

## WATER SAVINGS GUIDE

# How the Right Irrigation System Can Help You Reduce Your Total Water Usage by 10% to 60%

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### INTRODUCTION

Over the past several years, A&H Lawn Service, Inc. has worked closely with leading manufacturers, suppliers, and education centers to become Michigan's recognized experts in achieving water savings with efficient landscape irrigation systems.

We are members of the national Irrigation Association (IA), and we currently have the area's only Certified Landscape Irrigation Auditor (CLIA) on staff.

By steadily refining our irrigation system maintenance programs, A & H can now meet the needs individuals or companies desiring to reduce water usage and save money with their irrigation systems.

## The Three Main Components of Your Irrigation System's Water Savings Program

<b>1.</b>	<b>Landscape Irrigation Audit (LIA)</b>	
	The LIA consists of step-by-step procedures that can assist in improving water management by generating irrigation schedules and tracking actual water use. Procedures include methods for evaluating irrigation system performance (how evenly water is dispersed) and precipitation rates (how fast water is being applied). We combine these results with estimates on plant water use, to formulate an efficient irrigation schedule.	
<b>2.</b>	<b>Irrigation Maintenance Programs</b>	
	Maintenance is the largest factor in water savings. The more aggressive your approach, the greater the water savings over time. You should ensure that your contractor knows and applies best management practices for irrigation systems, and is expert in all aspects of irrigation systems including design, hydraulics, precipitation amounts, and pump performances. Just as crucial is the use of quality replacement parts.	
<b>3.</b>	<b>Weather-Based Irrigation Controllers</b>	
	Evapotranspiration (ET) is a new technology for watering landscapes. It uses weather data (historical or real-time) to automatically make time and frequency adjustments to the landscape watering schedule. This is unlike the standard controller, which requires manual adjustments.	

Remember that nearly anyone can install an irrigation system controller, replace a faulty head, or repair a leak. But if the service provider fails to understand your whole irrigation system picture, your results in effectiveness and efficiency will be questionable.

## Landscape Irrigation Audit (LIA)

### Objectives

A large amount of water is used to irrigate landscapes. The objective of a landscape irrigation audit (LIA) is to reduce the quantity of water used in irrigation to the absolute minimum possible without damaging the aesthetic quality or health of the landscape. This is accomplished by a water budgeting method whereby depletion of the available water in the root zone from such natural processes as Evapotranspiration (ET) is balanced by natural rainfall and supplemental irrigation.

### Procedure

The LIA consists of three distinct steps: preliminary site inspection, data collection, and follow-up. Please note that key concepts in irrigation system design, installation, maintenance, and evaluation are indicated in *italicized* print.

### Preliminary Site Inspection

The object here is to observe the irrigation hardware in operation. The intent of the inspection is to ensure that the irrigation hardware is in peak operating condition prior to the data collection phase. Missing, broken, blocked, and improperly sized or adjusted heads are common problems. The presence of thatch is a good indicator of over-watering or excessive fertilization. Any deficiencies noted during the inspection are referred to the site manager for correction prior to the data collection phase. If possible, the auditor schedules a date with the site manager to accomplish the data collection phase. In some instances, system design may be so obviously flawed that only major alteration will produce the *efficiency* required to make an LIA cost-effective.

### Data Collection

The *distribution uniformity* of the system hardware is measured during the data collection phase. Distribution uniformity is a measure of the evenness of application throughout the irrigated area. Uniformity is adversely affected when hardware is not operating at peak efficiency or when the system has been improperly designed. Distribution uniformity is

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measured by placing catch-cans throughout the irrigated area and operating the system for a known period of time. The volumes of water in each catch-can will be entered into a computer program that calculates the *run-time* for each *irrigation zone* necessary to provide the turf or landscape plantings with sufficient water. Run-times are based on *crop coefficients* (measured transpiration rates) for the specific species and local *ET* data (historical or real-time). Run-times are specified on a month-to-month basis. Although not needed to generate an irrigation schedule, the auditor measures *head-to-head distances*, sprinkler *head pressure*, sprinkler *throw* (upwind and downwind), *soil type* and *root-zone depth*, which can be useful in explaining lower than expected system efficiencies when writing the audit report. Data collection may have to be rescheduled in the event of inclement weather (rainy or extremely windy conditions). In the interest of efficiency, two individuals will perform the data collection.

### **Follow-Up**

In order to evaluate the success of the LIA, the auditor must communicate frequently with the site manager. The site manager should be able to provide comparisons of pre- and post-LIA water usage; this is, in fact, is the key element in a successful LIA program. The site manager must be dedicated to maintaining the irrigation hardware in the same condition as on the day of data collection, and must program the *irrigation controllers* at the start of each month if the calculated run-times are to be implemented. Additionally, the site manager should be encouraged to *trim back*. Software-generated run times are not absolute. By reducing the indicated run times in increments of 10% and watching for signs of stress, additional savings can be realized.

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## Irrigation Service Programs

Here is a brief summary of the irrigation service programs offered by A & H Lawn Service, Inc. Please note that these programs are designed to be proactive by nature.

<b>Silver Program</b>		
	<ul style="list-style-type: none"> <li>◆ Spring Start-Up</li> <li>◆ Fall Winterization</li> </ul>	
<b>Gold Program</b>		
	<ul style="list-style-type: none"> <li>◆ Spring Start-Up</li> <li>◆ Fall Winterization</li> <li>◆ Single-Point System Check</li> <li>◆ 10% Materials Discount</li> <li>◆ ___ Hours of Free Labor</li> </ul>	
<b>Platinum Program</b>		
	<ul style="list-style-type: none"> <li>◆ Spring Start-Up</li> <li>◆ Fall Winterization</li> <li>◆ 5-point System Check</li> <li>◆ 15% Materials Discount</li> <li>◆ ___ Hours of Free Labor</li> </ul>	
<b>Titanium Program</b>		
	<ul style="list-style-type: none"> <li>◆ Spring Start-Up</li> <li>◆ Fall Winterization</li> <li>◆ 10-Point System Check</li> <li>◆ 15% Materials Discount</li> <li>◆ ___ Hours of Free Labor</li> </ul>	

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### Descriptions of Program Services

**Spring Start-Up** – includes ensuring that all water supplies are open and providing water, locating all zones and heads on the zones with the use of the control clock, ensuring proper rotation and water distribution by straightening and adjusting heads, and identifying obvious or potential problems. \*

**Fall Winterization** – includes ensuring that all water supplies are closed to the system, applying forced air into the system, locating all zones and heads on the zones with the use of the control clock, ensuring that the water is depleted so not to cause problems after winter freezing, and identifying obvious and potential problems that are impeding with the winterization. \*\*

**System Checks** – includes using the control clock to find all zones, ensuring that all valves are opening and closing properly and that all electrical is working, locating all zones and heads on the zones, ensuring proper rotation and water distribution by straightening and adjusting heads, and identifying obvious or potential problems.

**Materials Discount** – is a percentage grouped with your program that is taken off all material prices used on your system throughout the year.

**Free Labor** – is the number of free labor hours received on your program purchase.

\* *Water supplies discussed are either city or well water. All pump systems require more time to check connections and replace intake line into water supply.*

\*\* *Water supplies discussed are either city or well water. All pump systems require more time to disconnect connections and remove intake line from the water supply.*

## Weather-Based Irrigation Controllers (ET Controllers)

### *Frequently Asked Questions*

<p><i>What is a weather-based irrigation controller (or ET controller)?</i></p>	<p>Weather-based or ET controllers are a new technology for watering landscapes. They utilize weather data (historical or real-time) to make time and frequency adjustments to the landscape watering schedule automatically. This is unlike the standard controller, which requires manual adjustments.</p>
<p><i>What is ET?</i></p>	<p>Evapotranspiration (ET) is the combination of evaporation from the soil and transpiration from the plant and how much water plants need based on this process. The ET controller uses this historical or real-time data when the landscape in a specific zone location needs water.</p>
<p><i>Where does weather data come from?</i></p>	<p>Weather data is received from various sources, depending on the make and model of your controller. Some models use local data collected from a local weather station or on-site sensors. Other models use local information gathered from several weather stations linked together with software that matches Zip codes or addresses. These models can also add a local catch-can to measure precise precipitation amounts. The remaining models use historical data from several years of past weather for their baseline and use on-site sensors to make daily adjustments.</p>
<p><i>What is the benefit of using this technology?</i></p>	<p>These smart controllers know how much water your landscape needs, eliminating the need for guessing. These controllers save time by not needing any manual resets due to weather changes. This can result in less water use, saving you money on water bills and conserving a precious resource.</p>
<p><i>Do I have to make adjustments or reprogram my weather-based controller?</i></p>	<p>Yes, it remains important to monitor your landscape. Fine-tuning is especially needed after initially setting up the controller.</p>

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<i>What if it rains for a few days?</i>	Many controllers have the ability to add a rain sensor to shut off the watering schedule. Most of these weather-based controllers will factor the amount of precipitation into the ET calculations. This rainfall amount will result in a change to the watering schedule.
<i>What if wet or dry spots become evident?</i>	This is most likely is due to problems in the irrigation design, not in the operation of the controller.
<i>What if there is a power failure?</i>	Most weather-based controllers have non-volatile memory, using battery back-ups or other methods.
<i>How much does an ET controller cost?</i>	These controllers typically cost three times as much as the standard controller. Professional installation is usually an extra charge. The exact cost will depend on the make and model of the controller you purchase; some will may require additional monthly fees for communication and/or weather data.
<i>How much money can this new technology save me?</i>	Water savings depends on how much over watering occurred in your landscape in the past. Studies have shown that savings can range from 5% to 50%, based on annual averages. Actual savings vary by customer and also vary month by month.
<i>Are there other benefits to using a weather-based controller?</i>	Yes, you can attain a much healthier landscape. Appropriately watered landscapes are less likely to suffer from fungus, diseases, and insect infestations.
<i>Will weather-based irrigation fix my irrigation problems?</i>	Just replacing a controller will not correct system design or maintenance problems. Poorly performing irrigation systems may lead to increased water use or poor landscape appearance.