CONSIDERING TIME AND HYDRAULICS IN IRRIGATION PROGRAMMING

The amount of time required to irrigate your golf course depends on the following variables:

1. The amount of irrigated area, broken down by zones of use; high use (tees, greens, fairways). medium use (roughs, clubhouse). low use (perimeter areas, driving range, extreme rough). etc.
2. The current water requirement for the various types (or zones) of turf and other plant material being irrigated.
3. The rate of precipitation being supplied to each zone by the irrigation system.
4. The efficiency of application within each zone.
5. The amount of water that the irrigation system can supply effectively at any given time.

The current value of each of these variables may be affected by any adjustments that are made to any other variable which may, in turn, affect the amount of time required to irrigate your golf course. It's a vicious circle.

If you are maintaining a typical golf course you probably have one additional "variable" in the weekly programming equation; the amount of time you have available to irrigate. This "variable" is dependent on how much time is left after the players, and your mowing crew, are finished using the course. This factor really should be considered a "seasonal variable" anyway because the course usage typically changes on a seasonal basis. Unfortunately the highest activity usage tends to be during the same season that the course needs to irrigated the most. Even more unfortunate is the fact that this occurs during the same season that time available for irrigation is at its lowest. It's a vicious circle.

If you can't convince the pro and starter to limit play during the summer between 8:00 AM and 4:00 PM (and who can?) you will probably have to develop a seasonal programming schedule.

If you've been reading this seemingly endless series of articles about irrigation system programming in "Thru The Green" you should have values for all the variables described above except for "the amount of water your irrigation system can supply effectively at any given time". This variable is dependent on several factors of its own including type and capacity of water source, pump station capacity at efficient operating level, size and routing of pipe network, and water volume required by each zone of irrigation. Before we get into the calculations involved in this variable we should get a better idea about how much time is available to irrigate.

One of the easiest ways to determine available time is to pull the starter sheets for your course for last year and examine the seasonal trends for play, twilight or early bird play, tournament play, etc. You should also pull your own maintenance records and account for the time required for mowing, fertilization, top-dressing, system repairs, construction, and any other seasonal activities or planned projects that will affect the amount of time you can irrigate. Finally you should be aware of sunrise and sunset times throughout the year. This will give you an idea of the hours of darkness available for irrigation on a seasonal basis.

It may be helpful to develop a weekly seasonal chart that incorporates this data for reference when you put the whole programming picture together. An example of this chart may be as follows:

AVAILABLE IRRIGATION HOURS/ NIGHT (SUMMER):

	M	T	W	Th	F	S	Su
TIME (HRS)							
June Week 1	8	8	9	9	7	7	10
WEEKLY TOTAL							58
June Week 2	8	9	9	8	6	6	10
WEEKLY TOTAL							58

...and so on. This chart will assist in calculating the average number zones that need to run at the same time in order to irrigate your course within the weekly time allotment.

Next Month: Balancing Hydraulics based on Allotted Time.

Doug Macdonald is an associate design consultant with Russell D. Mitchell & Associates, Inc., an irrigation system design and consultation firm in Walnut Creek, California.