

# FILTRATION IN GOLF COURSE IRRIGATION SYSTEMS

Water has been called the "Universal Solvent" meaning there are many materials that will break down (or become soluble) when exposed to water over a period of time. Water is also a necessary component in the growth of most living organisms. Add the fact that water in motion can provide enough force to carry along particles or objects in its direction of flow. Ironically, these three properties of water can be beneficial as well as detrimental to your golf course irrigation system.

Water solubility is a major consideration for selecting the types of fertilizers you will use on your course. Conversely, many elements that are harmful to turf growth or irrigation component operation are at least partially soluble in water.

Water keeps turf alive by providing essential nutrients, controlling temperature, and aiding in other life cycle processes. On the other hand, water also promotes the growth of algae and other micro organisms which can attach themselves to the irrigation system components and effect their operation.

The force created by moving water is the very basis for operation of many sprinkler components used in your irrigation system. However, if the water moving through the system is carrying solid particles along with it, they can act as abrasives which will certainly reduce the system's lifespan.

Your irrigation system is designed to take advantage of each of these "positive" properties of water to promote the healthy growth of your turf. Unfortunately, too often your water source introduces one or more of these other "negative" properties into your system. A majority of the negatives can be effectively controlled if you include proper filtration as part of your system design.

There are several methods of filtering water that are commonly used in today's irrigation systems. Before you determine which is the best method (or methods) for your course you should ask yourself several questions:

1. How clean is my water source? What

am I trying to filter out?

(boots and old tires don't do well with many types of media or self-cleaning filters).

2. What components am I trying to protect and where in my system should I locate the filter to accomplish this?

3. How does the filter work; does it have any hydraulically or electrically operated components that require special consideration?

4. How much time and money can I afford to spend for installation and monitoring of the filter.

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## "THE WATERS WEAR THE STONES"

### THE OLD TESTAMENT

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5. Do I feel lucky?

If you are drawing water directly into your system from a domestic water source, consider yourself lucky (from a filtration standpoint). Domestic water should already be sufficiently filtered before it reaches your system and you probably don't require any additional filtration. However, you should be aware of any major construction projects or water main repairs in your area - these may introduce a significant amount of particulates into your system which should be flushed out through a quick coupling valve or other large outlet before they have a chance to damage the smaller, more delicate components of your system.

If you are getting your water out of a storage lake on your course the odds are good that you need to filter out fish, leaves, and other large objects that may find their way into your lake (lawn chairs are not uncommon). This initial filtration can often be accomplished by fabricating and installing an enclosed vertical screen made from flattened stainless steel expanded metal at the mouth of the inlet pipe leading from the lake to the wet well. Care should be taken in sizing the inlet screen to provide enough mesh surface area to keep velocities through the screen below .25 feet/ second. This will reduce the tendency of larger particulates to become sucked onto the screen when the irrigation system is drawing

water from the lake.

A variation to this vertical inlet screen installation is the use of a self-cleaning rotary intake screen. These pre-manufactured units incorporate the use of a self-propelled "barrel-type" screen that rotates around a fixed row of backwash spray nozzles which draw pressurized water from the pump station discharge. The nozzles actually power the rotation of the barrel screen and, at the same time, flush sediment from the screen mesh. Filtered water is drawn into the intake pipe through the central axis of the barrel screen.

Inlet screens are intended to keep larger obstructions from entering the system and possibly causing damage to the pump components. Most pumping stations include filtration screens on the pump components as well. These filters are often enough to protect the pump station but are still inadequate protection for the valves and sprinklers. Providing filtration to protect the valves, sprinklers, and more delicate components of your system usually requires a more aggressive approach to filtration using more sophisticated filtration equipment.

*Next Month: Filtration on the discharge side of your pump station.*

