

Friday, February 11, 2011

**California Code of Regulations**  
**Title 23. Waters**  
**Division 2. Department of Water Resources**  
**Chapter 5.1. Water Conservation Act of 2009**  
**Article 2. Agricultural Water Measurement**

**§597. Agricultural Water Measurement**

Under the authority included under California Water Code §10608.48(i)(1), the Department of Water Resources shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirements in paragraph (1) of subdivision (b) of §10608.48.

For reference, §10608.48(b) of the California Water Code requires that:

*Agricultural water suppliers shall implement all of the following critical efficient management practices:*

- (1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).*
- (2) Adopt a pricing structure water customers based at least in part on quantity delivered*

*Note: These two subparts of §10608.48(b) specify reporting and adopting a volumetric water pricing structure as the purposes of water measurement. However, this regulation does not address these purposes, and only deals with developing a range of options for water measurement. Other critical efficient water management practices are also outside the scope of this regulation.*

Note: Authority cited: §10608.48 (b), §531.10 Water Code. Reference:

**§597.1. Applicability**

- a) Agricultural water suppliers that serve less than 10,000 irrigated acres are not subject to the §10608.48(b) water measurement requirements.
- b) Agricultural water suppliers serving 10,000 or more irrigated acres but less than 25,000 irrigated acres are not required to implement the §10608.48(b) water measurement requirements unless sufficient funding is provided specifically for that purpose, as stated under §10853.
- c) Agricultural water suppliers serving 25,000 irrigated acres or more shall be required to implement the SBx7-7 water measurement requirements.
- d) A wholesale agricultural water supplier that distributes or sells water to another water supplier (the receiving water supplier) for ultimate resale to customers is subject to the measurement regulations at the location at which control of the water is transferred to the

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receiving water supplier. It is not required to measure deliveries that the receiving water supplier makes to its customers. Canal authorities or other entities that convey or deliver water through facilities owned by a federal agency are not subject to these water measurement requirements.

- e) For an agricultural water supplier that pumps groundwater for delivery to its customers, those deliveries are subject to the measurement requirement at the point of delivery to the customer.
- f) §10608.8 (d) also excludes from the measurement requirement any agricultural water supplier “that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect.”
- g) §10608.12(a) excludes the Department of Water Resources.
- h) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, shall be deemed in compliance with the measurement requirement, if all irrigation water delivered by that supplier is delivered through devices that comply with the measurement accuracy standards outlined in the Conservation and Efficiency Criteria Standards written for Public Law 102-575, §3405 (e).

Note: Authority cited: §10828. Water Code.

#### **§597.2. Definitions**

- (a) The terms used in this article are defined in this subdivision.
  - 1) “Accuracy” is defined as the range of measured delivered volume, velocity or flow rate relative to the actual delivered volume, velocity, or flow rate, expressed as a percent. The percent shall be calculated as  $100 \times (\text{measured value} - \text{actual value}) / \text{actual value}$ , where “measured value” is the rate indicated by the device and “actual value” is the rate as determined through laboratory, design or field testing protocols that use best professional practices.
  - 2) “Agricultural water supplier,” as defined in §10608.12(a), means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. “Agricultural water supplier” includes a supplier or contractor for water, regardless of the basis of right that distributes or sells water for ultimate resale to customers. “Agricultural water supplier” does not include the Department of Water Resources.
  - 3) “Best professional practices,” as defined in §531(d), means practices attaining and maintaining accuracy of measurement and reporting devices and methods.

- 4) "Community conveyance system" is a distribution system not owned, maintained or otherwise controlled by the agricultural water supplier subject to these regulations.
- 5) "Customer" means the location of the last point of control by the agricultural water supplier into any subsequent conveyance system to accept water delivered by the supplier. Examples include a farm-gate, community conveyance system, and a retail water supplier.
- 6) "Delivery point" is the location at which the agricultural water supplier transfers control of irrigation water to a customer or group of customers. Delivery points can include farm-gates, turnouts to a community conveyance system, or turnouts to another water supplier.
- 7) "Farm-gate", as defined in §531(f), means the point at which water is delivered from the agricultural water supplier's distribution system to each of its customers.
- 8) "In-house built device" means a measurement device that is manufactured by a water supplier or by others to specifications provided by a water supplier.
- 9) "Lateral" is a branch of an agricultural water supplier's distribution system that supplies multiple customers.
- 10) "Manufactured Devices" means devices that are manufactured/marketed under exclusive legal rights of the manufacturer and certified to meet industry standards.
- 11) "Measurement device" means a device or a structure by which the agricultural water supplier measures the water flow rate.
- 12) "On-site built device" means a measurement device that is built in-situ on a water conveyance system.
- 13) "Recycled water" is defined in subdivision (n) of §13050 as water, which as a result of treatment of waste is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.
- 14) "Standard" is the numeric criterion that establishes measurement, accuracy.

Note: Authority cited: §10608.48, Water Code. Reference: §10608.

**§597.3 Agricultural Water Measurement Range of Options.**

An agricultural water supplier subject to these regulations may choose any single or combination of options listed in paragraphs (a) and (b) of this section as necessary to best accommodate individual supplier circumstances. Best professional practices shall be used to design, operate, maintain and replace measurement devices.

a) **Options Applicable to Measurement at the Customer Delivery Point :**

**Comment [GD1]:** This phrase begs definition. Maybe "third party vendor" would be better? Or, re-phrase as edited.

**Deleted:** by an entity other than a licensed manufacturing business.

**Deleted:** portion

**Deleted:** directly feeds

**Comment [GD2]:** Maybe too late now, but "off the shelf" might be clearer

**Comment [GD3]:** This is likely to be overly narrow. For example, orifice gates are manufactured by Waterman, Fresno Valves and Casting and perhaps others, and I am not sure whether any of them hold "exclusive legal rights" for anything.

**Comment [GD4]:** Don't most manufacturers do their own in-house testing? If so, does that comply with "certified to meet industry standards"?

**Deleted:** delivered to determine a numerical value.

**Deleted:** the accepted

**Deleted:** levels

**Comment [GD5]:** The rationale appears to be that devices are either existing in which case 3 applies OR they are newly installed or replaced devices in which case either 1 or 2 apply. And that there would be different (presumably lower) standards for existing devices as compared to new devices. And if existing devices don't achieve standards, then they need to be fixed.

Inasmuch as the beginning point for all suppliers is their existing measurement devices, and that all of those devices are either manufactured or on-site/in-house devices, is 3 really needed? And, once installed, does a device change status from manufactured/on-site/in-house to existing and then a different standard applies? I feel that 3 should be deleted provided that XX and YY are appropriately established.

**Deleted:** Location of Transfer to

**Deleted:** of an Individual Customer

1) *Measurement Using Manufactured Devices:*

Agricultural water suppliers shall measure water delivered to each customer delivery point using manufactured devices that are certified to at least be accurate within ±XX% by volume, velocity, or flow rate in the laboratory (before field installation). The certified accuracy must be achieved over the range of flow rates or velocities under which the device normally will be measuring. The accuracy shall be determined through testing by a certified laboratory or professional testing organization (see §597.5).

**Comment [GD6]:** This should be added to the words defined.

**Deleted:** apply to

**Deleted:** y conditions

**Deleted:** operating in most circumstances after field installation.

Or,

2) *Measurement Using On-site or In-house Built Devices:*

Agricultural water suppliers shall measure water delivered to each customer delivery point using measurement devices that are certified to at least be accurate within ±YY% by volume, velocity, or flow rate. The accuracy must apply to the range of flow rate or velocity conditions under which the device will be operating in most circumstances after field installation. Certification shall be determined through in-field testing of an individual device or statistically representative sample of devices and performed by an entity or individual as specified under §597.5.

**Comment [GD7]:** If you have not already, I suggest that DWR consult manufacturers on this. Does a measurement device certification process/authority already exist or not? If not, how is this brought into existence? What constitutes a professional testing organization?

**Comment [GD8]:** Suggest parallel edits to above para, as applicable.

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Or,

3) *Measurement Using Existing Devices:*

For devices installed prior to November 9, 2009, agricultural water suppliers shall measure water delivered to each customer using devices that are certified to at least be accurate within ±ZZ% by volume, velocity, or flow rate. The accuracy must apply to the range of flow rate or velocity conditions under which the device will be operating in most circumstances after field installation. Certification shall be determined through in-field testing of an individual device or statistically representative sample of devices and performed by an entity or individual as specified under §597.5. After replacement of an existing measurement device, the new or replacement device must meet the requirements of section 597.3(a) (1) or (2).

**Comment [GD9]:** Needs clarification. "In-field testing" should not necessarily denote only flow measurement. For example, for a standard weir configuration (vee notch, rectangular, broad-crested, etc., etc.) certification consists primarily of an as-built survey to determine critical dimensions and elevations. Once these values are known and used to develop a rating table, then the accuracy normally associated with the weir is assumed to have been achieved. There are references, such as the reference distributed by Stuart Styles (Bos, year?)

**Deleted:**

**b) Options Applicable to Measurement Upstream of the Location of Transfer to the Delivery Points of Multiple Individual Customers**

1) *Measurement Using Manufactured Devices:*

Agricultural water suppliers shall measure water delivered to each designated upstream location using manufactured devices that are certified to at least be accurate within ±AA% by volume, velocity, or flow rate in the laboratory (before field installation). The accuracy must apply to the range of flow rate or velocity conditions under which the device will be operating in most circumstances after field installation. The accuracy shall be determined through testing by a certified laboratory or professional testing organization (see §597.5).

**Comment [GD10]:** I strongly support this exemption because there will be cases where this is a better option. However, I don't understand the logic of having different numeric standards for the same kinds of devices just because they are in a different location within the distribution system. Meters are meters, weirs are weir, etc., regardless of whether they are located at a delivery point or at a lateral heading. Therefore, I suggest having one set of measurement standards applicable to 1) manufactured devices and 2) on-site/in-house devices and then a section dealing with measurement location stating that the location of measurement shall be the delivery point or elsewhere according to the exemption provisions.

Or,

2) *Measurement Using On-Site or In-house Built Devices:*

Agricultural water suppliers shall measure water delivered to each designated upstream location using measurement devices that can be certified to at least be accurate within  $\pm BB\%$  by volume, velocity, or flow rate. The accuracy must apply to the range of flow rate or velocity conditions under which the device will be operating in most circumstances after field installation. Certification shall be determined through in-field testing of an individual device or statistically representative sample of devices and performed by an entity or individual as specified under §597.5..

Or,

3) *Measurement Using Existing Devices:*

For devices installed prior to November 9, 2009, agricultural water suppliers shall measure water delivered to each designated upstream location using devices certified to at least be accurate within  $\pm CC\%$  by volume, velocity or flow rate. The accuracy must apply to the range of flow rate or velocity conditions under which the device will be operating in most circumstances after field installation. Certification shall be determined through in-field testing of an individual device or statistically representative sample of devices and performed by an entity or individual as specified under §597.5. After replacement of an existing measurement device, the new or replacement device must meet the requirements of §597.3 (b) (1) or (2).

c) A water supplier that uses one of the options under paragraph (b) of this section shall provide evidence in submitted Agricultural Water Management Plans pursuant to §10826 of the Water Code all of the following:

A) That measurement under section 597.3(a) is not legally accessible or technically feasible and cannot meet the required level of accuracy as specified in that section;

and,

B) The methodology the supplier will use to apportion the quantities of water delivered to individual customers must:

- (i) Account for differences in water use among individual customers, using information that may include, but is not limited to, irrigated acreage, soil, crop, and irrigation system
- (ii) Be formally approved by the supplier's governing body (e.g., Board of Directors)
- (iii) Be adequate for establishing a volumetric water pricing structure by the agricultural water supplier as determined by the suppliers governing body.

**Comment [GD11]:** Technical feasibility is too narrow. Supplier systems could be totally re-constructed to make delivery point measurement technically feasible but the cost would be ridiculously high. There needs to be some consideration of cost added.

Note: Authority cited: §10608.48, Water Code. Reference: §10608, Water Code.

**§597.4 Installation, Operation and Maintenance of Agricultural Water Measurement devices**

- a) All measurement devices, shall be correctly installed, maintained, operated, inspected, and monitored. Devices shall be appropriate for the site and installed and maintained in a manner consistent with the manufacturer’s recommendations and utilizing best professional practices.

If, as part of an agricultural water supplier’s maintenance and operations protocols, an installed device is determined by the agricultural supplier to not meet the requirements in §597.3(a) or §597.3(b), then the agricultural water supplier shall take appropriate corrective action to achieve the requirements.

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Comment [GD12]: Overly prescriptive. Suppliers should be allowed to choose the best solution, which will include all of the actions listed, but could involve other actions as well.

Deleted: either; ¶  
 A) service the device, ¶  
 B) recalibrate the device, ¶  
 C) re-engineer and/or re-install the device, or  
 D) replace the device.

- b) Records to document compliance with the regulations in §597.3 shall be maintained by the agricultural water supplier for at least 10 years. The records shall include at a minimum: evidence of certification for an individual device or type of device as necessary to indicate compliance with §597.3, and additional device-specific data where warranted including date of inspection, maintenance, repairs, calibrations, and adjustments to measurement device.

Note: Authority cited: §10608.48, Water Code. Reference:

**§597.5 Qualifications for Laboratories or Individuals Certifying Accuracy Ratings**

Certification of an individual device or type of device as required in §597.3 shall be documented by any of the following:

- a) ~~Manufactured Devices – testing will be performed by an entity, institution, or individual that has obtained certification from appropriate national organizations or accrediting institutions such as National Institute for Standards and Testing (NIST). The results of laboratory testing shall be provided to the agricultural supplier in (1) manufacture’s literature referencing the laboratory testing, or (2) laboratory reports documenting the testing results for the specific device or installation.~~

Deleted: Measurement Using

Comment [GD13]: This sounds ominous and possibly well beyond where industry is now. Again, I would vet this provision with device manufacturers.

- b) ~~In-house built devices – the design and installation requirements of an individual device constructed in-house (e.g. not in the field) shall be approved by a registered Professional Engineer.~~

Comment [GD14]: Use defined terminology

Deleted: Device manufactured in-house

- c) ~~On-site built devices – a registered Professional Engineer shall approve either (1) the design and installation of an individual device at a specified location, or (2) a standardized design and installation for a group of measurement devices constructed at various locations.~~

Comment [GD15]: What difference does it make when the certification is performed? Also, in some (maybe all) cases the device needs to exist before it can be certified.

Deleted: prior to construction or fabrication.

Comment [GD16]: Use defined terminology

Deleted: Device constructed on-site

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- d) Existing device or type of device – field testing of a statistically representative sample of existing device types or of an individual device shall be performed by individuals trained in the use of field testing equipment. The results of field tests will be reviewed and approved by a Professional Engineer.

**Comment [GD17]:** As noted above, a standard for existing devices should be eliminated since all devices, once installed, are existing devices of one type or the other. The concept of statistically representative sampling should be embedded in b and c, above. (Probably applies to a also, but leave that to the suppliers/testers.)

DRAFT