

# Mobile Mapping and Input Reduction for Golf Courses

By TROY CARSON  
The Toro Company

There has been much discussion around sustainable and organic golf course management, the carbon footprint of a golf course, how a golf course affects global warming, climate change, etc. This debate will be around for awhile and it is anyone's guess as to when we will have any definitive answers. No matter where you stand on the issues, many things can be done that reduce our use of resources which in turn will reduce costs. Better utilization of resources will not only be better on the environment as a whole, it will more than likely also save money.

The objective when managing a plant community, whether it is a corn field or a golf course, is to get the maximum outputs for the least amount of inputs. While the hope is to maximize yield when growing corn, it is to maximize the quality and playability on the golf course. From experience, we all know that it doesn't take much initial input to get a response, but as we increase the inputs we begin to get less return from those inputs. Eventually, increased inputs will not provide any further positive returns and may actually become detrimental. Applying the optimum inputs to every site in every situation can be an incredibly difficult task. The agricultural community has been effectively implementing Precision Agriculture over the last few decades. One benefit annual agricultural field production practices have over turfgrass is the regular access to the soil under the crop as it is turned over. Turfgrass is a perennial crop that doesn't afford us that opportunity. Like precision agriculture, understanding the variability across a site, such as a golf course, can provide aid in developing management techniques that will make the most of the inputs.

The process of better utilizing the resources that we invest on a golf course begins with understanding the potential for varying our inputs according to site requirements and developing application methods whereby we can optimize those inputs. Another way to look at this is to see it as increasing efficiencies; efficiencies in water, fertilizer, pesticides, labor, equipment use, etc. In order to achieve increases in efficiencies, we need to be able to precisely manage and apply all the inputs. Being precise requires that we understand more about the site conditions that we are managing so that we know what to apply where and when.

In an attempt to determine the potential need for precision applications we initiated a large project collecting soil samples and data with hand-held devices in an attempt to understand to what degree spatial soil variability existed across golf course fairways. What we discovered is that there can be great variability both between fairways and even within a fairway for soil moisture, compaction, soil texture, soil organic matter, soil chemical composition, and turfgrass vigor.

This research led to the conclusion that there is opportunity to better understand each site and adapt the maintenance accordingly with the hope of better utilizing inputs and creating a more healthy plant community. However, it became quite obvious that spatially frequent soil sampling or even closely spaced hand collected data could not be performed readily in a cost effective way. The quantity of soil samples required to determine the spatial variability across an entire golf course would be tremendously expensive to collect and process. And while data collected with handheld sensors may be somewhat more economical, it is still very labor intensive and quite taxing on the person collecting

the data.

In order to speed up the process and collect the parameters of interest simultaneously, we developed a mobile sampling vehicle (see Figure 1) that collects soil moisture, salinity, compaction, and plant reflectance on a spatially frequent pattern of up to 1000 samples per fairway. The data is all marked with a GPS coordinate allowing for the development of different Management Maps (see Figure 2). These maps are then used to develop management zones that can be used to precisely apply inputs. This article will highlight some of the ways this new mobile mapping platform can be used to provide a more precise understanding of site conditions that will allow managers to better utilize the resources available to them.

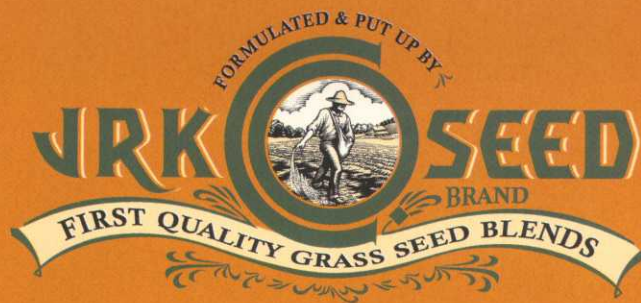
*(Continued on Page 23)*



**Figure 1.** Mobile Sampling and Mapping Platform. Measures soil moisture, compaction, salinity, and plant reflectance while continually moving.



**Figure 2.** Soil moisture map for a portion of a golf course. The variability in soil moisture can be very dramatic. The darker the blue the higher the moisture content.



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## Mobile Mapping-

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Irrigation systems have come a long way from the days of impact sprinklers on the top of quick-couplers. We now have electronically operated, valve-in-head rotors with precision engineered nozzles designed to deliver a very uniform coverage across the entire length of its throw and can be controlled individually from a remote computer. Although we have very precise control over what runs when and for how long, we are still uncertain as to exactly how frequently they should run and for exactly how long. It can also be very difficult to ascertain if a system is operating at its full potential. Sprinkler heads can sink or lean over time and nozzles wear and can be damaged. Some of these slow changes can be difficult to diagnose as problems because we slowly adapt our irrigation practices as they occur.

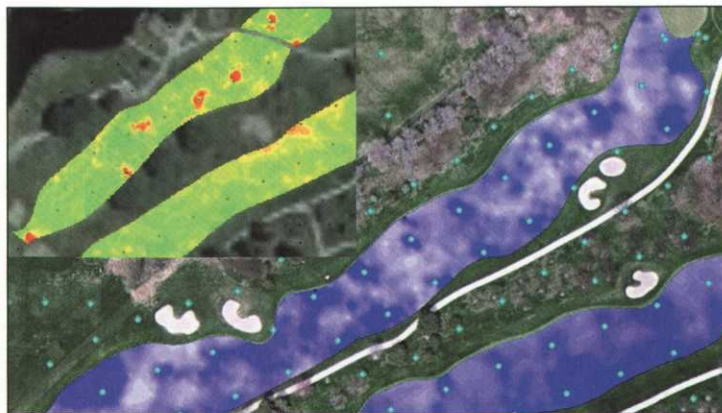
Spatially frequent soil moisture, compaction and plant reflectance data can provide for analysis of various aspects of irrigation management. The data can show some simple, relatively inexpensive things that can be done to improve the efficiency of the system or how the entire programming process can be adapted to optimize its performance.

### Simple Beginnings

Individual head efficiency or uniformity of coverage can have a dramatic affect on the overall irrigation efficiency. Worn nozzles and heads that are too deep or have tipped slightly over time do not uniformly apply water to its area of coverage. Any time a head is not applying water as it was originally intended, you are likely to get a situation where the runtime is going to have to be increased to supply adequate water to all areas covered by that head. Additionally, applying extra water to get an adequate amount to one area, results in other areas receiving too much water. Leveling and raising heads as well as replacing nozzles are relatively inexpensive practices to begin increasing efficiency. Maps produced from data collected with the mobile sampler are shown in Figure 3. They are examples of what appear to be worn or damaged nozzles creating wet or dry patterns around the sprinkler heads.

### Irrigation Management Zones

Irrigation programming is currently being performed as best possible given the information that is available. Often adjust-



**Figure 3.** Two different nozzle problems at two different golf courses. In the upper left corner is a plant reflectance map showing high stress around or near a number of the sprinkler heads. The lower and right portion of the picture is another course with much wetter soil conditions near most of the sprinklers.

ing run-times for each sprinkler head as we gain experience with the sites and learn where there are wet and dry areas. Because we are now able to collect spatially frequent site data, we are proposing a paradigm shift in how irrigation programming is performed. Understanding the variability of a site allows us to develop a

somewhat, but will easily pay for itself over the life of the system through reduced pumping costs. Sprinklers that will be managed similarly can still be tied together at the controller to reduce the number of stations required, but this gives you the flexibility to irrigate the site as required and provides for



**Figure 4.** Map of Irrigation Management Zones. Irrigation programming based upon this concept can conserve water and reduce pumping costs.

program grouping irrigation management zones based upon the similarities of the sites rather than by the traditional by-hole method that has been used until now. Figure 4 displays this concept showing four distinct irrigation management zones on this golf course. Rather than irrigating all the fairways, and the entire fairway, during each irrigation event, the frequency and amount of irrigation would vary according to the requirements and needs of each irrigation management zone. This new concept could allow the opportunity to extend irrigation events for some zones out by a day or multiple days. Extending the time between irrigation events allows for the increased likelihood that a rainfall will occur that will fulfill, at least partially, the irrigation needs of the area.


When installing a new irrigation system or renovating an old one, it is advisable to run a control wire to every sprinkler. This may increase the initial cost

future modifications as they become necessary.

### Compaction

Compacted soil is not only a difficult growing condition but it also increases runoff potential because of reduced infiltration of water into the soil. The reduced infiltration can result in droughty conditions even when adequate rainfall or irrigation is applied too quickly. Additional water has to be applied to provide adequate moisture to the rootzone. Getting water infiltration to the deeper parts of the rootzone is important because it promotes deeper rooting and is less susceptible to loss due to evaporation. This mobile sampling technology has the potential to aid in adjusting how irrigation is applied allowing for increased infiltration and increased irrigation efficiency and reducing the potential for runoff.

(Continued on Page 25)



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## Mobile Mapping-

(Continued from Page 23)

Understanding the spatial variability of compaction, and locating the most problematic places easily, makes it possible to aerify only the areas of concern (see Figure 5). This can be especially beneficial during



**Figure 5.** Compaction Management Map for a fairway with arrows representing the natural flow of cart traffic due to course design. Pinks represent higher compaction, white is average, and blues are lower compaction.

the growing season where solid tine or water injection aerification could be used for improved infiltration which again will provide for improved irrigation efficiency and increased gas exchange. This will increase the health of the plant making it more resistant to stress and pest problems and also reduce the amount of labor and fuel required to complete the task.

### Salinity

Although not generally a problem in the northern regions of the United States, salt accumulation can be a problem in more arid regions. Recently, there has been an increase in the number of locales that require golf courses to use reclaimed water for irrigation. As this trend continues, we may see an increase in the number of salt affected sites. Anywhere that has even short-term droughts can expect to see salt accumulation, and given that cool-season grasses tend to be less tolerant of saline conditions, salt management could become an important aspect of managing sites using reclaimed water.

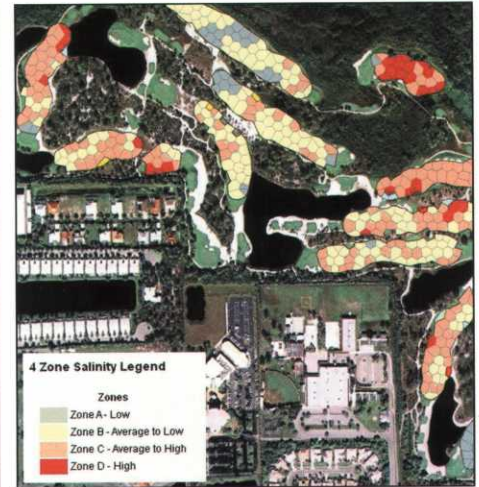
Again, understanding the variability of a site allows one to better understand how salts accumulate across different areas of a golf course and allow the manager to leach only those areas that require it. This type of leaching technique has the potential to significantly reduce the water consumed. Water used in leaching is for the most part "wasted." Its only purpose is to push excess salts below the plant rootzone. While it is important to the health of the plant to remove the salts, all the water leached beyond the rootzone is out of reach of the plant. Figure 6 demonstrates what a Salinity Management Plan looks like at a golf course irrigating with brackish water.

Maintaining soil moisture in the optimum range is important to having the healthiest plant environment. Too little moisture creates stresses that can greatly reduce a plant's productivity; however, too much can also be detrimental. Saturated soils contain little oxygen required for the plant during respiration and create an environment that is conducive to anaerobic microbes that often produce by-products that can be toxic. Saturated conditions, especially in finer textured soils, are more conducive to compaction which can then reduce infiltration. The excess water provides an environment for some diseases to spread more readily to plants that are more prone to infection because of the wet conditions.

Spatial mapping done at the right time provides the opportunity to understand the exact areas that may need to be included in a drainage project. You can see the before and after soil moisture patterns in Figure 7 where drainage was installed to help alleviate an excessively wet condition. Plant reflectance data, not shown here, also showed a thin turfgrass canopy where the soils were excessively wet. Removing the excess water will provide a healthier growing environment for the plants and allow them to better tolerate stressful conditions.

### In-Ground Sensors

Recent advances in technology have provided us with reliable stationary in-ground sensors that can measure soil moisture, salinity and temperature. Using the Irrigation, Compaction, and Salinity Management Maps developed from the mobile sampling vehicle provides the information required for placing these sensors in the key management zones on the golf course. The sensors then provide the feedback necessary to objectively make irrigation and salinity management decisions. Using this approach requires



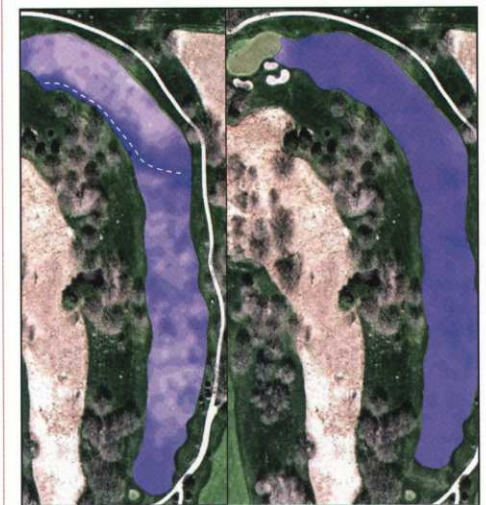
**Figure 6.** Salinity Management Map for an entire golf course.

only one or two sensors per management zone; many fewer than the hundreds that are sometimes mistakenly thought to be needed to fully monitor a golf course.

### Final Thoughts

It is possible now, with the technology presented here, to greatly improve your water use efficiency. As other technology matures and evolves, you will likely see equipment developed that allows you to apply even more of your resources in an increasingly precise way.

Whether by choice or through legislation, we will continue to see pressure toward reduced inputs. As an industry, it would be to our advantage to be proactive and take steps that show we are continually improving our resource utilization.



**Figure 7.** Drainage. The left picture shows soil moisture levels before installation of drainage with after drainage soil moisture levels on the right. The dotted line represents the drain tile installation. The darker the blue the higher the soil moisture.

# PEER-TO-PEER: BETTER TURF THROUGH NETWORKING

*MGCSA members were asked: How do you disseminate timely information about course conditions and maintenance practices? Blog, email, newsletter?*

**At TPC**, we use website and email. - Roger A. Stewart Jr., CGCS, TPC Twin Cities

\* \* \* \* \*

**At St. Cloud Country Club**, we use our newsletter, e-mail occasionally and posted informational notices at the locker room and/or 1st tee. - Dan Hanson, St. Cloud Country Club

\* \* \* \* \*

**At Dellwood** we use a few different tools. We use e-blast to get information out to the membership immediately. We started a blog this year which, we try to update once or twice a week. The blog allows us to go into more detail about practices and other things that are going on or seen on the golf course. And we use monthly newsletters for less time sensitive information. -Eric H. Peterson, Dellwood Hills Golf Club

\* \* \* \* \*

**For our restoration project at Edina CC** this summer I have started a blog as well as collaborating on another one with other people within our club management team, that will contain some more information (like reciprocity for our members) and through the club's website to communicate as much as we can. - Brandon Schindele, 1st Assistant Superintendent, Edina Country Club

\* \* \* \* \*

**Here at Cedar Creek** we have a link for Turf Conditions on our website in which I update it every week and I also give helpfully advice on your own home lawns so they can do it themselves and I also advise them to follow the labels of the Products and insure them there is a right way and the wrong way of Lawn Care. The clubhouse will also put up a sign on the proshop counter to make golfers aware of any issues out on the course to be aware

of. Check out the site at [www.cedarcreek-golfmn.com](http://www.cedarcreek-golfmn.com). - Tom Wicklund, Cedar Creek Golf Course

\* \* \* \* \*

**At Pike Lake**, we usually just put notes on the bulletin board. We are a small operation and this seems to work for us. - Mark Carlson, Pike Lake AAA Golf Course

\* \* \* \* \*

We use Facebook at **Olivia Golf Course**. - Rolly Rauenhurst, Olivia Golf Course

\* \* \* \* \*

**At Windsong**, I contribute to a weekly e-newsletter in a column I call 'The Keeper's Corner' to talk about any issues and/or relate any maintenance practices. It is as little as a few sentences to as much as a full page. - Scottie Hines CGCS, Windsong Farm Golf Club

(Continued on Page 27)

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## Peer-to-Peer--

(Continued from Page 26)

Communication is important for informing the membership as to ongoing program and maintenance practices here at **Hong Kong Golf Club**. I write and post a monthly report that summarizes the conditions of the four courses, course projects and improvements, and any other information that is pertinent to the courses.

I am also responsible to write an article for the Club's monthly newsletter. Each Friday I put together an article that reviews what maintenance works, project status, etc. that has transpired on the courses for the week. In this article I also provide a daily maintenance schedule for the upcoming week for all 4 courses so there are no surprises to the golfing membership during the week. This article and schedule is posted in the clubhouse on the locker room bulletins and sent out via e-mail to various club officials and department heads. - *Randy Witt, CGCS, Hong Kong Golf Club*

\* \* \* \* \*

**At Somerset** the Green Committee gets a weekly email on course conditions. I would like to expand it a bit to the membership, for example, this is how much rain we received, we are aerating etc.

I also email to a group of members who are interested in the wild life happenings at Somerset. That email, with pictures, has been quite popular. - *James Bade, Somerset Country Club*

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Rose Lake Golf Club  
507/235-3981

May 13  
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10 black ballwasher stand bases \$10 each  
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Contact: Jeramie Gossman  
Southview Country Club  
612/961-1289

May 11  
**FOR SALE**

1998 Ryan Greensaire 24, runs good, \$1,000 OBO  
2002 Smithco Windstar, 3 point blower, 100 hrs. \$1,500 OBO  
Contact: Daniel Baert  
Pierz Golf Course  
320/630-5084

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**FOR SALE**

2002 Southern Pride Model 60 - 66" Soil Reliever.

Purchased new from MTI for \$14,800. On-Line pictures available upon request. Excellent shape and asking \$8,500. We would entertain any reasonable offer.

1999 Land Pride Model OS1572 - 81" Overseeder priced new at \$8,800. Excellent condition and asking \$4,000. On-Line pictures available upon request. Any reasonable offer.  
Contact: Gary Jaskoviak  
Devils Lake Town & CC  
701/425-7385

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**FOR SALE**

Spreaders: Spyker (black) sand spreader - never used \$220,  
Simplot partners \$100,  
Lesco doesn't agitate \$50,  
Lesco commercial plus 80# capacity \$75 or best offer on any of them.  
Contact: Wes Stoneback  
The Wilds Golf Club  
952/496-0037

April 19  
**FOR SALE**

2002 Toro 4000D  
2450 hrs - \$15,000,  
2002 Toro 1800 bed mount top dresser maybe 75 hrs- \$3,000,  
(2)-2002 Toro 1600 walkers 320 hrs and 200 hrs - \$1,500 ea.,  
18 Bayco ball washers \$10 ea.  
Contact: Jared Finch  
Giants Ridge Golf Course  
218-865-3022

April 7  
**WANTED**

Used 700 E Rainbird Sprinkler heads.  
Contact: Jim Wagner  
Pine Ridge Golf Course  
320/834-4028

February 19  
**FOR SALE**

Box of 2005 E-Z-GO Golf Car parts. Filters, switches, manuals, plugs. Free or Best Offer!  
Contact: Kevin Clunis CGCS  
Tanners Brook GC  
651-464-4118

## Membership Report

May 26, 2010

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**David Maubach**  
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Cedar Falls, IA  
W: 319-240-2229

### Reclassifications

**Walter Braunig**  
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**Bradley Marty**  
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**Barry Hines**  
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**Brent Belanger**  
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Respectfully submitted by,  
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# GET TO KNOW 'EM



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I have been married for 25 years to Mary - a wonderful wife and mother, who has worked 30 years at Fairview University in Respiratory Therapy.

Children:  
 Matthew, a junior at St.

Cloud State. Melissa, a senior at Zimmerman H.S. If I could describe our family, I would say that we are a close, active, happy family that have set goals and enjoy what we do. Our special family interests are our large family holiday gatherings, mountain skiing, Apostle Islands camping and boating and proudly watching our kids participate in sports.

*The funniest thing you have seen on a golf course:* Joe Buege, my assistant, dislocating his arm after trying to pull the flagstick while mowing greens. I took the long route to the hospital, or maybe we were laughing so hard, I missed a turn...

*"Golf is a fabulous industry, with no age boundaries. I'm fortunate to have a job and to work with and for many talented-gifted people. I didn't know whether to laugh or cry when I got the senior discount the other day without the waitress even asking!"*

*One life lesson you have learned due to golf/work in golf:* One day at a time, you'll blow a gasket if you let it get to you.

*One piece of advice for your peers:* Remember, it's only grass. Toss the stimp meter, don't take growing grass so deep that your brain hurts, delegate work, ask questions and listen to your mentors, if you don't, you will pay for it down the road. Thank you Andy Lindquist, Morrey Anderson, Tom Fischer and Mike Redmond.

*Favorite piece of equipment:* The aerifier, under rated and under used.

*Best new golf innovation:* Contec DG! What else!?

*Why did you get into the industry?* Not to get rich, that's for sure. It's a labor of love. When you stop smiling on the way home, seek help, call a friend, avoid the clubhouse bar, take a day off.

Golf is a fabulous industry, with no age boundaries. I'm fortunate to have a job and to work with and for many talented-gifted people. I didn't know whether to laugh or cry when I got the senior discount the other day without the waitress even asking! Oh yeah, I'm tired of turning my head and coughing, what's it been now 40 some times...

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*The Preserve on Lake Rathbun  
 Hole 5 - 536 Yard Par 5,  
 Photo by Peter Wong.*

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# The Savory Supe

By Scottie Hines, CGCS  
Windsong Farm Golf Club

## Guacamole

4 medium ripe Hass avocados, mashed  
2 tablespoons finely chopped fresh cilantro or basil  
1-1/2 tablespoons fresh lime juice  
1 teaspoon kosher salt  
1/4 teaspoon ground black pepper

## Marinade

3 large garlic cloves  
1/2 cup loosely packed fresh cilantro or basil leaves  
1/4 cup fresh orange juice  
3 tablespoons extra-virgin olive oil  
1 tablespoon fresh lime juice  
2 teaspoons pure chile powder  
1 teaspoon dry mustard  
1 teaspoon dried oregano  
1 teaspoon kosher salt  
1 teaspoon ground cumin  
1/2 teaspoon ground coriander

1-1/2 lbs. flank steak, about 3/4 in. thick  
1-1/2 lbs. boneless, skinless chicken thighs  
4 medium green bell peppers, seeded and

## Family Fajita Bar

- Jamie Purviance

cut into flat sections  
2 medium red onions, cut crosswise into 1/3-inch slices  
Extra-virgin olive oil  
10 flour tortillas (9 to 10 inches)  
2 cups good-quality, store-bought chunky salsa  
Tabasco® sauce

1) In a medium bowl combine the guacamole ingredients and stir with a fork until thoroughly combined. Cover the surface with plastic wrap until ready to use.

2) In a blender or food processor finely chop the garlic and cilantro. Add the remaining marinade ingredients. Process until smooth.

3) Put the flank steak in one medium bowl and the chicken thighs in another. Add half the marinade to the steak and half to the chicken and toss to coat all sides evenly.

Cover and refrigerate for 1 to 2 hours.

4) Prepare the grill for direct cooking over for medium heat (350° to 450°F).

5) Lightly coat the bell peppers and onions on both sides with oil. Brush the cooking grates clean. Grill them over direct medium heat, with the lid closed as much as possible, until tender, turning once and swapping their positions as needed for even cooking. The bell peppers will take 6 to 8 minutes, and the onions will take 8 to 10 minutes. Cut the bell peppers and onions into 1/3-inch strips.

6) Remove the steak and chicken from their bowls and discard the marinade. Grill them over direct medium heat, with the lid closed as much as possible, until the steak is medium rare and the chicken is brown on the surface and no longer pink in the middle, 8 to 10 minutes, turning once and swapping their positions as needed for even cooking. Let the steak rest for 2 to 3 minutes. Evenly divide the tortillas into two foil packets and grill over direct medium heat to warm them, 2 to 3 minutes, turning once.

7) Cut the steak in half lengthwise and then cut crosswise into 1/4-inch slices. Cut the chicken into 1/4-inch slices. Place the tortillas, steak, chicken, peppers, onions, guacamole, and salsa in separate serving dishes. Let each person make their own fajita by placing the fillings down the center of each tortilla and adding Tabasco® sauce. Serve warm. **Enjoy!**

(Editor's Note: Recipe from Weber's Charcoal Grilling™ featured 5-21-2010)

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## Creating Destiny

By JACK MacKENZIE, CGCS  
North Oaks Golf Club  
Editor

Ever wonder why one side in a flying 'V' of a goose formation in flight is longer than the other?

We take our irrigation supplies for granted here in the "Land of Ten Thousand Lakes." Each year we fill out our water use forms and send them into the Department of Natural Resources for their review and compilation. A few years ago a fee for usage was added, a very small fee when compared to other areas of our country. Water is cheap and plentiful...in our eyes perhaps, but not at the State Capitol.

For the past two years I have been following with interest the movement of legislation intended to track water quality and appropriation in our state. At Senate Committee hearings I learned that there are several, no many, groups doing their own evaluations of the water resources in our state and across the United States. Groups such as the Alliance for Water Stewardship, the American Groundwater Trust, the Environmental Defense Fund, the Minnesota Ground Water Association, the Ocean Project, the Water Education Foundation and the Fresh Water Society have organized and are helping to set the agendas for new legislation.

regulator of water in Minnesota. It enforces federal and state law including the administration of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). The PCA also issues water quality certifications under §401 of the Clean Water Act. As mentioned in a previous President's Column a new fee system will be mandated upon those in the 11 county metropolitan area whom draw their water from non-stressed aquifers. These monies are to be directly applied to monitoring the quality and quantity in the underground reservoirs.

**Our "stressed state aquifer," the Mt. Simon-Hinckley aquifer,** has its own special mandates if approved beginning this year: MS 103G.271, Subd. 4a. Mt. Simon-Hinckley aquifer: (a) The commissioner may not issue new water use for the Mt. Simon-Hinckley aquifer unless the appropriation is for domestic water use, there are no feasible or practical alternatives to this source, and a water conservation plan is incorporated with the permit. Domestic water uses include water used for general household purposes for essential human needs such as cooking, cleaning, drinking, washing, and waste disposal. (b) The com-

State agencies that have a role in water regulation and management are the BWSR, DNR, EQB, MDA, MDH, and PCA. The PCA is the largest single

missioner may not issue new water use permits for the Mt. Simon-Hinckley aquifer for non-domestic uses unless the volume of water is less than 100 million gallons per year, there are no feasible or practical alternatives to this source, and a water conservation plan is incorporated with the permit. This paragraph does not apply within a metropolitan county, as defined in section 473.121, subdivision 4.

**No, we are not losing our access to water, but that concept isn't too far out of the realm of possibilities.** If it were allowed by those who oppose our industries' use of this valuable resource we wouldn't be irrigating at all!

So what are we doing about it? As responsible golf course managers we understand the value of our water and don't intentionally abuse our resources. Throughout our country we use roughly .05 percent of all water consumed yet the perception is that we are mass users of this unique chemical combination. Yet currently we attempt to maintain a profile under the radar to limit our exposure.

**So what are we doing about it?** If I may be so bold I request the Minnesota Golf Course Superintendents' Association take a very proactive stand and, as stewards of our natural resources develop a plan supported by allied golf associations, educate our foes, partner with our legislatures and the state water management agencies to develop a Best Management Program to assure our access to this life blood of our industry. While we are at it, take it a step further and craft BMP's for nutrient management and proper chemical use. Of course we know what we are doing, but does everyone else?

**Wow, that was much easier said than I am sure it will be to get done.** Yes, it will cost some money as no volunteer has the time to do the job that is necessary to maintain our access to water and in the long run nutrients and plant protection chemistries. Yes, it will take some time to implement. But won't it be worth it in the long term to have a plan in place and ratified by legitimate partners to enhance the viability of our industry?

But by working with our allies I am positive the MGCSA can and will create a living document acceptable to all parties involved. Across our country state golf associations are creating their own destiny by working with their representatives. It is high time we do as well or we will suffer the consequences of more and higher fees and limited access to water, the liquid that equates to life.

If we don't create our own destiny then somebody else will!



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