Luke Cella, CGCS *Tamarack G.C.*

Just Do It! Your Guide to Navigating the Improved MAGCS Web Site

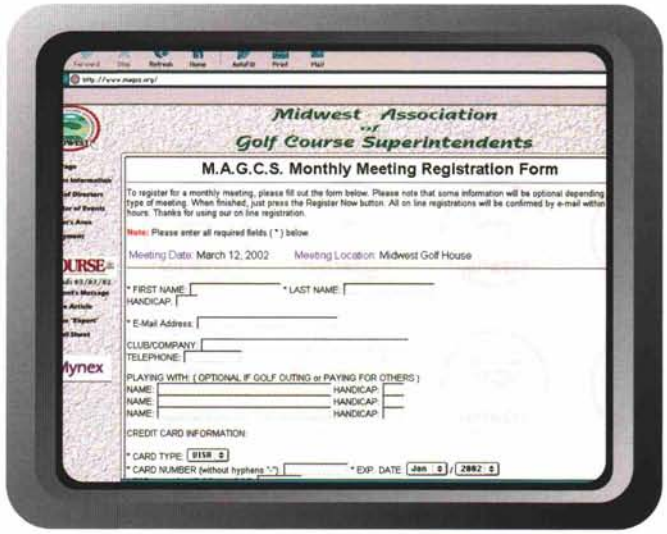
Recent enhancements to the MAGCS Web site (www.magcs.org) have impressed and yes, even confounded some of our members. For one, the membership is now able to sign up for events over the Internet. To take advantage of the improvements and new services, members now need to take a few new steps to get to the member's area.

Click on Member's Area in the left frame as in old times, and this will bring up a dialog box that asks for the network log-in name and password. In this dialog box, enter the username and password we have always used to gain access to the member's area. (Hint: the username is magcs.) The old page looked like this:

If you are a member and do not have this password, please e-mail lukecella@att.net and I will send it to you. Once you have submitted the correct information, the new member's area will appear and you will see this page:

Clicking on MAGCS Message Board will take you to the old message board that is not going to exist much longer. Its days are numbered, so there is not much reason to use it. Clicking on MAGCS Monthly Meeting Registration will get you this sheet:

(continued on page 12)



This is where you can sign up for a monthly meeting. Wait—it gets better. If you click on New MAGCS Message Board, a new window will come up:

This is your path to the new message board. With the new interface, each member of MAGCS will have his/her own username and password for use on the Web site. You might think that this is a hassle, however, it will be worth it once you see the new message board and its capabilities. First, think of a username unique to yourself; I use lcella, pretty boring but something I can remember. Next, think of a password that is even easier to remember. (When choosing a password, always try to select something that is easy to remember and is a combination of numbers and letters. That first or favorite car could be a great password, e.g., 72pinto or fairlane51.) Now, you need to click on Register in the upper-right-hand corner or Register in the navigation bar or click -here- under the warning sign. Once that is accomplished, this page will appear:

Your task is pretty simple from here; enter your username, put in your e-mail address (so members can directly e-mail you), enter your password and re-enter your password. One last thing you must do is agree to abide by the rules or codes laid forth. After you have read the stipulations and agreed to follow them, click on the I Agree radio button. Next, click on Register and you're in like dollar spot in September. The new message board looks like this:

Initially, it may seem like a lot is going on, and there is compared to the old message board. Once you get the handle on this board, however, you won't be disappointed. To post a message, you first need to click on a forum. Currently, two subject forums are in the offing: Turf Talk and Classifieds. Turf Talk is divided into the two topics General Chat and Golf Events and Info, and Classifieds is divided into For Sale and Want to Buy topics. More forums and/or topics will be added to the site as needs arise. (If you think of a forum or topic you would like to see added, let me know.) When you click on General Chat, this page appears:

To read a post, click on that post under the column subject. You will be taken to another screen where the post will be displayed. You can respond to the post by clicking on Reply, or you can return to the previous screen by pressing the back button on your browser or by clicking on the previous page listed under: MAGCS Message Board. If you want to post a new message, you need to start a new thread. Click on New Thread to begin your post.

Though it may seem that there is "a lot going on" with our new message board, give it a chance. The capabilities of the new board will allow us many more options in the future. For example, the messages will stay on the board for a year and we will be able to search all of them using the Search button. We can change our user-profile information at any time using the Profile button. You can even add a picture of yourself, if you are that savvy. Remember, the old message board is on its way out and the new board is here to stay. Take some time and play around with it; before you know it, you'll be a message-posting pro. Meanwhile, please contact me with any concerns, questions or comments about the Web site. As more members become registered users, I will delve deeper into the message board, exploring more of its options and sharing them with the membership in *On Course*.

Dr. John Stier *Department of Horticulture*
University of Wisconsin-Madison

Effluent Irrigation, Part II: The Agronomics

Editor's Note: This article—part two of a series—originally appeared in the November/December issue of The Grass Roots, *the official publication of the Wisconsin GCSA. The August 2001 issue of* On Course *featured part one of the same series. Our thanks to the WGCSA for permission to reprint this discussion of a topic that is sure to come to the forefront in the near future.*

So you've decided to be a good neighbor to your community and look into using effluent water for irrigation. You've learned about how water is recycled. Primary treatment removes much of the solid material, both organic and inorganic. Secondary treatment removes up to 90% of the remaining organic matter, though it still contains large quantities of nutrients and other inorganic constituents. Tertiary water is best for your course; non-biodegradable organic matter and much of the nutrient content have been filtered from the water by passing it over activated charcoal. Tertiary water is also the most friendly type of recycled water from a human health perspective since most of the coliform bacteria have been removed. But all is not necessarily well. With more golf courses every day feeling the pressure to turn to effluent for irrigation, it's important to know what you're getting yourself into, and what you're getting into your turf.

Properly treated tertiary effluent will still contain solids, microbes, organic compounds and dissolved inorganics such as salts and nutrients like nitrogen and phosphorus. If considering using effluent for irrigation, check the water quality first. Effluent water quality will vary among locations. Items to check for include pH, dissolved solids, salts and sodium, bicarbonates and carbonates, and heavy metals.

Total suspended solids (TSS) should be less than 5-10 grams per liter. Water with TSS can eventually clog surface pores and inhibit infiltration, causing puddling, algal growth and other drainage-related problems. Management practices may have to change to include more frequent core aeration, spiking or slicing to enhance drainage. TSS should not be confused with turbidity measurements, which are often included in standard water tests. Turbidity is merely a measure of the light transmission through the water. Although dependent on the particulate matter suspended in water, no standard guidelines have been developed to determine acceptable turbidity levels.

Irrigating with effluent will likely affect your fertility program. Effluent contains a variety of nutrients, including N and P. The algal blooms in your ponds may not be from your fertilizer, but rather from your irrigation water!

Irrigating with effluent will likely affect your fertility program. Effluent contains a variety of nutrients, including N and P. The algal blooms in your ponds may not be from your fertilizer, but rather from your irrigation water! You'll have to monitor your water source regularly, usually monthly, since nutrient loads will not be constant. Nitrogen levels may range from 10-35 parts per million (ppm), phosphorus from 0-5 ppm, and potassium from 5-25 ppm. Calculate the nutrient loads monthly to determine how much to change your fertility program as shown below:

1. Find the concentration of the element such as N or P from your water quality test. Results are typically given in ppm or mg/L.

2. Multiply the concentration by 2.72 to give lb. nutrient per acre-foot of applied water. One acre-foot is 43,560 ft.^{3}, equal to the volume of water

(continued on page 18)

contained in a prism one foot high with a one-acre base, roughly 325,000 gallons.

3. Divide the value from #2 by 43.56 to determine the lb. nutrient per 1,000 ft.^{2} turf area.

For example, assume a water test reported 1) 6 ppm N; 2) 6 x 2.72 = 16.3 lb. N per acre-foot of water; 3) 16.3 lb. N/acre-foot divided by 43.56 = 0.374 lb. N/1,000 ft.^{2}. Thus, one acre-foot of this effluent would supply 1/3 lb. N per 1,000 ft.^{2} of turf area. This nutrient loading adds up: A typical 18-hole course may use 300,000 gallons of water on a hot summer day, equivalent to over 90% of an acre-foot of water, or about 15 lb. N/acre added to the turf if the effluent contains 6 ppm. The EPA standard for drinking water is 10 ppm, an amount that even tertiary water may exceed. For those superintendents living in a community concerned about nutrient runoff, effluent irrigation may not be doing anyone a favor unless proper steps are taken to avoid excessive nutrient loading.

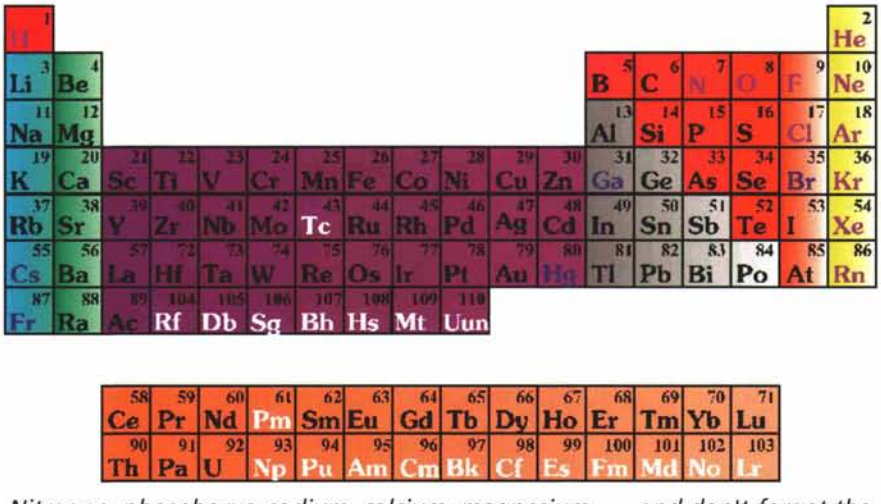
If you've ever been out West, you may have seen some of the famous "salt flats," areas where salt has become so concentrated little vegetation will grow. Users of effluent, no matter where they are, could face a similar situation if steps aren't taken to avoid salt buildup. One of the items to check in the effluent water test report is salinity level. Salinity levels are determined by using an electrical conductivity (ECW) test that measures the ability of the water to conduct electricity. The more salt, the greater the conductivity. Conductivity measurements will be shown in units of decisiemens per meter (dS/m) or millimhos per centimeter (mmhos/cm). Total dissolved salts (TDS) may be listed in ppm. High salt concentrations in soil reduce turf growth by withholding water from plants; the high salt concentration lowers the soil osmotic (or solute) potential, preventing water from being attracted to the plant roots if they have a higher osmotic potential. Affected turf may be prone to wilting on hot and/or windy days even when the soil is still moist. Leaf tips may appear scorched. Over time, the turf thins out and loses uniformity.

The USDA has classified salinity into four levels: low salinity (less than 0.25 dS/m), medium (0.25-0.75 dS/m), high (0.75-2.25 dS/m) and very high (>2.25 dS/m). Turfgrass breeders are focusing more closely than ever on salt-tolerant species such as alkaligrass, which is tolerant of salinity exceeding 10 dS/m. Research is being conducted on genetically modifying turfgrasses with a gene known as BADH to confer salt tolerance to salt-intolerant, yet commercially desirable, varieties. Perennial ryegrass has good salt tolerance and can tolerate 6-10 dS/m. Tall fescue, Chewings fescue and creeping bentgrass generally can tolerate 3-6 dS/m though genetics of individual cultivars plays a strong role: 'Seaside' creeping bentgrass is much more tolerant than 'Penncross' and 'Penneagle.' Kentucky and annual bluegrasses have poor salt tolerance (< 3 dS/m).

If you've ever been out West, you may have seen some of the famous "salt flats," areas where salt has become so concentrated little vegetation will grow. Users of effluent, no matter where they are, could face a similar situation if steps aren't taken to avoid salt buildup.

Sodium levels are often excessive in saline water. Sodium is not an essential plant nutrient and can damage plants and soil structure when present at high levels. Sodium causes loss of soil structure by displacing larger ions such as calcium and magnesium, resulting in a breakdown of soil aggregation (a process known as "deflocculation"). Sodic soils have talcum-powderlike properties; water literally beads on the soil surfaces, which significantly reduces infiltration. A good water test report will include the sodium absorption ratio (SAR). The SAR estimates the sodium hazard and relates sodium levels to calcium and magnesium. The greater the number, the greater the risk for poor soil structure. Values of less than 10 meq per liter pose little danger to soils, while water with a value above 24 meq per liter is not suitable for irrigation. Use of irrigation sources with values between 10 and 24 meq per liter may be accept-

(continued on page 21)



Nitrogen, phosphorus, sodium, calcium, magnesium . . . and don't forget the heavy metals . . . just a few elements to consider with effluent irrigation.