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Revised Draft Specification for Weather-Based Irrigation Controllers

Public Meeting

February, 23 2011

Housekeeping

- All participants will be muted until called upon
  - Press *6 to unmute your line. When finished speaking, press *6 to mute your line.
- **Do not place the call on hold**
  - **If you need to take a call, please disconnect from the conference line and call back when you are finished**
- Ask questions between sections or type your name in the ‘question’ box to the right to be called on

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Meeting Agenda

- Introduction to WaterSense®
- Revised Draft Specification Development Process
- Revised Draft Specification for Weather-Based Irrigation Controllers
  - Scope
  - Performance Criteria
  - Supplemental Capability Requirements
  - Packaging and Product Documentation
  - Testing Configuration and Programming
  - Informative Annex for WaterSense Labeling
- Certification and Labeling
- Next Steps

Part 1

Introduction and Specification Development

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What Is WaterSense?

A partnership program sponsored by the U.S. EPA

Promotes the value of water and helps Americans make smart decisions regarding water use and water-using products

Aims to increase the adoption of water-efficient products and services by consumers and organizations

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WaterSense Product Evaluation Factors

WaterSense uses the following factors in determining which products to label

Products must:

- Be about 20 percent more water-efficient than conventional models
- Offer equivalent or superior performance
- Use or control the use of water
- Realize water savings on a national level
- Provide measurable results
- Achieve water efficiency through several technology options
- Be effectively differentiated by the WaterSense label
- Perform its intended function in its intended system
- Be independently certified

Weather-Based Irrigation Controller Specification Development Process

- Published NOI and began working with stakeholders to develop draft specification– April 2007
- Conducted initial research at the University of Florida – 2008-2009
  - Assessed transferability of results among climate regions and repeatability of protocol between different laboratories
- Published first draft specification – November 2009
- Reviewed public comments – February/March 2010

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Weather-Based Irrigation Controller Specification Development Process (Cont.)

University of Florida Research

- Conducted follow-up research at the University of Florida in 2010 to examine potential changes EPA considered making to the draft specification.
- Used the same controllers as the first study, with additional data including various weather scenarios (i.e., high rainfall, low rainfall, high ET, low ET).
- Produced a new report, *Examination of SWAT Protocol Utilizing a Performance Analysis of Weather-Based Irrigation Controllers: Update with Extended Data.*

University of Florida Research: Question 1

- Using the current SWAT protocol rainfall requirement of 0.40 inches, are performance scores transferable from a dry climate to a wet climate ?
  - The report concluded that performance scores using the current SWAT protocol are not transferable from a dry to wet climate and that the specification should address this issue.
  - WaterSense analyzed data from the National Oceanic and Atmospheric Administration and has proposed in the revised draft a requirement for a minimum number of days with rainfall.

University of Florida Research: Question 2

- Does the addition of a rain sensor affect performance scores?
  - The report found that a rain sensor does not significantly affect performance scores, but does decrease the amount of water applied.
  - There was no change to the specification based on this conclusion. Products have to be capable of accepting a rain sensor, but are not required to have one.

University of Florida Research: Question 3

- Should an irrigation event be required in every zone for the test to be valid?
  - The report concluded that an irrigation event should be required in each zone for the test to be valid.
  - This suggestion was not taken into consideration in the revised draft specification because controllers may have to significantly extend the time they are tested for this to occur.

University of Florida Research: Question 4

- Should *each zone* OR the *average of the six zones' performance scores* have to meet the performance thresholds?
  - The report indicated that requiring every zone to pass the thresholds would ensure that a product could perform in a variety of landscapes.
  - The revised draft specification requires that each zone pass the performance thresholds.

University of Florida Research: Question 5

- Does the order of operations impact performance scores and if so, is it unfairly penalizing products for not being able to predict rainfall?
  - The report concluded that the order of operations impacts SWAT scores and should be changed so that controllers are not expected to predict rainfall.
  - WaterSense has incorporated this change into the revised draft specification.

University of Florida Research: Question 6

- What action should be taken if there are missing weather data from the reference weather station (i.e., rain or ET) and how many days of missing data are acceptable?
  - The report concluded that two consecutive days or three total days of missing weather data during a single 30-day test period would not significantly impact final results.
  - WaterSense incorporated this conclusion into the specification and has provided direction on how to handle missing data.

Research on Product Packaging and Labeling

- Held a webinar with manufacturers in August 2010 to examine how the certification and labeling process will work for irrigation controllers.
  - If the same product is sold with various numbers of stations (e.g., 6 station controller, 12 station controller), would it have the same model number?
  - How do manufacturers currently handle packaging for products sold in two or more pieces? Is it clear which products are compatible with others?
  - For add-on or plug-in devices, how do manufacturers identify which standard controllers these products are compatible with?
- Spoke individually with a number of manufacturers, utilities and distributors about packaging

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Weather-Based Irrigation Controller Specification Development Process

- Questions/Discussion?

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Part 2

Revised Draft Specification for Weather-Based Irrigation Controllers

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Scope and Objective

- Specification establishes criteria for weather-based irrigation controllers that utilize current climatological data as a basis for scheduling irrigation.
- Applies to:
  - Standalone controllers
  - Add-on and plug-in devices
  - Both residential and commercial

Scope and Objective

- Specification applies to controllers that create or modify irrigation schedules based on evapotranspiration (ET) principles by:
  - Storing historical crop evapotranspiration (ETc) data characteristics of the site and modifying these data with an onsite sensor;
  - Using onsite sensors as a basis for calculating real time Etc;
  - Using a central weather station as a basis for ETc calculations and transmitting the data to individual users from remote sites; or
  - Using onsite weather or climate sensors.

Performance Criteria

- The controller shall be tested in accordance with the most recent version of the Smart Water Application Technologies™ (SWAT) test protocol for climatologically based controllers, with the additional requirements identified in the specification.
- Irrigation adequacy for each zone shall be greater than or equal to 80 percent.
- Irrigation excess for each zone shall be less than or equal to 5 percent.

Modifications to the SWAT Protocol

- Minimum Runtimes
  - All runtimes (irrigation cycles) that occur during the test period must be greater than three minutes in duration.
  - Water applied during irrigation events totaling three minutes or less shall be excluded from the daily water balance calculation.

Modifications to the SWAT Protocol

- Missing Data From the Reference Weather Station
  - For the test to be valid there shall be no more than two consecutive days, or no more than three days in total, of missing ET data generated by the reference weather station during the test period.
    - If ET data generated by the reference weather station are missing during the test, then the previous day's ET data shall be used instead.
  - There shall be no missing rainfall data during the test period, but data from a backup rain gauge located at the same site as the reference weather station may be substituted for missing rainfall data. If data from a backup rain gauge is available, this is not considered missing data.

Modifications to the SWAT Protocol

- Root Zone Working Water Storage Starting Point
  - The Root Zone Working Water Storage (RZWWS), as defined in the SWAT protocol, must be programmed as full at the beginning of the test.

Modifications to the SWAT Protocol

- Rainfall Requirement
  - In addition to the existing SWAT protocol requirement of a total of at least 0.40 inches of rainfall required during the test period, there shall be at least four days during the test period with 0.10 inches or greater of precipitation for the test to be considered valid.

Modifications to the SWAT Protocol

- Order of Operations
  - The order of operations implemented during the SWAT protocol daily water balance calculation shall be ETc, irrigation, then rainfall, rather than rainfall occurring first, as designated by the SWAT protocol.

Supplemental Capabilities

- WaterSense revised the language to reflect the controllers' capabilities, rather than features, in a effort to make the language less prescriptive.
- WateSense indicated whether the capability will be required in smart mode or standard mode.
- WaterSense deleted some features because they are tested for in the SWAT protocol.

Product Packaging and Documentation Requirements

- The product, as packaged, shall include the same components or attributes that it was tested with to meet the requirements of this specification.
- The product packaging shall include an instruction manual that lists the settings and specific parts used during the performance test.
- The product shall not be packaged or marked to encourage operation of the controller in standard mode. Any instruction related to the maintenance of the product shall direct the user on how to return the controller to smart mode.

Product Packaging and Documentation Requirements

- Plug-in and Add-on Devices
  - The add-on device is not required to be packaged with the base controller(s) that it was tested with to meet the requirements of this specification.
  - However, the product documentation for the add-on device must list each base controller model that the device was tested with to meet the requirements of this specification and with which the manufacturer intends it to be connected.
  - The documentation must also contain a statement to the effect that the device is only WaterSense labeled when used in combination with a base controller on the provided list.

Testing Configuration and Programming

- The controller shall be tested with all weather stations, sensors, or service(s) required to meet this specification.
- The controller shall be programmed according to the list of settings provided by the manufacturer in the product's instruction manual, as described in Section 5.1 of the specification.
- Add-on and Plug-in Devices
  - The device must be tested with each base controller model with which the manufacturer intends it to be connected. As a unit, the device and the base controller must meet all of the requirements contained in this specification.

Informative Annex for WaterSense Labeling

- WaterSense Partnership
  - The manufacturer of a controller must have a signed partnership agreement in place with EPA. Manufacturers of components, such as weather stations or additional sensors, or weather services, are not eligible for partnership on that basis alone.

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Informative Annex for WaterSense Labeling

- WaterSense Labeling
  - Product packaging that includes the certified controller and all components or attributes that the controller was tested with to meet the requirements of this specification may bear the WaterSense label.
  - Only add-on or plug-in devices certified to meet the requirements of this specification may bear the WaterSense label. Base controllers that the devices are tested with and that are sold separately from the add-on/plug-in shall not bear the WaterSense label. Product documentation shall indicate that the device is only WaterSense labeled when used in combination with the base controller(s) listed in product documentation as described in Section 5.0 of the specification.

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- Questions/Discussion?

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Part 3

Certification & Labeling and Next Steps

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Product Certification and Labeling

- WaterSense product certification process is independent of ongoing SWAT testing conducted at the Center for Irrigation Technology (CIT) in Fresno, California.
- WaterSense held a webinar in 2008 to describe the certification system to weather-based controller manufacturers and has taken steps to introduce manufacturers to WaterSense LCBs.
- WaterSense provided training on the performance test protocol to LCBs through the University of Florida in early 2010. An additional training will be held later this year.
- University of Florida created a spreadsheet to run the protocol with modifications as presented in the specification. All LCBs will use this program for controller testing.

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Product Certification and Labeling

- WaterSense developed the *Draft Supplemental Guidance for WaterSense Certification and Labeling of Weather-Based Irrigation Controllers.*
  - Application to a Licensed Certifying Body
  - Initial Production Inspection and Product Testing
  - Product Evaluation
  - Product Certification Listing
  - Authorization to Use the WaterSense Label
  - Ongoing Surveillance
  - Label Suspension or Withdrawal
  - Notifying WaterSense of Certified Products

Product Certification and Labeling

- Manufacturers must sign a partnership agreement with EPA in order to have their products labeled
- All products must be certified by an EPA licensed certifying body (LCB)
  - Approved list of LCBs will be posted on WaterSense Web site with the release of the final specification
- Manufacturers apply to an LCB of choice
- LCB certifies product in accordance with WaterSense specification
- LCB authorizes manufacturer to use WaterSense label
  - Provides manufacturer with graphic artwork of label
- LCB conducts periodic surveillance
  - Factory visits
  - Product retesting
  - Label policing

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Questions?

- Questions/discussion on certification and labeling?
- Other questions, comments, or concerns?

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Next Steps

- Submit written comments to watersense-products@erg.com by March 21.
- EPA will make public the comments received during the comment period.
- EPA will hold a webinar for manufacturers on the certification and labeling process prior to opening the program up for partnership (required).

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Next Steps (continued)

- Manufactures should start working with LCBs as soon as possible.
- Final specification will be issued after evaluation of public comments
- No plan for further research by the WaterSense program
- Anticipated effective date: Fall/Winter 2011

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More Information

EPA WaterSense

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