

# The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit  
By WGR Southwest, Inc.

## RAIN GAUGES EQUIPMENT REVIEW

The last couple months of 2014 proved to be wet ones, providing California with much-needed rain and hopefully some relief from the looming drought conditions. How much rain have we gotten? How much has your construction site received? As you know, the Construction General Permit requires projects to measure and record rain gauge readings. Some construction sites have avoided this by relying on a nearby governmental rain gauge or Weather Underground weather stations that are available online. Rain events are not homogeneous, we have had sites nearby one another that have received very different rain amounts on the same day for the same storm. There is so much riding on the 0.5-inch qualifying storm event that you want to know whether or not it was achieved at your project site.

In light of this, we at The Monthly Dirt set about trying to find a good (and affordable) rain gauge to help you in recording your daily rainfall numbers. There are so many to choose from, which is the best and most reliable? For this article, we purchased five different rain gauges from different price brackets, and performed a series of tests on them to see how they compared with each other. Our first test was an “uncontrolled” drip test, where we carefully poured exact measurements of water into each device in a slow, steady stream. We then performed a more controlled drip test, where we dripped an exact amount of water into each device over a period of twenty minutes. Each test was repeated five times. Finally, we took all of the rain gauges outside, and tested them in a simulated rain shower that we rigged up using a garden sprinkler and a flow meter. Bear in mind that we were checking for device precision, not accuracy – there is an important difference. Precision is the device’s consistency with itself, while accuracy is the device’s consistency with the actual rainfall amount. Because the collection part of each gauge we tested had a different surface area and some were very irregular in shape, it was too difficult to develop a good quick test for accuracy – so for this article we tested for precision only.

Now, the results. After running our battery of tests, we were surprised to discover that the cheapest device outperformed most of the more expensive rain gauges! Not only that, the biggest, fanciest rain gauge never actually worked. *(Continued on next page)*

### Rain Gauge Review

					
Model	Oregon Scientific RGR126 Rain Gauge	La Crosse WS-9004U Wireless Rain Center	Chaney Instrument 5-Inch Capacity Rain Gauge	Acu-Rite 01057 Weather Environment System	Acu-Rite 00896A1 Basic Rain Gauge
Price	\$59.95	\$25.42	\$8.84	\$159.98	\$34.90
Recommended	Recommended	Recommended	Recommended	Not Recommended	Not Recommended
Setup	★★★★★	★★★★★	★★★★★	★★★	★★★★★
User Interface	★★★★★	★★★	★★★★★	★★★	★★★
Ease of Use	★★★★★	★★★★★	★★★	★	★★★
Features	★★★	★★	★	★★★★★	★
Precision	★★★★★	★★★★★	★★★★★	N/A	★
<b>Total</b>	★★★★	★★★ 1/2	★★★ 1/2	★★	★★

Continued from page 1 To see the numeric results for each of these devices, check out the sidebar below. One thing that we found very interesting (and disappointing) was that we consistently encountered problems with the Acu-Rite brand of rain gauges. We couldn't get the 5-in-1 Weather System to read any rain, and the Acu-Rite basic rain gauge had some serious consistency problems. We designed a comparison chart (on page 1) to highlight the strengths and weaknesses of each of these rain gauges. Also, be sure to watch the video we made (see link on the right) for a more in-depth review of each of these devices. 🌧️

## Digital Rain Gauge Test Results

For our comparison, we ran a number of different tests on each of the digital rain gauges (well, the ones that worked) to determine the consistency of the readings. Since we were looking for consistency in the device's measuring capabilities, we ran each test five times (reflected on the vertical axis) Because each device has a different size rain collector, the results will not match from rain gauge to rain gauge. Look for consistency in the numbers for each device.

### Oregon Scientific Rain Gauge

#### Uncontrolled Drip Test

	2.3 oz	8.0 oz	16.0 oz
Test #1	0.31	0.98	1.97
Test #2	0.28	0.98	1.97
Test #3	0.31	0.94	1.85
Test #4	0.28	0.98	1.85
Test #5	0.31	1.02	1.85

Standard Deviation (in inches): 0.03

#### Controlled Drip Test

	8.0 oz
Test #1	0.98
Test #2	0.98
Test #3	0.94
Test #4	0.98
Test #5	1.02

Stan. Dev: 0.03

### La Crosse Rain Gauge

#### Uncontrolled Drip Test

	2.3 oz	8.0 oz	16.0 oz
Test #1	0.49	1.65	3.19
Test #2	0.49	1.65	3.34
Test #3	0.51	1.57	3.36
Test #4	0.47	1.61	3.27
Test #5	0.51	1.61	3.36

Standard Deviation (in inches): 0.03

#### Controlled Drip Test

	8.0 oz
Test #1	2.06
Test #2	2.08
Test #3	2.08
Test #4	2.08
Test #5	2.10

Stan. Dev: 0.01

### Acu-Rite Basic Rain Gauge

#### Uncontrolled Drip Test

	2.3 oz	8.0 oz	16.0 oz
Test #1	0.36	0.90	3.13
Test #2	0.34	1.63	1.63
Test #3	0.46	1.27	3.88
Test #4	0.28	0.46	2.74
Test #5	0.25	1.23	2.67

Standard Deviation (in inches): 0.38

#### Controlled Drip Test

	8.0 oz
Test #1	2.32
Test #2	2.55
Test #3	2.55
Test #4	2.58
Test #5	2.77

Stan. Dev: 0.16

The Acu-Rite 5-in-1 Weather Environment system did not register any rain, so it is not listed here. We also did not perform these tests on the Chaney Instrument 5-inch capacity rain gauge since they are not needed on a manual instrument.

## Upcoming Training

Got SWPPP? Classes coming to Lodi:

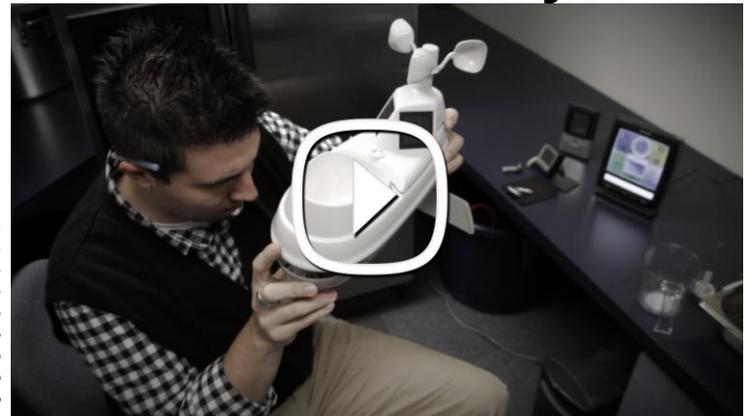
- ✓ QSP/QSD Training, **January 27 - 29, 2015**
- ✓ Need PDUs? We have free PDU workshops online at:

[www.youtube.com/user/pduweek/videos](http://www.youtube.com/user/pduweek/videos)

For more information about these classes, go to [www.gotswppp.com](http://www.gotswppp.com).

*Need storm water training at your office or project location? Invite one of WGR's experienced QSPs to come and provide training for your crew.*

## Watch Us Test the Rain Gauges



<https://www.youtube.com/watch?v=Zdhl8-H-LS0>

## Rain Gauge Requirements In the Construction General Permit

**Order Section XVI:** Annual report must include rain gauge measurements for inspections and sampling.

**Attachment A:** LUP Type 2 & 3 must install a rain gauge on-site and take readings during all storm events.

**Attachments C, D, & E:** Risk Level 1, 2, and 3 dischargers are required to take rain gauge readings of all qualifying rain events and during site inspections.

**Please contact us if you have any questions ...**

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**Technical Questions about Environmental Compliance?**

Call ...

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**COME SEE OUR SHOWROOM!**

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## PRODUCT SPOTLIGHT

The Hornet's Nest Drain Inlet Filter is a unique, under-grate storm drain filter, perfect for locations looking for basic drain protection with a clean appearance. The oversized base allows the filter to be used with many different sizes and shapes of drain inlets.

Simply insert the filter, replace the grate, and trim the excess material for a custom fit and clean appearance. The yellow webbing secures the filter to the grate and doubles as lifting straps allowing for quick and easy removal of the filter and grate. The sediment collection cone has four overflow portals to ease congestion during heavy storm events.

### Product Specifications:

- Material: 8-ounce non-woven geotextile
- Strapping: Weather resistant 2" polypropylene webbing
- Flow Rate: 90 GPM/foot
- Dimensions: 48" x 36"

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## Elima-Drip Pads

Eliminate drips underneath your vehicles and equipment with Elima-Drip drip containment pads. Elima-Drip pads are weighted absorbent pouches contained in heavy-duty vinyl sleeves, which protect the spill pads from accidental movement. The 50"x20" pad is capable of containing up to 50 ounces of oil, and the 30"x20" pad can contain up to 29 ounces. Best of all, these pads are reusable! Simply replace the pouch inside the vinyl sleeve.

### Product Specifications:

**Outside Material:** Heavy-duty vinyl sleeve

**Spill Containment Media:** Absorbent pads

**Dimensions:** 50"x20" or 30"x20"

\$48.00  
(30"x20")

\$58.00  
(50"x20")



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# Living Wall

DEMONSTRATION GARDEN



The Living Wall demonstration garden is collaborative project from Filtrexx® International, Zanker Recycling, and WGR Southwest, Inc., to provide landscape architects and developers with a real-life demonstration of Living Wall technology.

**Come Check it out!**  
**11780 N Hwy 99, Lodi, CA 95240**  
Monday-Friday, 8AM - 5PM



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