

DEVELOPING AN IRRIGATION BASELINE

ARTICLE & PHOTOGRAPHS BY GREGORY SNAITH, P.ENG., ENVIROIRRIGATION™ ENGINEERING INC.

Using Water to Ensure Safety

A critical water use balance is essential to maintain a healthy, safe and functional turf sports field. Under irrigating a sports field may result in a playing surface that becomes dry, compacted and less safe for athletes. Sports turf managers require historical water use baselines which provide a datum to measure from while implementing higher water management technologies.

Landscape Water Use Program. It only makes sense, since one is to provide a safe sports environment for the public while the other functions to achieve beautification. Since irrigation is generally considered a high water use sector, golf course superintendents and sports field managers should have strategic influence on the development of water efficiency plans. The double win opportunity would be a partnership between the city and the water purveyor (often the region) to promote water saving incentives including irrigation system performance auditing, training, technology upgrades and water use monitoring. For most cities, if water efficiency programs are not implemented, they will require major infrastructure expansion to accommodate future population growth.

adjusting water efficient irrigation controllers take into account both on-site rainfall and changing weather. Case studies have shown such automatic adjustments can account for seasonal water savings up to 30% or higher. Irrigation is only required to make up for the lack of timely and effective rainfall. For example, an effective rainfall of 10 mm on a 6,000 m² soccer field is worth \$120 if during a dry period the same amount was added by irrigation and the water cost was \$2 per m³.

Record Keeping is Essential

Measurement of the irrigation system's performance whether a golf course, sports field or a commercial site, is the critical step in identifying baseline water use. Personal auditing experience proves that no one can judge with accuracy the efficiency of any system until it is measured professionally.

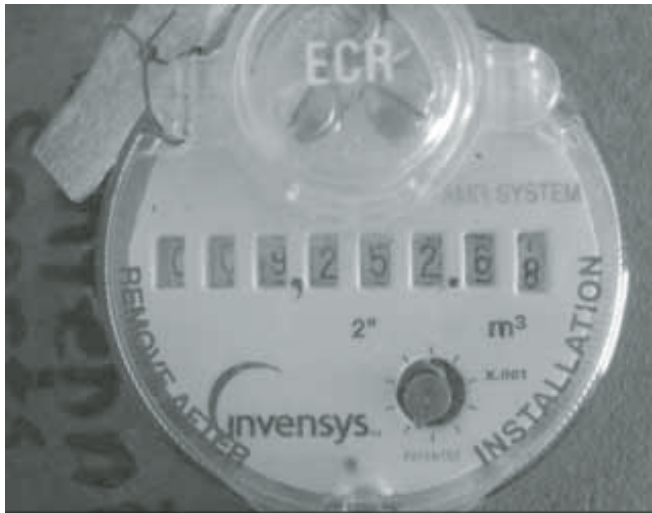
Verify Water Usage With Dedicated Flow Meters

Dedicated water meters are excellent water usage management tools and take the estimation out of volume calculations. The strategic key to implementing any water efficiency plan is to first establish and provide the historical water use baseline. This can be done by monitoring a dedicated water meter on a monthly basis and by providing a performance audit to the existing system.

Historical Water Use Baseline (HWUB)

The HWUB for any irrigation system is affected by:

1. Original irrigation design (ideally done by Certified Irrigation Designer independent from the sale or installation of any product).
2. Original irrigation installation (ideally installed by a Certified Irrigation Contractor with same project experience and inspected by a certified designer).
3. Maintenance of system (routinely checked and repaired).



Justifying Water Usage

Justifying water use for irrigation is based on the area of playing surface multiplied by the depth of water required. To implement water efficiency, it is essential every sports turf manager understands:

- soil water holding capacity
- drainage
- infiltration rates
- compaction
- evapotranspiration rates

A recommended resource on these topics is *Understanding Turf Management* written by Dr. Robert Sheard and published by the Sports Turf Association.

Typical Irrigation Baseline vs. ET Management

The majority of existing irrigation controllers rely on a weekly schedule of irrigation cycles that remain fixed until the sports turf manager adjusts them. Self

Daily Peak Demands

During the summer months, many cities and towns across North America experience daily peak demands which approach the rated capacity of water distribution infrastructure. In critical situations, this limits available water resources for emergency response and fire protection. While outdoor water use bans and restriction programs are created to decrease daily peak demands, these water programs are often in conflict with the required water to ensure athlete safety, functional turf sustainability and Integrated Pest Management program support.

Implementing the Water Efficiency Plan

An effective *Water Efficiency Plan* should separate the *Water Efficiency Program for Sports Fields* from the *Outdoor*

4. Management of system (ideally by implementing monitoring and seasonal changes using Smart Water Application Technologies).

Once a water use baseline has been established it can then be utilized as a datum against the following:

1. Measure baseline against seasonal ET requirements (usually measured in mm per day, week or month).
2. Measure baseline against expected water efficiency technology performance (it is realistic to expect a rotor zone to operate at an overall efficiency of 75%).
3. Measure baseline against goals and/or objectives of a *Water Efficiency Plan* (the goal may be to decrease the water use by a realistic 20-30%).

The Irrigation Association, consultant, manufacturer, contractor and the distributor are all key team members playing their appropriate roles in providing technical and educational support for all irrigation



systems. No matter how simple or complicated an irrigation system is, one thing is for certain, it is very difficult to measure improved water efficiency practices

without first establishing the water use baseline. Remember, you cannot effectively manage that which has not been effectively measured. ♦

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