus considered a high hazard to plants and soils. Under drought conditions, there were minimal quality differences between bermudagrass irrigated with freshwater compared to saline water. During times of severe drought stress, supplemental irrigation may be necessary depending on the aesthetics requirements. When rainfall was abundant, saline-irrigated bermudagrass had slightly lower quality, but the quality was still good and more consistent over time than during the drought period. At these times, no additional freshwater irrigation would be required.

Saline water irrigations didn't result in excessive top growth; thus, superintendents can expect not to have to change their mowing frequency when irrigating with saline water. If long-term use of saline water is expected with no cycling of freshwater (regardless if it's through irrigation or rainfall), superintendents are advised to monitor their soil salinity, especially in nonsandy textured soils. GCI

Dara Park, Ph.D., is an assistant professor at Clemson University's Pee Dee Research and Education Center in Florence, S.C. Kelsey L. Gorman is master's candidate there.

Acknowledgements: This research was partially supported by the South Carolina Turfgrass Foundation, Revels Turf and Tractor and Harrell's Technical assistance from Sheila Godwin, Latasha Blathers, Eric Cooper, Ryan Graham and Albert Lynn was much appreciated.

**Literature cited:**


PREPARING FOR INTERVIEWS

The new year is a time to assess your golf course, budget, labor, finances and future. This assessment may lead to exploring other employment opportunities.

The outlook for the 2009 job market may be bleak, but a well-prepared resume may separate you from others. If you advance to the interview process, be creative, politely persistent and as professionally detailed as possible. Your agronomic knowledge and talent may not separate you from others. If you advance to the interview process, be creative, politely persistent and as professionally detailed as possible. Your agronomic knowledge and talent may not guarantee success, but other factors might.

Here are a few examples:

1. Identify when, where and who is conducting the interview.
   • Use the Internet to research and learn about the background and personal characteristics of those conducting the interviews. Study their backgrounds to establish traits and philosophies that may assist you with your preparation and help determine if you wish to pursue the opportunity.
   • Check the references of those interviewing you.
   • Plan travel time appropriately to avoid unexpected delays.
   • If the interview is in the clubhouse, find out if it will be in a large board room, small office or both. This will aid you when presenting your information. Practice your delivery in a similar environment.

2. The adage, “You never get a second chance to make a good first impression” is vital to your preparation. Review your personal traits, characteristics and etiquette for meeting and greeting people.
   • When meeting people for the first time, demonstrate initiative, passion and energy for the position. The individuals will know immediately if you’re interested and honest in your pursuit of the opportunity.
   • Honestly review your personality shortcomings and avoid having them surface at an inopportune time. Look people in the eyes, speak slowly, keep your hands still and quiet, avoid terms such as “you know,” “like” and “um,” and allow people to finish their sentences without interrupting.
   • Know hand-shake protocol and respect certain guidelines. If the person is older than you are, wait until his hand is extended, firmly grasp the hand using a light grip, give a modest pump and let go. In a business setting, the rules are the same whether the person is male or female. Always shake a hand that’s extended to you.

3. Review and establish your nonagronomic qualifications. More interview committees wish to determine your qualities beyond turf knowledge.
   • Be prepared to discuss and outline personal management philosophies about your staff, the club’s professional staff, other employees and club membership.
   • Be fluent when discussing finances, ordering protocol, record-keeping, employee/member discipline and membership reactions to your plans and objectives.
   • Understand the protocol of conducting a meeting, whether it’s a green committee meeting, board meeting or staff meeting.
   • Focus on organizational skills – they’ll identify you as a professional manager.
   • Often, a committee’s first interaction with a candidate is through the computer. Being well versed in all aspects of electronic management and communication options is critical to advancement.

4. Be one step ahead of the competition. If the club forwards you a package containing its history, background, design philosophy, budget and operating information for your review, read it thoroughly.
   • If the club sends you its operating budget, review and revise it to meet your forecasted operational needs.
   • Become as familiar with the property and golf course as possible before the interview. If possible, visit and walk the property in advance. Download an aerial image of the property from Google Earth to review the topography, especially if it’s raining, to observe surface run-off.
   • If the incumbent superintendent is no longer employed, visit the maintenance facility, pump station, irrigation controllers and turf nursery.
   • Investigate perimeter properties and the club neighborhood to determine if there are any potential outside agency impacts or intrusions.
   • Bring a compass for determining sun angles, shade cast from trees and where you may encounter winter damage if in a Northern climate.
   • Bring a soil probe and turf thermometer to uncover any malady not unveiled in the interview process.

5. Clothes can make or break first impressions.
   • Determine when and where you’ll be interviewed, and dress accordingly. Many interviews involve a walk around the golf course with committee members. Don’t wear a suit in this situation. Bring your suit for the dress-to-impress aspect of the interview.
   • Be clean shaven. If you have facial hair, be sure it’s trimmed and neat. Always trim nose and ear hair.
   • The attire for the walk is business casual. Wear dress slacks, a collared shirt, a tie and your logoed club sweater or wind shirt, plus clean footwear.
   • The formal interview is the time for a business suit. Make sure it’s current and stylish, with no loud or unusual patterns or colors. Most importantly, your suit must fit. Poor-fitting attire indicates lack of concern or discipline.
   • Match shoe color with belt color.
   • A timely haircut allows your crop to be at its best. Don’t head to the barber the morning of the interview.
   • Shine your shoes. If you pay attention to detail on the golf course, do so off the golf course.

6. Personal grooming is the final touch for the dress-to-impress aspect of the interview.
   • A timely haircut allows your crop to be at its best. Don’t head to the barber the morning of the interview.
   • Be clean shaven. If you have facial hair, be sure it’s trimmed and neat. Always trim nose and ear hair.
   • Remove soil underneath your fingernails.

Being prepared professionally off the golf course requires logic, forethought and consideration of others.
Clip it and store it

The maintenance crew at the Golf Santander Club in Boadilla, Spain – Juan Jose Plaza Gallardo is the head greenkeeper and Estanislao Rubio Urquijo is the managing director – uses grass catchers on the mowers when cutting the bentgrass fairways. The equipment operators deposit the grass clippings in hard-plastic storage bins positioned adjacent to the cart paths throughout the 18-hole course. Laborers empty the bins when they’re filled to capacity.

The storage bins measure 4 feet by 3 feet by 2 feet. They have \( \frac{3}{8} \)-inch-diameter holes drilled in the bottoms on 6-inch centers so any excessive moisture from the clippings, rainfall or irrigation will drain. The crew installed decorative fencing – 2-inch-by-10-inch boards mounted on 6-inch-by-6-inch posts stabilized in concrete – on three sides of the bins to conceal them.

The bins cost about $100 each, and the wooden fencing material costs about $125. About seven hours of labor is needed to drill the drain holes in the bottom of the bins and build the decorative fencing.

Ride along

At the Pacific Dunes Course at Bandon (Ore.) Dunes Golf Resort, the greenkeepers – under the direction of Ken Nice, director of agronomy, and Jeff Sutherland, golf course superintendent – walk the fairways with buckets and a bunker rake mounted on specialty pull carts. The Riksha Model R-1000 pull carts were free from the golf shop because they had broken frames and straps. The maintenance department repaired them, and they’ve been recycled for daily use.

Damon Lewis, a former staff member, came up with the idea of equipping each Riksha with two or three plastic buckets and a wooden bunker rake.

Divots are placed in one 5-gallon bucket, and a soil-and-finefescue-seed mixture is carried in another 5-gallon bucket. Crew members carry a smaller bucket for filling the divots with a soil/seed mixture and a larger one to collect the old divots.

The Riksha pull carts initially cost about $117. The plastic buckets were free – they’re recycled grass-seed buckets or from the clubhouse kitchen. It took one to two hours to repair each used cart and mount the buckets.
BUSINESS FOR SALE

9-HOLE COURSE
For sale, owner will finance 9-hole par 3 course w/1100 sq ft club house. Course lays nicely on 26 acres, greens are awesome. Popular and just 7 mi. from Lebanon, Mo. 417 532-4158.

GOLF COURSE FOR SALE
Located in Central South Carolina
18 Hole Course over 6700 Yards
Bentgrass Greens $1.1 million
Add'l Development Acreage Available
For Minimal $/Acre
Call 910-575-6262 for details

BUSINESS OPPORTUNITY
SERIOUS ENTREPRENEURS ONLY!
After four years, $400,000 of market testing, and Millions of dollars in earnings, we have perfected the most powerful, automated, turn-key, sales and marketing system on the planet. That’s How Normal People Like You Are Earning $5,000 to $10,000 a week Without Picking Up The Phone.
visit: www.wealthmaster4u.com
229/848-5288

HELP WANTED
Golf Course Company seeking experienced Shapers, Irrigation Supervisor, Drainage, Management and Finish Personnel and Drafts Person with Auto Cad experience for International Projects.
Resumes to be e-mailed to resumes@intergolfinc.com

FOR SALE

TECH SALES
Golf Course Division
REPLACEMENT:
Bearings, Oil Seals, V-Belts
Nation’s Leading Supplier
Most Competitive Pricing In The Industry
Same Day Shipping On Most Parts
1-800-373-6002
www.techsales-golfcoursedivision.com

Digital Edition
- E-mail to anyone
- View on a PDA
- Print multiple copies
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PAGE</th>
<th>RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abell Turf &amp; Tractor</td>
<td>59</td>
<td>41</td>
</tr>
<tr>
<td><a href="http://www.abellturfandtractor.com">www.abellturfandtractor.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agrium Advanced Technologies...</td>
<td>39</td>
<td>28</td>
</tr>
<tr>
<td>Agroin International</td>
<td>75</td>
<td>45</td>
</tr>
<tr>
<td><a href="http://www.agroin.com">www.agroin.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agua Dulce</td>
<td>61</td>
<td>42</td>
</tr>
<tr>
<td><a href="http://www.sulfurburners.com">www.sulfurburners.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andersons Golf Products</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td><a href="http://www.andersonsgolfproducts.com">www.andersonsgolfproducts.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatrols</td>
<td>67</td>
<td>44</td>
</tr>
<tr>
<td><a href="http://www.aquatrols.com">www.aquatrols.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arysta LifeScience</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td><a href="http://www.arystalifesience.com">www.arystalifesience.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASF</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td><a href="http://www.betterturf.com">www.betterturf.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Champion Turf</td>
<td>40-41*</td>
<td>30</td>
</tr>
<tr>
<td><a href="http://www.championturffarms.com">www.championturffarms.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Turf</td>
<td>76</td>
<td>46</td>
</tr>
<tr>
<td><a href="http://www.environmentalturf.com">www.environmentalturf.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gandy</td>
<td>56</td>
<td>39</td>
</tr>
<tr>
<td><a href="http://www.gandy.net">www.gandy.net</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jacobsen</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td><a href="http://www.jacobsengolf.com">www.jacobsengolf.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Deere Golf</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td><a href="http://www.deere.com">www.deere.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JRM</td>
<td>52</td>
<td>37</td>
</tr>
<tr>
<td><a href="http://www.jrmonline.com">www.jrmonline.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalo</td>
<td>40-41*</td>
<td>31</td>
</tr>
<tr>
<td><a href="http://www.kalo.com">www.kalo.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Fence Co.</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><a href="http://www.liquidfence.com">www.liquidfence.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nufarm</td>
<td>22,23</td>
<td>19,20</td>
</tr>
<tr>
<td><a href="http://www.turf.us.nufarm.com">www.turf.us.nufarm.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Gordon</td>
<td>28-29,49,51,23,35,36</td>
<td>34</td>
</tr>
<tr>
<td><a href="http://www.pbigordon.com">www.pbigordon.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penn State World Campus</td>
<td>46</td>
<td>34</td>
</tr>
<tr>
<td><a href="http://www.worldcampus.psu.edu/gci">www.worldcampus.psu.edu/gci</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenix Environmental Care</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td><a href="http://www.phoenixenvcare.com">www.phoenixenvcare.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PrimeraTurf</td>
<td>45</td>
<td>33</td>
</tr>
<tr>
<td><a href="http://www.primera">www.primera</a> turf.com</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Turf Products</td>
<td>53</td>
<td>38</td>
</tr>
<tr>
<td><a href="http://www.proturfproducts.com">www.proturfproducts.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quaili-Pro</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td><a href="http://www.quali-pro.com">www.quali-pro.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ryan</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td><a href="http://www.ryanturf.com">www.ryanturf.com</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SePro Corp..........................37   26 |
www.sepro.com                    |      |    |
Standard Golf Co....................33   25 |
www.standardgolf.com             |      |    |
Stens                            | 24   | 21 |
www.stens.com                    |      |    |
Syngenta Professional Products...| 43   | 32 |
www.syngentaprofessionalproducts.com |      |
Tee-2-Green                      | 2    | 10 |
www.tee-2-green.com              |      |    |
3 Tier Technologies              | 38   | 27 |
www.3tierotech.com               |      |    |
Turfco                          | 57   | 40 |
www.turfco.com                   |      |    |
Valent                           | 11   | 14 |
www.valentpro.com                |      |    |
Valve & Filter Corp              | 64   | 43 |
www.valveandfilter.com           |      |    |

* Denotes regional advertisement

For more information about any of the products or services advertised in this issue, visit golfcourseindustry.com/readerservice and search for the product with the Reader Service (RS)
I adore Bill Engvall, the “Blue Collar Comedian” comedian. He’s less well-known than his compadres Jeff Foxworthy and Larry the Cable Guy, but no less funny. Engvall has a common-sense approach to life and an amazing ability to laugh at himself.

His signature routine is “Here’s your sign.” It sounds goofy to those who haven’t seen him, but he’s basically saying if you ask a normal question and get an incredibly stupid answer, you deserve to wear a sign that says, “I’m an idiot.” He metaphorically hands them out to the many morons we encounter in daily life.

Here’s a classic bit of Engvall to demonstrate my point: “It’s like before my wife and I moved. Our house was full of boxes, and there was a U-Haul truck in our driveway. My friend comes over and says, ‘Hey, you moving?’ Nope. We just pack our stuff up once or twice a week to see how many boxes it takes. Here’s your sign.”

Well, I’m reminded of the need to be smarter than the average redneck as our industry goes through a significant correction right now. Frankly, it’s more than a correction, and — you can quote me on this — the overall golf industry as we know it is going to continue to be in the crapper for the next two or three years.

To be more specific, courses that continue to conduct business as usual are going to flail and/or fail during the next 36 months or so. Anyone who believes differently should be bitch-slapped immediately with a five-iron.

So, is your place conducting business as usual and just wishin’ and hopin’ things will change? If so, and you’re not taking personal or professional action to change things, here’s your sign.

Let’s see, you work at an upper-tier club in Phoenix, and most of your players are in Phoenix, and most of your players are in the speculative real estate business. Yet, the obviousness of the dilemma goes unspoken. If no one’s speaking up to suggest it’s time to change your business model, shouldn’t you just keep your nose to the grindstone and assume that everything is hunky-dory? If so, here’s your sign.

You’re sure you’re irreplaceable. You think everyone unanimously agrees the place wouldn’t be the same without you and they couldn’t possibly ever find someone better (or cheaper), could they? If so, here’s your sign.

The management team isn’t talking with one another and everybody’s pretending nothing bad is happening. Let’s see, you work at an upper-tier club in Detroit, and most of your members are auto executives. Or, you’re at a high-end daily fee in Phoenix, and most of your players are in the speculative real estate business. Yet, the obviousness of the dilemma goes unspoken.

The owner or general manager keeps the overall financial position of the facility secret. Do you receive the entire P&L, or do you receive only your part of it? Are you kept out of revenue discussions? Is the club putting up new drapes in the ladies card room while you’re inexplicably being told to cut your fungicide budget? Are you being asked how much those new walk-behinds you fought for would be worth on eBay? If so, here’s your sign.

Unless you’re a genius superintendent whose course is on the U.S. Open rota or you have compromising pictures of the club president, don’t pretend you or the facility are immune to the problems the entire industry faces.

The facility’s marketing budget is cut to the bone. How, exactly, do you think you’re going to reverse the downward trend? Is the Member Fairy going to fly into your bedroom and put them under your pillow while you sleep? Will Tiger Woods drop by unexpectedly and hold a press conference to declare your course is the greatest he’s ever played? You can be providing the finest conditions in the world for the dollar, but unless management is telling people about it, you’re screwed. It’s a death spiral. Do you believe you can compete against 16,000 other suppliers without marketing? If so, here’s your sign.

The good members are bailing faster than a half-drowned sailor on a leaky lifeboat. You know who they are. They’re the good ones … the members or regular players who care about the facility but who sense something’s not quite right anymore. They’re the ones who stop to talk to you, know your name and have legitimate interests in what you do and how you do it. Do you think the facility will be just fine without them, as they resign their memberships to go other places? If so, here’s your sign.

The management team isn’t talking with one another and everybody’s pretending nothing bad is happening. Let’s see, you work at an upper-tier club in Detroit, and most of your members are auto executives. Or, you’re at a high-end daily fee in Phoenix, and most of your players are in the speculative real estate business. Yet, the obviousness of the dilemma goes unspoken.

If no one’s speaking up to suggest it’s time to change your business model, shouldn’t you just keep your nose to the grindstone and assume that everything is hunky-dory? If so, here’s your sign.

You’re sure you’re irreplaceable. You think everyone unanimously agrees the place wouldn’t be the same without you and they couldn’t possibly ever find someone better (or cheaper), could they? If so, here’s your sign.

Sure, I’m making light of the situation, but I’m also hoping to shine a light on the facts. This is a serious time for our nation and business. Unless you’re a genius superintendent whose course is on the U.S. Open rota or you have compromising pictures of the club president, don’t pretend you or the facility are immune to the problems the entire industry faces. It’s time to make a serious assessment of your employment and future. If you want to commit to your current position and this industry — as it is right now and will be for the next few years — be realistic, be proactive and be businesslike.

Otherwise, you might be wearing a sign. GCI
NON-STABILIZED NITROGEN.

WAIT NO LONGER FOR A BETTER NITROGEN SOURCE.

Slow release nitrogen fertilizers can starve your turf while waiting for soil temperatures high enough for soil microbes to release the nitrogen. Not UMAXX® Stabilized Nitrogen. In any season UMAXX provides a steady, dependable supply of nitrogen to your fairways and greens. Apply as a granule or melt and spray. Either way, it is the most efficient source of nitrogen you can find. Why wait? And ask your distributor for UMAXX in all seasons.

STABILIZED NITROGEN.

UMAXX
STABILIZED NITROGEN FERTILIZER
SeaDwarf® Seashore Paspalum requires up to 50% less water than Bermuda varieties. It can be irrigated with a wide range of water quality. Alternative water sources such as effluent, reclaimed or brackish may be used as an irrigation source. Weeds can be treated with table salt, and SeaDwarf® has reduced nitrogen requirements – meaning less fertilization and less nitrogen run-off.

SeaDwarf® is a warm season turfgrass that has virtually no grain, putts true and creates a tee-to-green playing surface that is tournament-ready. Highly regarded by superintendents, touring professionals and architects alike, SeaDwarf® golf courses look so good that leading golf associations have said SeaDwarf® has the ‘Wow’ factor.

Learn more about SeaDwarf® Seashore Paspalum by visiting www.environmentalturf.com. SeaDwarf® is available exclusively through Environmental Turf and our network of Licensed Growers.