



WaterSense® Revised Draft Specification for Weather-Based Irrigation Controllers Public Meeting Summary

February 23, 2011 9:00–11:00 a.m. (EST), Webinar

Meeting Participants

George Alexanian, Alex-Tronix
Norman Bartlett, American Society of Irrigation Consultants
Eugene Carlson, CE Technical
Louise Cottreau, AWS Irrigation Management, Inc.
James Covert, Unaffiliated
Beth Davis, James City Service Authority
Nick DiMeo, Hartney Greymont
Raymond Eurto, Northern Designs, LLC
Tom Fairey, DBLive
Shannon Filarecki, Hartland Township
Candy Garrett, Texas Commission on Environmental Quality (TCEQ)
Susannah Harris, Eastern Research Group (ERG), Inc.
Joanna Kind, ERG
Cary McElhinney, U.S. Environmental Protection Agency (EPA) Region 5
William Moriarty, King Engineering Associates, Inc.
Eric Nelson, Green-Way Irrigation
Eddie Oquendo, Recycle Used Cooking Oil From Home, LLC
Hanifah Parker-Morrison, U.S. EPA Headquarters
Jim Reed, TCEQ
Timothy Schaadt, Metropolitan Water District of Southern California
Tom Shannon, Ewing Irrigation Products
Ben Silverman, Rain Bird Corporation
Jordan Smith, The Brickman Group
Zane Stoneman, Mainscape
Stephanie Tanner, U.S. EPA Headquarters
Rodney Tilley, Toho Water Authority
Lauren Wingo, ERG
Ron Wolfarth, Rain Bird Services Corporation

February 23, 2011 1:00–3:00 p.m. (EST), Webinar

Meeting Participants

Randall Barron, City of Santa Rosa
Cathleen Brennan, Coastside County Water District
Peter Carlson, Weathertrak
Jan Caudel, Schmueser Gordon Meyer, Inc.
Cheryl Coltes, Southern Nevada Water Authority (SNWA)
Warren Gorowitz, Ewing Irrigation Products
Jeff Hall, Town of Cary

Randy Hall, Rain Bird Corporation
Dale Hansen, Signature Control Systems, Inc.
Susannah Harris, ERG
Gordon Holmes, National Lawn Sprinklers, Inc.
Joanna Kind, ERG
Jeff Kremicki, Hunter Industries
Kevin LeBlanc, King Engineering Associates, Inc.
Brian Lennon, Irrrometer Company, Inc.
Shawn Martin, International Code Council (ICC)
Marilyn McCrory, Massachusetts Department of Conservation and Recreation
Kate McMordie, Pacific Northwest National Laboratory (PNNL)
John Meyer, Wet 'n' Green
Steven Moore, Irrisoft, Inc.
Thomas Reynolds, EgoSagacity
Philip Robisch, Hunter Industries
Scott Sablan, NDS, Inc.
Sarah Santner, Portland Water Bureau
Diana Schulz, Cyber-Rain, Inc.
Dominic Shows, Alex-Tronix
Julie Shows, Alex-Tronix
Lois Sorensen, Southwest Florida Water Management District (SWFWMD)
Christopher Spain, HydroPoint Data Systems, Inc.
Stephanie Tanner, U.S. EPA Headquarters
David Turnage, Austin Water Utility
Brian Vinchesi, Irrigation Consulting, Inc.
Tom Whitmore, City of Rifle
Lauren Wingo, ERG

Meeting Summary

1. Introduction and Specification Development

Stephanie Tanner (U.S. EPA Headquarters) gave an introduction to WaterSense and the weather-based irrigation controller specification development process.

Joanna Kind (ERG) gave an overview of the University of Florida research.

Presentation slides reviewing these topics are located at
[<http://www.epa.gov/WaterSense/products/controltech.html>]

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Dan Nourian (NDS, Inc.) asked if more information would be distributed on the information WaterSense gathered on the product labeling. Ms. Tanner indicated that information gathered on this process was used to inform the development of the specification and certification guidance. Ms. Kind added that there is information regarding the findings in the Summary of Changes and Supporting Statement documents.

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Lois Sorensen (SWFMD) asked if the University of Florida concurred with all the changes made in the revised draft specification (especially with regard to the study objective of determining testing location transferability). Ms. Tanner explained that the University of Florida provided data and research conclusions that served as a basis for the changes that WaterSense made to the draft specification.

Peter Carlson (Weathertrak) added to the question, asking how likely it would be for a facility to meet the rainfall requirement of four days of 0.1 inches of rainfall. Ms. Tanner explained that WaterSense looked at NOAA data and determined that there were a number of certifying bodies (CBs) that met the requirements for rainfall.

Lois Sorensen (SWFWMD) asked that in addition to labeling, will there be enough information for consumers to know that they are buying an appropriate product for their climate. Ms. Tanner stated that anything that carries the WaterSense label will allow the customer to know that a certain level of performance can be expected anywhere in the country.

Peter Carlson (Weathertrak) asked if the rainfall requirement would limit testing to certain seasons of the year. Ms. Kind clarified that WaterSense looked at NOAA data and discussed the data with NOAA climate scientists, determining that there are many testing locations that would not be inhibited by this requirement. Through discussions with CBs, WaterSense determined that the rainfall requirement would not limit testing to a certain time of year.

Scott Sablan (NDS, Inc.) asked if manufacturers could choose the geographic location of where the testing is performed. Ms. Tanner indicated that manufacturers must submit products to CBs for testing and then the CB will choose the testing location. Potentially, manufacturers may learn the location of testing but the intent is that products are tested at a representative location.

Brian Vinchesi (Irrigation Consulting, Inc.) asked for Ms. Tanner to elaborate on the why WaterSense will not require an irrigation event in every zone. Ms. Tanner stated that ideally, products would have irrigation events in all zones but to prevent a long testing duration, WaterSense determined that this requirement would be infeasible.

Steven Moore (Irrisoft, Inc.) offered feedback to Mr. Vinchesi's comment, stating that he found issues with the SWAT protocol in terms of the size of the root zone working water storage (RZWWS) for several of the zones. Mr. Moore recommended reducing RZWWS limits to be more in line with typical landscapes, which would enable irrigation events to occur in all zones.

Peter Carlson (Weathertrak) asked if each zone is required to have an irrigation event if testing occurs during a very rainy period. Ms. Tanner indicated that each zone is not required to have an irrigation event, but that over the course of testing, it would be expected that each zone would have at least one irrigation event.

2. Revised Draft Specification for Weather-Based Irrigation Controllers

Ms. Tanner explained the changes to the initial draft specification, including the expansion of the scope. Ms. Tanner also included a discussion of product packaging and labeling. Product

packaging and labeling was evaluated early on in the draft specification process to prevent future issues upon the release of a final specification.

Ms. Tanner explained that partnership will be open four to six months before the final specification is issued to allow plenty of time for manufacturers to become involved with the certification process.

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Eugene Carlson (CE Technical) suggested looking to distinguish between weather-based and weather-forecasting controllers. Mr. Carlson stated that the specification does not apply to weather-forecasting controllers. He found that the climatological data terminology is confusing and thought that WaterSense should clarify that it does not apply to weather-forecasting controllers.

George Alexanian (Alex-Tronix) appreciated that WaterSense expanded the scope to include add-on devices that use evapotranspiration (ET) principles. Mr. Alexanian expressed concern that testing add-on devices with every controller on the market is infeasible. Add-on devices should instead, Mr. Alexanian suggested, be tested with a representative controller. Mr. Alexanian stated that add-ons can work with most existing non-smart controllers. He suggested testing add-on devices with one or two representative controllers and then certifying the add-on to work with other similar controllers.

Ron Wolfarth (Rain Bird) congratulated WaterSense on the revised draft specification and for incorporating comments and achieving a good middle ground for stakeholders. Mr. Wolfarth asked about the consideration WaterSense put into specifying that every zone has to meet the adequacy and excess requirement. Mr. Wolfarth found that starting with a full root zone and requiring a 5 percent irrigation excess limit for all zones would be difficult. Mr. Wolfarth believed that it would be feasible to develop technology that would meet these requirements but that the process of developing the technology would be too costly. Mr. Wolfarth wanted to know if WaterSense considered this added cost and the impact it would have on the end consumer.

Ms. Tanner explained that the results of the University of Florida research indicated that controllers were able to pass the revised draft specification requirements in all zones. WaterSense has limited cost data but would be willing to have that conversation with manufacturers to discuss this concern. Ms. Tanner indicated that if manufacturers are willing to submit data on this, WaterSense would review it.

Mr. Wolfarth explained that most weather-based irrigation controllers are more expensive than standard controllers (several hundred dollars compared to as little as \$20). Mr. Wolfarth indicated that a sophisticated controller could pass the test but would be more expensive and in order to encourage a wider adoption of weather-based irrigation controllers, a lower price point would be better.

Ms. Kind asked Mr. Wolfarth to clarify which performance requirement he thought would be too difficult to meet and would drive up technology costs: requiring RZWWS to start at full, requiring irrigation excess of less than 5 percent, or requiring all zones to pass the performance threshold

of 5 percent irrigation excess. Mr. Wolfarth responded that it is the combination of all three of these requirements that would cause it to be difficult for current controller technology to pass. Ms. Kind encouraged manufacturers to submit data on what technological changes would have to be made to meet all three requirements. Ms. Tanner asked for data on what percentage increase in price can be expected to make these changes.

Mr. Wolfarth suggested starting RZWWS programmed at half full, although it would be difficult to define this. Mr. Wolfarth also suggested requiring the average of all zones to meet the irrigation adequacy and excess requirement rather than each zone.

Mr. Nourian (NDS, Inc.) reiterated that the three performance requirements mentioned by Mr. Wolfarth are of concern to manufacturers. Mr. Nourian also suggested taking an average of all zones and requiring RZWS to be programmed at half full, much how it has been done at the Center for Irrigation Technology (CIT) for a while. Mr. Nourian suggested that WaterSense revisit the performance requirements, taking into consideration the potential added cost and complexity for the end user.

Tim Schaadt (MWD) has been running a rebate program on weather-based irrigation controllers and has data on what units would meet or not meet the current requirements. For the controllers that MWD tested, there was a wide range of prices for controllers that met the proposed requirements. Mr. Schaadt indicated that about half of the controllers tested were able to meet the irrigation adequacy and excess requirement on all six zones. MWD is supportive of the requirements as currently written.

Eugene Carlson (CE Technical) had several comments on the revised draft specification. First, Mr. Carlson noted that ET_c was referenced in the specification, rather than ET_o . Second, Mr. Carlson indicated that rain sensors would allow for shorter runtimes than three minutes and work as a fail schedule. Lastly, Mr. Carlson found that it would be very difficult to manufacture controllers to operate at full RZWWS. A predictive factor would be needed. Mr. Carlson suggested that the RZWWS be changed to start at half full.

Mr. Alexanian (Alex-Tronix) reiterated the sentiment of Mr. Nourian and Mr. Wolfarth regarding added costs being prohibitive to the adoption of irrigation controller technology if required to meet the three performance requirements previously discussed. Mr. Alexanian found that the certification costs for add-on controllers will be immense if add-ons are required to be tested with all controllers. Mr. Alexanian asked if a rain sensor has to be packaged with the controller.

Ms. Tanner clarified that if a controller is tested and passes with a rain sensor, it must be packaged with that rain sensor. If the controller passes without a rain sensor, it does not have to be packaged with one. Mr. Alexanian responded to this comment by asking if an add-on is tested with a randomly chosen non-smart controller and rain sensor, would it the add-on have to be packaged with the rain sensor, even though it is not required to be packaged with the controller. Ms. Tanner explained that if the add-on is tested with a rain sensor, it must be packaged with the rain sensor.

Mr. Alexanian provided another comment, stating that it would be difficult, if not impossible, to meet the irrigation excess requirement with a full RZWWS without a rain sensor. Ms. Tanner

responded, stating that data from the University of Florida led WaterSense to determine that the performance requirements in the specification are feasible to meet. Some products may not meet the requirements; however, the purpose of the WaterSense label is to provide differentiation amongst controllers on the market. Ms. Tanner asked manufacturers to submit data on tested products that would not meet the proposed requirements. Manufacturers are welcome to work with the Center for Irrigation Technology (CIT) or WaterSense accredited CBs to demonstrate that the requirements are too difficult to pass.

Mr. Nourian asked if the details of the test data from the University of Florida research were available. Ms. Tanner stated that details are included in the report posted on the WaterSense website.

Mr. Nourian also asked for clarification on the requirement that controllers must default to the smart mode and whether or not users will be able to select the standard mode. Ms. Tanner explained that switching back to standard mode should not be encouraged or obvious and that product instructions must explain how to return to smart mode.

Mr. Nourian asked if WaterSense will provide the program for SWAT protocol testing. Ms. Tanner indicated that an Excel spreadsheet was developed for CBs but that the spreadsheet is not posted on the WaterSense website because it has too many macros. If manufacturers are interested in receiving the spreadsheet, they may contact the WaterSense Helpline.

Mr. Nourian concluded his questions by asking if SWAT will be updating its protocol to reflect the testing modifications in the WaterSense specification and if it is revised, will the WaterSense specification then reference the SWAT protocol. Ms. Tanner indicated that if SWAT were to revise the testing protocol, that the WaterSense specification would reference the updated protocol. Stakeholders that wish to see this done should indicate so to SWAT.

Mr. Carlson asked if the University of Florida study was the only source of data for WaterSense's decisions. Mr. Carlson found that the data set was limited, and while manufacturers would like to produce their own data, they are unable to because it is cost prohibitive. Ms. Tanner clarified that the University of Florida study was initiated because there was a lack of data on the applicability of the SWAT protocol and that it is the only data available at this time. WaterSense does its best to fund research to develop a path forward but is also welcome to additional data from manufacturers or other stakeholder groups.

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Peter Carlson (Weathertrak) asked if the minimum runtime is for the total daily station runtime or each cycle time. Ms. Kind explained that this refers to each cycle time; a runtime less than three minutes would not be counted towards the soil moisture balance in the testing protocol.

Mr. Carlson followed up by asking if the three minute runtime applies to anytime the controller is turned on. Mr. Carlson's controller technology determines cycle time to minimize runoff and typically can have shorter cycle times depending on soil capabilities. Mr. Carlson indicated that shorter cycle times could amount to a total daily runtime that would be appropriate to fill up the reservoir. Ms. Kind responded, stating that as the specification is currently written, each cycle is

required to have a three minute runtime in order to be counted towards the daily water balance calculation. Because the intent of this requirement is to fill up the reservoir, Ms. Kind encouraged Mr. Carlson to submit a comment regarding other methods to achieve this intent.

Mr. Carlson also asked about the supplementary feature requirements in Section 4.0. Mr. Carlson wanted clarification on whether or not Sections 4.2 and 4.3 should only be for standard mode. Furthermore, Mr. Carlson wanted clarification in general on the difference between smart and standard mode.

Ms. Tanner explained that smart mode is when the controller is using ET data and standard mode is when the system is effectively acting as a clock. Ms. Kind expanded on Ms. Tanner's comment and stated that smart mode is when some sort of climatological-based information is used. Standard mode should notify the user that climatological-based information is not being used. Used historical weather data only is not considered smart mode.

Steven Moore (Irrisoft, Inc.) was concerned that add-on devices would have to be tested with every controller to be eligible to receive the WaterSense label. Ms. Tanner explained that the WaterSense philosophy is that every product that bears the label must meet all the requirements of the specification. Because add-on controllers are such a large part of the weather-based irrigation controller market, WaterSense wanted to provide a method for them to receive a label.

Brian Vinchesi (Irrigation Consulting, Inc.) recommended that the scope of the WaterSense specification be limited to systems with 48 stations or less since there aren't many commercial controllers with more than 48 stations, making the requirement in Section 4.5 unnecessary. Ms. Tanner explained that, with regard to Section 4.5, WaterSense did not want to require flow meters for all controllers since it would make it very expensive. However, WaterSense also did not want to limit the scope of the specification because there was no industry consensus on an appropriate station count limit.

Mr. Vinchesi responded by stating that the SWAT protocol was not designed for larger central control-type systems and that there are not many controllers with more than 48 stations that are not central control. Mr. Vinchesi also encouraged WaterSense to consider allowing a longer time for controllers to become "smart" again after manual operation to troubleshoot the test cycle, as specified in Section 4.8. Mr. Vinchesi closed his comments by suggesting that in future specifications, smart controllers should leave some room for rainfall and should not fill up the root zone fully every time the controller is in operation.

Tom Reynolds (EgoSagacity) wanted to know if soil-moisture sensors are currently being used with weather-based irrigation controllers as an add-on device. Ms. Tanner indicated that the SWAT soil-moisture sensor testing protocol is currently in development and is not part of this specification. Mr. Reynolds was of the opinion that soil-moisture sensors should be allowed to provide data to weather-based irrigation controllers if rain sensors are able to provide data. Ms. Tanner explained that soil-moisture sensors are not able to provide real-time weather data; and therefore, are not included under the scope of the specification. If the soil-moisture sensor is being used to interface with a weather-based controller, similar to rain sensors, that is

acceptable. Soil-moisture sensors will not have a specification as an individual technology until the SWAT protocol has been developed.

Julie Shows (Alex-Tronix) wanted to follow up to the previous discussion of add-on device. Ms. Shows was concerned that high certification and testing costs may discourage smaller manufacturers from innovation within the field.

Kate McMordie (PNNL) asked if the percent adjust feature required in Section 4.7 was intended to allow for deficit irrigation (starting below 100 percent ET). Ms. McMordie asked if this was a user feature that would be present on controllers. Ms. Tanner explained that this feature is currently only required in smart mode, i.e., users are not able to dial down manually in standard mode. Ms. Kind suggested that Ms. McMordie submit a written comment suggesting that the percent adjust feature be present in standard mode as well. Lois Sorensen (SWFMD) seconded Ms. McMordie's comments.

Peter Carlson (Weathertrak) stated that Section 4.1 does not specify how long the content of the irrigation program settings, date, and time must be kept. Mr. Carlson also asked for the intent of Section 4.8. Ms. Tanner explained that Section 4.8 was intended to give the irrigation professional the ability to test the system if necessary, while ensuring that the system would revert automatically back to smart mode after testing was completed.

George Alexanian (Alex-Tronix) asked if the requirements of Sections 4.6.2 and 4.6.3 were developed to accommodate municipal watering restrictions. Ms. Tanner responded affirmatively.

3. Certification & Labeling

Ms. Kind explained the product certification and labeling process for weather-based irrigation controllers in more detail.

Ms. Tanner urged manufacturers and other relevant parties to read the Supplemental Guidance for WaterSense Certification and Labeling of Weather-Based Irrigation Controllers, located at <http://www.epa.gov/WaterSense/partners/controltech.html>, because certification and labeling is complex and the irrigation industry is relatively new to the process.

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Ron Wolfarth (Rain Bird Services Corporation) asked if a significant number of organizations have expressed interest in becoming CBs. Ms. Tanner explained that there are currently four CBs that have shown interest.

Eugene Carlson (CE Technical) asked for the rationale behind annual re-certification.

Ms. Tanner clarified that periodic surveillance of the marketplace is a requirement of certification to ensure that all products meet and continue to meet the specification criteria. WaterSense re-certification begins after five years. WaterSense wants to guarantee that consumers can feel confident that the product they are purchasing meets the performance requirements, regardless of when it was purchased relative to when the product was certified.

Mr. Wolfarth asked if there were any updated cost estimates for testing and certification. Ms. Tanner responded that there are currently no updated cost estimates, as it is very difficult to get the cost of testing. Ms. Tanner reiterated that the certification industry is a market-based industry, meaning that CBs compete with each other on price and service.

Mr. Wolfarth was also interested in getting information about testing locations. Ms. Tanner explained that CBs work with testing organizations that have locations across the country. Originally, there were no requirements in the SWAT protocol for testing location. WaterSense developed requirements for a minimum number of days with a certain amount precipitation to occur. There are a number regions across the country that meet these requirements and a number of CBs that work in these testing locations.

Mr. Carlson asked if some testing locations may be preferable to others based on climatological conditions. Ms. Tanner indicated that products should operate wherever they are tested and that CBs should get a good sense of system performance.

George Alexanian (Alex-Tronix) stated that soil moisture sensors are a type of add-on and asked if soil moisture sensors need to be tested with existing controllers or rain sensors. Ms. Tanner explained that WaterSense does not label retrofit devices unless they convey all the requirements of the specification that applies. Ms. Tanner could not speculate on the SWAT testing protocol for soil moisture sensors, which is currently in development.

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Warren Gorowitz (Ewing Irrigation Products) asked if retailers and distributors can apply for partnership at that time as well. Ms. Tanner responded affirmatively.

4. Next Steps

Meeting participants and other interested stakeholders are encouraged to submit comments to watersense-products@erg.com by March 21. Written comments should be submitted using the template for comment submission form available on the WaterSense website at <http://www.epa.gov/WaterSense/partners/controltech.html>.

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As a closing comment, Tom Fairey (DBLive) illustrated how difficult it would be to test add-on devices with all existing controllers by estimating the number of controllers currently installed nationally.

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Brian Vinchesi (Irrigation Consulting, Inc.) asked for clarification on the definitions section, specifically if the reference for the SWAT testing protocol would change if the testing protocol were to be updated. Ms. Tanner indicated that the reference would change if the SWAT protocol were updated.