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RECEIVED
January 13, 2014
Commission on
State Mandates

January 13, 2014

Heather Halsey
Executive Director
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814

Re: Substitution of Parties – Water Conservation Act of 2009 Test Claim No. 10-TC-12 and Agricultural Water Measurement Test Claim No. 12-TC-01

Dear Ms. Halsey:

Pursuant to the "Notice of Pending Dismissal of Test Claim and Notice of Opportunity for a Local Agency, Subject to the Tax and Spend Limitation of Article XIII A and B of the California Constitution and Subject to the Requirements of the Alleged Mandate to Take Over the Test Claim by a Substitution of Parties" (Notice), which was issued in the above-referenced matters on November 12, 2013, Glenn-Colusa Irrigation District (GCID) respectfully requests that it be substituted in as a party to Water Conservation Act of 2009 Test Claim No. 10-TC-12 and Agricultural Water Measurement Test Claim No. 12-TC-01 (collectively referred to herein as "Claims").

The Claims challenge the mandates imposed by the Water Conservation Act of 2009, S.B. x7-7, (amend and repeal section 10631.5 of, to add part 2.55 [commencing with section 10608] to division 6 of, and to repeal and add part 2.8 [commencing with section 10800] of division 6 of the Water Code) and the Agricultural Water Measurement Regulations, California Code of Regulations, title 23 (Water), division 2 (Department of Water Resources), chapter 5.1 (Water Conservation Act of 2009), article 2 (Agricultural Water Measurement), commencing with section 597(Agricultural Water Measurement Regulations).

The Notice provided that a local agency, subject to the tax and spend limitations of California Constitution Articles XIII A and B and subject to the alleged mandate in the Claims, may submit a request to take over the Claims. The Notice further provided that the last day to take over the Claims was January 12, 2013. Pursuant to section 1183.01(a)(1) of title 2 of the California Code of Regulations, because the last day to take over the Claims fell on a Sunday, the substitution period ends on Monday, January 13, 2014. GCID's request for substitution is being submitted electronically using the Commission Dropbox on Monday, January 13, 2014. This request for substitution is therefore timely.

GCID is local public agency formed and operating under division 11 of the Water Code (Wat. Code, §§ 20500-26677). GCID (1) is subject to the tax and spend limitations of

Articles XIII A and B of the California Constitution, (2) is an "agricultural water supplier" subject to the mandates imposed by the Water Conservation Act of 2009, SBx7-7 and the Agricultural Water Measurement Regulations (Cal. Code Regs., tit. 2, § 597 et seq.), and (3) has incurred costs in excess of $1,000 to comply with the mandates imposed by the Water Conservation Act of 2009 and the Agricultural Water Measurement Regulations. In support of its request for substitution, GCID submits herewith the Declaration of GCID's General Manager, Thaddeus L. Bettner and the accompanying exhibits.

GCID designates the following person(s) to act as its representatives in this test claim:

Andrew M. Hitchings
Alexis K. Stevens
Somach Simmons & Dunn
500 Capitol Mall, Suite 1000
Sacramento, CA 95814
(916) 446-7979 phone
(916) 446-8199 fax
ahitchings@somachlaw.com
astevens@somachlaw.com

All correspondence and communications regarding this claim should be forwarded to the representatives listed above, as well as to GCID's General Manager, Thaddeus Bettner. Mr. Bettner's contact information is included below.

Thaddeus L. Bettner
Glenn-Colusa Irrigation District
P.O. Box 150
Willows, CA 95988
tbettner@gcid.net

Please feel free to contact our office if you have any questions or require any additional information.

Very truly yours,
Somach Simmons & Dunn

By: _____
ALEXIS K. STEVENS

cc: Thaddeus L. Bettner
Glenn-Colusa Irrigation District

DECLARATION OF THADDEUS L. BETTNER
ON BEHALF OF
GLENN-COLUSA IRRIGATION DISTRICT
IN SUPPORT OF SUBSTITUTION INTO
WATER CONSERVATION ACT OF 2009 TEST CLAIM NO. 10-TC-12 AND
AGRICULTURAL WATER MEASUREMENT TEST CLAIM NO. 12-TC-01

I, Thaddeus L. Bettner, declare as follows:

1. I make this declaration based on my personal knowledge, except for matters set forth herein on information and belief, and as to those matters I believe them to be true, and if called upon to testify I could and would competently testify to the matters set forth herein under oath.

2. I am employed by Glenn-Colusa Irrigation District (hereinafter "GCID" or "District") as its General Manager. I have held my current position since May 2006. I am also a Registered Civil Engineer licensed by the State of California (No. 52082).

3. GCID is an irrigation district formed pursuant to the California Irrigation District Law, California Water Code sections 20500-26677. GCID consists of approximately 170,000 acres of land in Glenn and Colusa counties within the Sacramento Valley of California. GCID has perfected water rights under California law with a date of priority before 1900. In accordance with GCID's Sacramento River Settlement Contract with the United States Bureau of Reclamation ("Reclamation"), GCID diverts surface water from the Sacramento River near Hamilton City, and that water is conveyed through GCID's Main Canal and laterals to more than 1,500 landowners as far south as the area around Williams, California. GCID has approximately 65 miles of Main Canal and nearly 1,000 miles of laterals, canals, and drains. The Main Canal is the primary conveyance facility for the District. It runs along the west side of the District and supplies the various laterals for delivery to field turnouts.

4. I have reviewed the Water Conservation Act of 2009 (hereinafter "Act") approved by the Governor of the State of California on November 10, 2009, and am familiar with the requirements of the Act as it applies to GCID.

5. I have reviewed the regulations adopted in the California Code of Regulations, title 23, division 2, chapter 5.1 (Agricultural Water Measurement) (hereinafter "Regulations")

approved by the Office of Administrative Law on July 11, 2012, and am familiar with the requirements of the Regulations as they apply to GCID.

6. Based on my understanding of the requirements of the Act and Regulations, GCID is an "agricultural water supplier" and subject to the mandates applicable to agricultural water suppliers in the Act and Regulations. It is my belief that the Act and Regulations constitute a new program and/or higher level of service that was not mandated prior to the enactment of the Act or Regulations, and which are almost exclusively unique to local governmental entities like GCID.

7. I am informed and believe, and on that basis declare, that the new programs and/or higher levels of service mandated by the Act include:

a. Measuring the volume of water delivered to GCID's customers using best professional practices to achieve a minimum level of measurement accuracy at each farm-gate (i.e., at each customer's point of delivery);

b. Adopting a pricing structure for water customers based on the quantity of water delivered;

c. Implementing up to fourteen additional efficient management practices, such as financing capital improvements for on-farm irrigation systems, designating an existing employee or hiring a new employee to be a "water conservation coordinator," and to expand line or pipe water distribution systems, if such practices are "locally cost effective" and technically feasible; and

8. I am informed and believe, and on that basis declare, that the new programs and/or higher levels of service mandated by the Regulations include:

a. Acquiring and/or retrofitting measuring devices to measure the volume of water delivered to GCID's customers using best professional practices to achieve accuracy of ±12% by volume for existing measuring devices, ±5% by volume for new or replacement measuring devices if laboratory certified, or ±10% by volume if non-laboratory certification is used;

b. Certifying, inspecting, analyzing, and reporting on the water measurement devices in GCID's agricultural water management plan;

c. Retaining records of compliance with the Regulations for 10 years; and

d. Maintenance, operation, repair, and replacement of the agricultural measurement devices on an annual and as-needed basis.

9. None of the new programs or higher levels of service described in paragraphs 7 and 8 above, as well as in the Water Conservation Act of 2009 Test Claim written narrative submitted by South Feather Water and Power Agency et al. on June 30, 2011 (attached hereto as Exhibit A) and the Agricultural Water Measurement Test Claim written narrative submitted by Richvale Irrigation District et al. on February 28, 2013 (attached hereto as Exhibit B), were required prior to the enactment of the Act and Regulations.

10. GCID prepared the Water Measurement Compliance Program ("Program"), attached hereto as Exhibit C, to comply with the Agricultural Water Measurement Component of the Act. The Program was included in GCID's Agricultural Water Management Plan unanimously approved by GCID's Board of Directors on February 14, 2013, and submitted to the California Department of Water Resources on March 7, 2013.

11. The Program consists of five phases. Phase I, the Pilot Project, consisted of the development and evaluation of measurement device alternatives at sites representative of GCID's extensive and diverse conveyance system. The measurement sites chosen were a combination of lateral level (upstream delivery points) and farm-gate turnouts, which deliver water to individual landowners. A total of ten measurement sites were used in the Pilot Project. Five of the sites were located at upstream delivery points and five of the sites were located at farm-gate turnouts. The Pilot Project began in April 2013 and concluded in August 2013.

12. GCID Staff prepared the GCID Agricultural Water Measurement Pilot Project – Phase I Progress Report ("Progress Report"), dated September 5, 2013, and attached hereto as Exhibit D. The Progress Report concluded that the labor cost to install each device was $1,575 and the average equipment costs per site was $510. The total cost per site (device, materials/supplies, and labor/equipment) ranged from $6,155 to $13,675 with the average cost per site coming to $9,862. Labor and equipment costs make up 21.1% of the average cost per site.

13. Based upon the foregoing, I am informed and believe, and on that basis declare, that each of the new programs and/or higher levels of service described in paragraphs 7 and 8 above, exceed $1,000 for GCID to implement.

14. GCID's fiscal year runs from October 1 to September 30. In Fiscal Year 2013, GCID incurred approximately $98,618 in capital costs associated with the Pilot Project, as it began to implement the mandates of the Act and Regulations. This amount includes the cost of the ten measuring devices that were installed, materials and supplies, as well as labor and equipment costs incurred in installing the devices. This amount does not include costs associated with District Staff time required for operation and maintenance of the devices that were installed.

15. Estimating the exact cost in Fiscal Year 2014 and future fiscal years is difficult to predict at this time. Based on the recommendation included in the Progress Report, GCID plans to extend Phase I of the Program into the 2014 irrigation season. The estimated capital cost for the Pilot Project in 2014 is $97,000. A copy of the Capital Cost Estimate for GCID's Agricultural Water Measurement Pilot Project 2014 is attached hereto as Exhibit E. I am informed and believe, and on that basis declare, that the direct and indirect costs of GCID's compliance with the Act and Regulations in future fiscal years will exceed $1,000 per fiscal year.

16. GCID does not currently implement farm-gate measurement, and instead charges for water on the basis of consumptive use and applicable unit duty by crop, which is then converted to a price per acre charge. Thus, in order to comply with the Act and Regulations, GCID must install and/or retrofit existing measurement devices at approximately 2,650 locations throughout its conveyance system. The current estimated cost per location is $9,862 as explained in Exhibit D. GCID will also incur increased labor costs as a result of compliance with the Act and Regulations because it will be necessary to hire additional staff to properly maintain, manage, and operate the installed measurement devices. Additionally, GCID will have to comply with Proposition 218 in order to change its rates to charge, at least in part, on the volume of water delivered to each customer.

17. GCID currently estimates that the capital costs associated with compliance with the Act and Regulations will exceed $46 million with the annual cost of compliance estimated at $2.1 million. A copy of GCID's most current estimate of the cost of the District's compliance with the Act and Regulations is attached hereto as Exhibit F.

18. The Act and Regulations do not generally apply to all residents and entities in the state of California. I am informed and believe, and on that basis declare, that the predominant majority of "agricultural water suppliers" are local government agencies like GCID.

Accordingly, I understand that the Act and Regulations impose unique requirements primarily on local agencies like GCID.

19. The Act is mandated by the State of California, not as a result of any federal requirement that requires water conservation or related measures.

20. The Regulations are mandated by the California Department of Water Resources, not as a result of any federal requirement that requires water measurement, conservation or related measures.

21. GCID is subject to the tax and spend limitations of articles XIII A and B of the California Constitution. GCID receives an annual share of ad valorem property tax revenue from Glenn and Colusa counties. GCID received $520,420 in property taxes in 2013 and expects to receive $528,300 in 2014. Based on the District's current cost estimate of compliance with the Act and Regulations (Exhibit F), this amount is insufficient to cover the cost of compliance with the mandates of the Act and Regulations.

22. GCID does not receive any dedicated state funds for implementation of the Act and Regulations or for any other purpose; nor am I aware of any dedicated state funds currently available for implementation of the Act and Regulations. GCID does not receive any dedicated federal funds for implementation of the Act and Regulations or for any other purpose; nor am I aware of any dedicated federal funds currently available for implementation of the Act and Regulations. GCID does not receive any other non-local agency funds for implementation of the Act and Regulations or for any other purpose; nor am I aware of any non-local agency funds currently available for implementation of the Act and Regulations. In addition, GCID has a relatively fixed customer base comprised of landowners within GCID's service area, and GCID must obtain Reclamation's consent before GCID may transfer or provide any surplus water outside of GCID's service area. Accordingly, because the anticipated costs of complying with the mandates of the Act and Regulations exceed the amount of dedicated funds GCID receives for such services, GCID must use some of its general purpose property tax funds to make up for the shortfall and comply with the mandates of the Act and Regulations. These funds, however, are insufficient to cover the cost of compliance.

23. I am unaware of any authority available to GCID to assess a fee for complying with the mandates of the Act and Regulations. GCID is subject to Proposition 218, which deprives GCID of exclusive authority to impose new assessments or increase fees without the

consent and authorization of its landowners and/or customers. Given these limitations, GCID's customers could reject an assessment or fee increase, yet GCID would still be subject to the mandates of the Act and Regulations.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this the 13th day of January, 2013, at Sacramento, California.

THADDEUS L. BETTNER

EXHIBIT A

ORIGINAL

For CSM Use Only
Filing Date RECEIVED
JUN 30 2011
COMMISSION ON STATE MANDATES
Test Claim #: 10-TC-12

1. TEST CLAIM TITLE

WATER CONSERVATION ACT OF 2009

2. CLAIMANT INFORMATION

South Feather Water & Power Agency, et al.
Name of Local Agency or School District

Dustin C. Cooper
Claimant Contact

General Counsel
Title

1681 Bird Street, P.O. Box 1679
Street Address

Oroville, CA 95965-1679
City, State, Zip

(530) 533-2885
Telephone Number

(530) 533-0197
Fax Number

dcooper@minasianlaw.com
E-Mail Address

3. CLAIMANT REPRESENTATIVE INFORMATION

Claimant designates the following person to act as its sole representative in this test claim. All correspondence and communications regarding this claim shall be forwarded to this representative. Any change in representation must be authorized by the claimant in writing, and sent to the Commission on State Mandates.

Dustin C. Cooper
Claimant Representative Name

General Counsel
Title

Minasian, Meith, Soares, Sexton & Cooper, LLP
Organization

1681 Bird Street, P.O. Box 1679
Street Address

Oroville, CA 95965-1679
City, State, Zip

(530) 533-2885
Telephone Number

(530) 533-0197
Fax Number

dcooper@minasianlaw.com
E-Mail Address

4. TEST CLAIM STATUTES OR EXECUTIVE ORDERS CITED

Please identify all code sections, statutes, bill numbers, regulations, and/or executive orders that impose the alleged mandate (e.g., Penal Code Section 2045, Statutes 2004, Chapter 54 [AB 290]). When alleging regulations or executive orders, please include the effective date of each one.

Water Conservation Act of 2009, S.B. x7-7, (amend and repeal Section 10631.5 of, to add Part 2.55 [commencing with section 10608] to Division 6 of, and to repeal and add Part 2.8 [commencing with section 10800] of division 6 of the Water Code).

☑ *Copies of all statutes and executive orders cited are attached.*

Sections 5, 6, and 7 are attached as follows:

5. Written Narrative: pages 2 to 14.
6. Declarations: pages 15 to 31.
7. Documentation: pages 32 to 56.

SECTION 5. WRITTEN NARRATIVE

In Support of Joint Test Claims In Re Water Conservation Act of 2009

Claimants:
South Feather Water & Power Agency
Paradise Irrigation District
Richvale Irrigation District
Biggs-West Gridley Water District

Joint Claimants South Feather Water & Power Agency ("South Feather"), Paradise Irrigation District ("Paradise"), Richvale Irrigation District ("Richvale"), and Biggs-West Gridley Water District ("Biggs") (hereinafter collectively "Claimants") represent that the actual costs resulting from the mandate to conserve water pursuant to the Water Conservation Act of 2009 ("Act") exceeds $1,000. Additionally, Claimants respond to each of the separate inquiries on the Test Claim Form as follows:

(A) A detailed description of the new activities and costs that arise from the mandate.

The Water Conservation Act of 2009 imposes unfunded state mandates to conserve water and achieve water conservation goals on local public agencies that are "urban retail water suppliers" and/or "agricultural water suppliers". '"Urban retail water supplier' means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes." (Water Code § 10608.12, subd. (p)). South Feather and Paradise are irrigation districts formed and existing under Division 11 of the California Water Code and are "urban retail water suppliers", as defined.

'"Agricultural water supplier' 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]." (*Id.* at subd. (a)). Agricultural water suppliers that provide water to less than 25,000 irrigated acres, excluding recycled water, are not required to implement the conservation mandates unless sufficient funding is provided by the State. (Water Code § 10853).

Richvale and Biggs are local public agencies formed and operating under Divisions 11 and 13, respectively, of the Water Code. Richvale and Biggs are "agricultural water suppliers", as defined, and provide water to 25,000 or more irrigated acres.

(1) New activities and costs mandated on South Feather and Paradise as urban retail water suppliers

The Act mandates urban retail water suppliers to achieve a 20% reduction in urban per capita water use by December 31, 2020. (Water Code §§ 10608, subd. (g), 10608.4, subd. (d), 10608.16, subd. (a), 10608). Urban suppliers are required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. (*Id.* § 10608.24).

South Feather and Paradise are required to establish their urban water use targets, or baselines, by July 1, 2011 by selecting one of four methods to achieve the mandated water conservation. (Water Code § 10608.20, subds. (a), (b)). Urban suppliers are mandated to adopt expanded and more detailed urban water management plans in 2010 that include the baseline daily per capita water use, urban water use target, interim urban water use target, compliance daily per capita water use, along with the bases for determining estimates, including supporting data. (*Id.* subd. (e)). The deadline for the 2010 urban water management plan may be extended until July 1, 2011. (*Id.* subd. (j)). Thereafter, the urban water management plans shall be updated in every year ending in 5 and 0. The 2015 urban water management plan must describe the urban retail water supplier's progress towards achieving the 20% reduction by 2020. (Water Code § 10608.42).

In complying with Part 2.55 (commencing with § 10608) of the Water Code, South Feather and Paradise are required to conduct at least one public meeting to (1) allow community input regarding the supplier's implementation

plan; (2) consider economic impacts of the implementation plan; and (3) adopt a method for determining its baseline from which to measure the 20% reduction. (Water Code § 10608).

Failure to comply with the aforementioned mandates by South Feather and Paradise will result, on and after July 1, 2016, in ineligibility for water grants or loans awarded or administered by the State of California. (Water Code § 10608.56). Further, a failure to meet the 20% target shall be a violation of law on and after January 1, 2021. (*Id.* § 10608.8, subd. (a)(2)).

(2) New activities and costs mandated on Richvale and Biggs as agricultural water suppliers

The Act "Require[s] implementation of specific efficient water management practices for agricultural water suppliers." (Water Code § 10608, subd. (i)). Richvale and Biggs are required to measure the volume of water delivered to their customers using best professional practices to achieve a minimum level of measurement accuracy at the farm-gate. (*Id.* § 10608.48, subd. (b)(1)). The Department of Water Resources will adopt regulations providing for a range of options to comply with the water measurement requirement. (*Id.* at subd. (i)(1)). Agricultural water suppliers are required to adopt a pricing structure for water customers based on the quantity of water delivered. (*Id.* § 10608.48, subd. (b)(2)). Because Richvale and Biggs are local public agencies, the change in pricing structure would have to be authorized and approved by its customers through the Proposition 218 process.

If "locally cost effective" and technically feasible, agricultural water suppliers are required to implement fourteen additional efficient management practices:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(*Id.* at subd. (c)).

On or before December 31, 2012, Richvale and Biggs are required to prepare agricultural water management plans that include (1) a report on which efficient water management practices have been implemented and are planned to be implemented; (2) an estimate of the water use efficiency improvements that have occurred since the last report; and (3) an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. (Water Code §§ 10608.48 subd. (d), 10820). Other descriptions required to be included in the plan, such as a description of the service area, water rates, water uses, quantity and quality of water resources, etc., are listed in Water Code section 10828. If conservation measures are not "locally cost effective or technically feasible", then the agricultural water supplier shall submit information documenting that determination. (*Id.* at § 10608.48, subd. (d), § 10825, subd. (b)).

Prior to adopting the water management plan, agricultural water suppliers are required to make the proposed plan available for public inspection and hold at least one public hearing. (Water Code § 10841). Publicly owned agricultural water suppliers are required to publish notice of the time and place of the hearing in a newspaper at least once a week for two successive weeks. (*Ibid.*). After

adoption the plan must be distributed to various entities (*id.* § 10843) and on an internet website (*id.* § 10844).

Failure to comply with the aforementioned mandates by Richvale and Biggs will result, on and after July 1, 2013, in ineligibility for water grants or loans awarded or administered by the State of California. (Water Code § 10608.56, subd. (b)). Further, the Act contains a citizen suit provision permitting actions (1) alleging a failure to adopt a plan to be commenced within 18 months after the time adoption is required and/or (2) alleging that a plan does not comply with the Act within 120 days after plan adoption. (*Id.* § 10850, subds. (a)(1)-(2)). The inquiry shall extend to whether the agricultural water supplier prejudicially abused its discretion by failing to proceed in the manner required by law or if the action is not supported by substantial evidence. (*Id.* at subd. (b)).

(B) A detailed description of existing activities and costs that are modified by the mandate

The California Constitution requires that all water use be reasonable and beneficial. (Cal. Const., Art. 10, § 2; *See Also* Water Code §§ 100, 275, 1050, 1051). At all times Claimants have reasonably applied water towards beneficial uses, such as potable water supply, irrigation, stockwatering, recreation, environmental enhancement and hydroelectric power generation. In addition to applying and using water in a reasonable and beneficial manner, the Act mandates that Claimants adopt and implement water conservation measures. As discussed more fully hereafter, the mandated conservation measures were not required prior to the Act.

(1) Urban retail water suppliers

Prior to the Act, there was no requirement on South Feather and Paradise to achieve a 20% per capita reduction in water use by 2020 or a 10% incremental reduction by December 31, 2015. South Feather and Paradise were required to prepare and adopt urban water management plans prior to the Act (Water Code §§ 10610 et seq.), but that requirement did not include "the baseline per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with bases for determining those estimates, including

references to supporting data[]" required by the Act to be included in the 2010 urban water management plan and future plans. In other words, the Act has expanded the scope and content of urban water management plans.

Finally, prior to the Act, there was no requirement to conduct at least one public hearing to allow for community input regarding conservation, consider economic impacts of the implementing the 20% reduction, or to adopt a method for determining an urban water use target. (Water Code § 10608.26, subds. (a)(1)-(3)).

(2) Agricultural water suppliers

Prior to the Act, Richvale and Biggs were not required to have a pricing structure based, at least in part, on the quantity of water delivered. For example, an agricultural water supplier could have a fee structure based on acreage, crop duty, or the number of irrigations per growing season. While subdivision (a) of Water Code section 531.10 was a preexisting obligation, subdivision (b) of that same section gave an exception to the farm-gate measurement requirement if the measurement devices were not locally cost effective. The Act requires compliance with subdivision (a) regardless of whether it is locally cost effective.

Prior to the Act, there was no requirement to implement up to 14 additional conservation measures if locally cost effective and technically feasible. (Water Code § 10608.48, subd. (c)).

The Act expands and amplifies the requirement to adopt agricultural water management plans. Formerly, agricultural water suppliers were subject to the plan requirement only if it supplied more than 50,000 acre-feet of water annually for agricultural purposes. (Former Water Code § 10816). The Act expanded the definition of what constitutes an agricultural water supplier to include all entities who serve 10,000 or more irrigated acres. (Water Code § 10608.12, subd. (a)). The Act specifies the contents of the plans, which are more encompassing than plans required under former law. (Water Code § 10825). New plans must be adopted on or before December 31, 2012, and updated on or before December 31, 2015, and on or before December 31 every five years thereafter. Formerly, agricultural suppliers were reimbursed up to $5,000 and up to $25,000 for each

report and plan, respectively. (Former Water Code § 10853). The Act does not give any reimbursement for preparing plans and updating them every 5 years thereafter.

Finally, prior to the Act, there was no requirement to conduct at least one public hearing prior to adopting the plan, make copies of it available for public inspection, or to publish the time and place of the hearing once per week for two successive weeks in a newspaper of general circulation.

(C) The actual increased costs incurred by the claimant during the fiscal year for which the claim was filed to implement the alleged mandate.

Paradise's fiscal year runs from July 1 through June 30 each year. Its current fiscal year is known as Fiscal Year 2010/2011 and the immediate preceding fiscal year was known as Fiscal Year 2009/2010. The fiscal years of South Feather, Richvale and Biggs run from January 1 through December 31 each year. Their current fiscal year is known as Fiscal Year 2011 and its immediately preceding fiscal year is known as Fiscal Year 2010.

For Fiscal Year 2009/2010, which ran from July 1, 2009, through June 30, 2010, Paradise incurred approximately $5,731.61 in direct and indirect costs in complying with the Act. For Fiscal Year 2010, South Feather, Richvale, and Biggs cumulatively incurred approximately $66,462.87 in direct and indirect costs in complying with the Act.

Claimants' total cost of the complying with the Act is expected to be higher in Fiscal Year 2010/2011 and Fiscal Year 2011, respectively, because Claimants are beginning to prepare water management plans and otherwise implement the mandates required by the Act. It is difficult to specify the cost of complying with the Act in Fiscal Year 2010/2011 and Fiscal Year 2011. Such costs are subject to a number of unknown variables.

For example, for urban retail water suppliers it is unknown: (i) what the final form of target method 4 will be given it is not to be finalized until December 31, 2014, pursuant to Water Code section 10608.20, subdivision (d); (ii) how much time a consultant and/or staff will need to establish baseline by July 1,

2011; and (iii) what measures will most effectively and economically achieve the interim 10% per capita water use reduction in 2015 and eventual 20% reduction in 2020.

The water sale revenues of South Feather and Paradise will also decrease as a result of the Act and particularly the required 20% reduction in per capita water use, yet it is expected that their fixed costs such as treatment and distribution of the water will remain the same or increase. Because South Feather and Paradise do not expect a corresponding decrease in costs, the Act results in less water sales revenue, which must be offset by tax proceeds or a rate increase approved by their customers through Proposition 218.

For agricultural water suppliers it is unknown: (i) when the Department of Water Resources' regulations specifying a range of options for farm-gate measurement will be finalized pursuant to Water Code section 10608.48, subdivision (i)(1); (ii) whether a new pricing structure based on the quantity of water delivered will be authorized and approved by Richvale's and Biggs' customers through a Proposition 218 process; and (iii) whether the 14 additional conservation measures will be "locally cost effective" under subdivision (c) of Water Code section 10608.48. The Act results in a potential loss of water sales revenue for Richvale and Biggs insofar as their costs of water delivery will remain the same or increase, while the quantity of water sold is expected to decrease after the conservation measures of the Act are imposed.

(D) The actual or estimated annual costs that will be incurred by the claimant to implement the alleged mandate during the immediately following the fiscal year for which the claim was filed.

Paradise's next fiscal year is Fiscal Year 2011/2012 (July 1, 2011, through June 30, 2012). South Feather's, Richvale's and Biggs' next fiscal year is known as Fiscal Year 2012 (January 1, 2012 through December 31, 2012). The costs of complying with the Act's mandates will be subject to the same unknown variables discussed above with respect to the costs of the mandates in Fiscal Year 2010/2011 and Fiscal Year 2011, respectively.

It is expected that Claimants' costs in complying with the Act's mandates in the immediately following fiscal year will be greater than those estimated in the current fiscal year (Fiscal Year 2010/2011 and Fiscal Year 2011, respectively). South Feather estimates that the mandates will likely require a combination of projects such as pipeline replacement, conservation education programs for customers, installation of smart meters, low-flow toilets and low-flow shower heads, hiring a conservation facilitator, water rate increases to encourage conservation and possibly other programs or projects that are currently unknown to comply with the Act. In addition to the approximately $7,945 spent in 2010 to comply with the Act, South Feather has incurred approximately $5,000 in direct and indirect costs in complying with the Act thus far in Fiscal Year 2011, and estimates that costs will be cumulatively in excess of approximately $9,000,000 through 2020.

Paradise estimates that the mandates will likely require a combination of projects, such as pipeline replacement, water education for Kindergarten through 12th grade, water recycling, metering, tiered pricing and other rate increases to encourage conservation, public information programs, hiring a conservation coordinator, and possibly other programs that are currently unknown to comply with the Act. In complying with the Act, Paradise incurred approximately $5,731.61 is direct and indirect costs for Fiscal Year 2009/2010, approximately $47,571.46 thus far in Fiscal Year 2010/2011, and believes costs would be cumulatively in excess of $8,000,000 through 2020.

Richvale and Biggs will comply with the Act's mandates by, for example, implementing farm-gate measurement systems, altering its water pricing structure to charge for water, at least in part, by volume delivered (assuming approval of the rate change by their customers after completing the Proposition 218 process), and implementing other conservation measures if locally cost effective. Richvale's direct and indirect costs for complying with the Act were approximately $47,766.10 for Fiscal Year 2010, expects to expend approximately $328.219.62 in Fiscal Year 2011, and believes costs would be cumulatively in excess of $3,000,000 through 2020. Biggs' direct and indirect cost for complying

with the Act were approximately $10,751.77 for Fiscal Year 2010, approximately $53,853.46 thus far in Fiscal Year 2011, and believes costs would be cumulatively in excess of approximately $1.7 to $4 million through 2020.

(E) A statewide cost estimate of increased costs that all local agencies or school districts will incur to implement the alleged mandate during the fiscal year immediately following the fiscal year for which the claim was filed.

There are a number of variables that make accurate estimation of the statewide costs of the mandate difficult. It is unknown, for example, how many "urban retail water suppliers" or "agricultural water suppliers" are subject to the mandates and are local public agencies eligible for reimbursement for the mandates. This uncertainty is compounded by the number of exemptions from the definition of "agricultural water supplier", such as (i) agricultural water suppliers with less than 25,000 irrigated acres are exempt from the mandates until sufficient funding is provided by the State (Water Code § 10853); (ii) agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to the Central Valley Project Improvement Act or the Reclamation Reform Act of 1982 are exempt from the requirement to prepare and submit agricultural water management plans (*id.* § 10828); and/or (iii) an agricultural water suppliers are exempt from the requirement to prepare plans by adopting an urban water management plan or by participating in an areawide, regional, watershed, or basinwide water management planning (*id.* § 10829). For urban retail water suppliers, per capita water use is governed to a large extent by water year type and it is unknown what future water year types there will be. In above average or wet water years, per capita water use is typically less. However, in below average or dry periods, per capita water use is typically much greater.

Notwithstanding these variables, it appears likely that the costs of the mandate will exceed $1,000,000.00 for urban retail water suppliers and $1,000,000.00 for agricultural water suppliers per year statewide.

(F) Identification of all the following funding sources available for this program:

(i) Dedicated state funds

Claimants do not receive any dedicated state funds for implementation of the Act or for any other purpose. Claimants are unaware of any dedicated state funds currently available for implementing the Act's mandates.

(ii) Dedicated federal funds

Claimants do not receive any dedicated federal funds for implementation of the Act or for any other purpose. Claimants are unaware of any dedicated federal funds currently available for implementing the Act's mandates.

(iii) Other nonlocal agency funds

Claimants do not receive any other nonlocal agency funds for implementation of the Act or for any other purpose. Claimants are unaware of any other nonlocal agency funds currently available for implementing the Act's mandates.

(iv) The local agency's general purpose funds

Because the cost in complying with the Act's mandates exceeds the amount of dedicated funds Claimants receive for such services, Claimants must use some of their general purpose funds to make up the difference and comply with the mandates.

(v) Fee authority to offset costs

Claimants are unaware of any authority to assess a fee for complying with the Act's mandates to offset the costs of such conservation efforts. Claimants, as local public agencies, are subject to Proposition 218, which divests Claimants of authority to impose assessments or increase service fees without the consent and authorization (which may be withheld despite the Act's mandates) of Claimants' landowners.

(G) Identification of prior mandate determinations made by the Board of Control or the Commission on State Mandates that may be related to the alleged mandate.

After a diligent inquiry, Claimants have concluded that no prior test claims have been submitted to the Board of Control and/or the Commission on State

Mandates on the issue of whether the Act's provisions constitute a reimbursable state mandate.

(H) Identification of a legislatively determined mandate pursuant to Government Code section 17573 that is on the same statute or executive order.

After a diligent inquiry, Claimants have concluded that no prior joint requests have been made to the California Legislature to determine if the Act constitutes a reimbursable state mandate.

Additionally, Claimants note that the Legislative Counsel's Digest does not state whether the Act mandates a new program or higher level of service as required by Government Code section 17575. Nor does the Digest state the basis for any such determination.

EXHIBIT B

ORIGINAL

1. TEST CLAIM TITLE

AGRICULTURAL WATER MEASUREMENT

2. CLAIMANT INFORMATION

RICHVALE IRRIGATION DISTRICT, et al.
Name of Local Agency or School District

Dustin C. Cooper
Claimant Contact

General Counsel
Title

1681 Bird Street, P.O. Box 1679
Street Address

Oroville, CA 95965
City, State, Zip

(530) 533-2885
Telephone Number

(530) 533-0197
Fax Number

dcooper@minasianlaw.com
E-Mail Address

3. CLAIMANT REPRESENTATIVE INFORMATION

Claimant designates the following person to act as its sole representative in this test claim. All correspondence and communications regarding this claim shall be forwarded to this representative. Any change in representation must be authorized by the claimant in writing, and sent to the Commission on State Mandates.

Dustin C. Cooper
Claimant Representative Name

General Counsel
Title

Minasian, Meith, Soares, Sexton & Cooper, LLP
Organization

1681 Bird St., P.O. Box 1679
Street Address

Oroville, CA 95965
City, State, Zip

(530) 533-2885
Telephone Number

(530) 533-0197
Fax Number

dcooper@minasianlaw.com
E-Mail Address

For CSM Use Only

Filing Date:

RECEIVED
FEB 2 8 2013
COMMISSION ON STATE MANDATES

Test Claim #: 12-TC-01

4. TEST CLAIM STATUTES OR EXECUTIVE ORDERS CITED

Please identify all code sections, statutes, bill numbers, regulations, and/or executive orders that impose the alleged mandate (e.g., Penal Code Section 2045, Statutes 2004, Chapter 54 [AB 290]). When alleging regulations or executive orders, please include the effective date of each one.

Agricultural Water Measurement, California Code of Regulations, Title 23 (Water), Division 2 (Department of Water Resources), Chapter 5.1. (Water conservation Act of 2009) Article 2 (Agricultural Water Measurement), commencing with Section 597

☑ *Copies of all statutes and executive orders cited are attached.*

Sections 5, 6, and 7 are attached as follows:

5. Written Narrative: pages 2 to 8.
6. Declarations: pages 9 to 169.
7. Documentation: pages 170 to 179.

Sections 5, 6, and 7 should be answered on separate sheets of plain 8-1/2 x 11 paper. Each sheet should include the test claim name, the claimant, the section number, and heading at the top of each page.

5. WRITTEN NARRATIVE

Under the heading "5. Written Narrative," please identify the specific sections of statutes or executive orders alleged to contain a mandate.

Include a statement that actual and/or estimated costs resulting from the alleged mandate exceeds one thousand dollars ($1,000), and include all of the following elements for each statute or executive order alleged:

(A) A detailed description of the new activities and costs that arise from the mandate.

(B) A detailed description of existing activities and costs that are modified by the mandate.

(C) The actual increased costs incurred by the claimant during the fiscal year for which the claim was filed to implement the alleged mandate.

(D) The actual or estimated annual costs that will be incurred by the claimant to implement the alleged mandate during the fiscal year immediately following the fiscal year for which the claim was filed.

(E) A statewide cost estimate of increased costs that all local agencies or school districts will incur to implement the alleged mandate during the fiscal year immediately following the fiscal year for which the claim was filed.

(F) Identification of all of the following funding sources available for this program:
- (i) Dedicated state funds
- (ii) Dedicated federal funds
- (iii) Other nonlocal agency funds
- (iv) The local agency's general purpose funds
- (v) Fee authority to offset costs

(G) Identification of prior mandate determinations made by the Board of Control or the Commission on State Mandates that may be related to the alleged mandate.

(H) Identification of a legislatively determined mandate pursuant to Government Code section 17573 that is on the same statute or executive order.

6. DECLARATIONS

Under the heading "6. Declarations," support the written narrative with declarations that:

(A) declare actual or estimated increased costs that will be incurred by the claimant to implement the alleged mandate;

(B) identify all local, state, or federal funds, and fee authority that may be used to offset the increased costs that will be incurred by the claimant to implement the alleged mandate, including direct and indirect costs;

(C) describe new activities performed to implement specified provisions of the new statute or executive order alleged to impose a reimbursable state-mandated program (specific references shall be made to chapters, articles, sections, or page numbers alleged to impose a reimbursable state-mandated program);

(D) If applicable, describe the period of reimbursement and payments received for full reimbursement of costs for a legislatively determined mandate pursuant to Section 17573, and the authority to file a test claim pursuant to paragraph (1) of subdivision (c) of Section17574.

(E) are signed under penalty of perjury, based on the declarant's personal knowledge, information or belief, by persons who are authorized and competent to do so.

7. DOCUMENTATION

Under the heading "7. Documention, " support the written narrative with copies of all of the following:

(A) the test claim statute that includes the bill number alleged to impose or impact a mandate; and/or

(B) the executive order, identified by its effective date, alleged to impose or impact a mandate; and

(C) relevant portions of state constitutional provisions, federal statutes, and executive orders that may impact the alleged mandate; and

(D) administrative decisions and court decisions cited in the narrative. Published court decisions arising from a state mandate determination by the Board of Control or the Commission are exempt from this requirement; and

(E) statutes, chapters of original legislatively determined mandate and any amendments.

SECTION 5. WRITTEN NARRATIVE

In Support of Joint Test Claims in Re Agricultural Water Measurement

Claimants:

Richvale Irrigation District
Biggs-West Gridley Water District

Joint Claimants Richvale Irrigation District ("Richvale") and Biggs-West Gridley Water District ("Biggs") (hereinafter collectively "Claimants") represent that the actual costs resulting from the mandate to install, maintain and operate agricultural water measurements under regulations adopted by the California Department of Water Resources (the "Regulations") exceed $1,000. The Regulations at issue in this Test Claim were implemented under authority of the Water Conservation Act of 2009, which is the subject of a pending test claim (10-TC-12) submitted by Claimants jointly with urban retail water suppliers Paradise Irrigation District and South Feather Water & Power Agency.

Claimants respond to each of the separate inquiries on the Test Claim Form as follows:

(A) A detailed description of the new activities and costs that arise from the Mandate

The Regulations impose unfunded state mandates to measure surface water and groundwater (including installation and certification of accuracy of water measurement devices) delivered to customers of local public agencies that are "agricultural water suppliers". An agricultural water supplier "means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding acres that receive only recycled water. 'Agricultural water supplier' includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells water for ultimate resale to customers. 'Agricultural water supplier' does not include the Department [of Water Resources]." (Cal. Code Regs., Tit. 23[1], § 597.2, subd. (a)(2)). Agricultural water suppliers that supply water to 25,000 or more irrigated acres are subject to the Regulations. (§ 597.1, subd. (a)).

[1] Unless otherwise noted, all citations are to Title 23 of the California Code of Regulations.

Richvale and Biggs are local public agencies formed and operating under Divisions 11 and 13, respectively, of the Water Code. Richvale and Biggs are "agricultural water suppliers", as defined, and provide water to 25,000 or more irrigated acres. Thus, Claimants must comply with the Regulations' mandates set forth hereafter.

Claimants and other agricultural water suppliers "shall measure water and groundwater that it delivers to its customers pursuant to the accuracy standards in this section." (§ 597.3). Water must be measured at the delivery or farm-gate of each single customer by either (1) using an existing measurement device, certified to be accurate within ±12% by volume or (2) a new or replacement measurement device, certified to be accurate within ± 5% by volume in the laboratory if using a laboratory certification or ± 10% by volume in the field using a non-laboratory certification. (§ 597.3, subd. (a)(1)-(2)).

The Regulations provide for limited exceptions for measurement at each customer's farm-gate including, for example, if the agricultural water supplier does not have legal access to install, maintain and operate the measurement device and the agricultural water supplier's legal counsel certifies that it has sought and been denied access. (§ 597.3, subds. (b)(1)(A), (b)(2)(A)). Another example of when farm-gate measurement is not required is if an engineer determines the accuracy standards cannot be met and certain documentation is provided. (§ 597.3, subds. (b)(1)(B), (b)(2)(B)-(b)(2)(C)).

For existing measurement devices, the Regulations mandate one of two alternatives. First, agricultural water suppliers may select a random and statistically significant sample of measurement devices and field-test them to determine if the devices meet the ± 12% accuracy standard and document the same in a report approved by an engineer. (§ 597.4, subd. (a)(1)(A); see also *id.* at subd. (b)(1)). If the sample of devices field-tested result in more than one quarter of devices failing to meet the ±12% criteria, then an additional round of field-testing an additional 10% of the devices must be completed and corrective actions must be completed within three years of initial testing. (*Id.* at subd. (b)(2)). Alternatively, suppliers may field inspect and analyze every existing measurement device using trained individuals and document the same in a report approved by an engineer. (*Id.* at subd. (a)(1)(B); see also *id.* subd. (b)(3)).

For new or replacement measurement devices, the Regulations mandate one of two alternatives. First, suppliers may obtain a laboratory certification prior to installation of the device with documentation from the manufacturer that it followed industry-established testing protocols such as the National Institute for Standards and Testing traceability standards. (§ 597.4, subd. (a)(2)(A)). Alternatively, suppliers may obtain non-laboratory certifications after installation by either (i) providing an affidavit approved by an engineer documenting design and installation or (ii) providing a report approved by an engineer documenting the field-testing performed on the devices. (*Id.* subd. (a)(2)(B)).

The Regulations require record retention for 10 years demonstrating compliance (§ 597.4, subd. (c)); continued maintenance, operation, inspection and monitoring as required by the manufacturer, the laboratory, or the engineer that signed and stamped the certification of the device (*id.* subd. (d)(1)); and require repair or replacement of measurement devices that no longer satisfy the accuracy requirements of the Regulations (*id.* subd. (d)(2)).

Finally, the regulations require reporting in each supplier's agricultural water management plan: (i) documentation required to demonstrate compliance with the Regulations; (ii) a description of best professional practices including, how water measurement data is collected, frequency of water measurement, method for determining irrigated acres, and quality control and quality assurance procedures; (iii) if devices do not measure total volume of water delivered (e.g., flow rate, velocity or water elevation), a description of how to convert the measure to volume; and (iv) a schedule, budget, and finance plan to bring existing water measurement devices into compliance with the Regulations in 3 years or less. (§ 597.4, subd. (e)(1)-(e)(4)).

All of these requirements are new mandates that did not exist prior to the establishment of the Regulations. A true and correct copy of the Regulations is attached to this test claim at Section 7, pages 170 through 179.

(B) A detailed description of existing activities and costs that are modified by the mandate

The California Constitution requires that all water use be reasonable and beneficial. (Cal Const., Art. 10, § 2; see also Water Code §§ 100, 275, 1050, 1051). At all times Claimants have reasonably applied water under water rights established and recognized under California law and

utilized it for beneficial uses, such as irrigation, stockwatering, recreation and environmental enhancement.

> The Water Conservation Act mandates agricultural water suppliers to:
>
> (1) Measure the volume of water delivered to customers with sufficiency accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).
> (2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(Water Code § 10608.48, subd. (b)). Water Code section 531.10(a), which predates the Water Conservation Act, provides that

> An agricultural water supplier shall submit an annual report to the department that summarizes aggregated farm-gate delivery data, on a monthly or bi-monthly basis, using best professional practices.

However, subdivision (b) of Water Code section 531.10 provides "Nothing in this article shall be construed to require the implementation of water measurement programs or practices that are not locally cost effective." The Water Conservation Act and Regulations remove this limitation and, instead, mandate measurement devices at each farm-gate regardless local cost effectiveness.

The Regulations expand and amplify the Water Conservation Act by requiring, among other items, that existing measurement devices be certified to be accurate within ±12% by volume and new or replacement devices to be ±5% by volume if laboratory certified or ±10% by volume if using non-laboratory certification. (§ 597.3). Prior to the Regulations, there was no requirement to measure water delivered to the farm-gate of *each* single customer, with limited exception. (See, e.g., *Id.* subds. (a), (b)(1)). Rather, the Water Conservation Act permitted "aggregated farm-gate delivery data" (Water Code § 531.10, subd. (a)) and only required volumetric measurement of water delivered to customers with "sufficient accuracy" (*id.* § 10608.48, subd. (b)(1)). Prior to the Regulations, there was no obligation to certify (using a licensed engineer), test, inspect, analyze and report on water measurement devices in agricultural water management plans. (*Ibid.*; § 597.4). Prior to the Regulations, there was no requirement to include in Claimants' agricultural water management plans the information listed in § 597.4(e)(1) through (e)(4) of the Regulations.

Claimants incorporate by reference the test claim for the Water Conservation Act (10-TC-12) for further details regarding new activities and costs that were modified by the Water Conservation Act.

(C) The actual increased costs incurred by the claimant during the fiscal year for which the claim was filed to implement the alleged mandate.

The fiscal years of Biggs and Richvale run from January 1 through December 31 each year. Claimants current fiscal years are known as Fiscal Year 2013 and its immediate preceding fiscal years are known as Fiscal Year 2012.

Thus far Biggs and Richvale cumulatively incurred approximately $330,000.00 in direct and indirect costs in complying with the Regulation. Claimants estimate a cumulative expenditure of approximately $135,000.00 in Fiscal Year 2013 to comply with the Regulations' mandates. Claimants total costs of complying with the Regulations are expected to be higher in future fiscal years because the Regulations were finalized by the Office of Administrative Law on July 11, 2012, and Claimants have just started to comply with the mandates contained therein.

(D) The actual or estimated annual costs that will be incurred by the claimant to implement the alleged mandate during the fiscal year immediately following the fiscal year for which the claim was filed.

Claimants' next fiscal years are Fiscal Year 2014 (January 1, 2014, through December 31, 2014). It is expected that Claimants costs of complying with the Regulations will be greater than those estimated in Fiscal Year 2012. Richvale estimates that its direct and indirect costs in complying with the Regulations will far exceed the $1000.00 jurisdictional limit in Fiscal Year 2014 and believes costs would be cumulatively in excess of $1,600,000.00 through 2020.

Biggs estimates that its direct and indirect costs in complying with the Regulations will far exceed the $1000.00 jurisdictional limit in Fiscal Year 2014 and believes costs would be cumulatively in excess of $2,000,000.00 through 2020.

(E) A statewide cost estimate of increased costs that all local agencies or school districts will incur to implement the alleged mandate during the fiscal year immediately following the fiscal year for which the claim was filed.

There are a number of variables that make accurate estimation of the statewide costs of the mandate difficult. It is unknown, for example, how many "agricultural water suppliers" there are subject to the Regulations' mandates and are local public agencies eligible for reimbursement for the mandates. Notwithstanding these variables, it appears likely that the costs of the mandate will exceed $10,000,000.00 for agricultural water suppliers per year statewide.

(F) Identification of all the following funding sources available for this program:

(i) Dedicated state funds

Claimants do not receive any dedicated state funds for implementation of the Regulations or for any other purpose. Claimants are unaware of any dedicated state funds currently available for implementing the Regulations' mandates.

(ii) Dedicated federal funds

Claimants do not receive any dedicated federal funds for implementation of the Regulations or for any other purpose. Claimants are unaware of any dedicated federal funds currently available to implement the Regulations' mandates.

(iii) Other nonlocal agency funds

Claimants do not receive any other nonlocal agency funds for implementation of the Regulations or for any other purpose. Claimants are unaware of any other nonlocal agency funds currently available for implementing the Regulations' mandates.

(iv) The local agency's general purpose funds

Because the cost of complying with the Regulations' mandates exceeds the amount of dedicated funds Claimants receive for such services, Claimants must use some of their general purpose funds to make up the difference and comply with the mandates.

(v) Fee authority to offset costs

Claimants are unaware of any authority to assess a fee for complying with the Regulations' mandates to offset the costs agricultural water measurement. Claimants, as local public agencies, are subject to Proposition 218, which divests Claimants of authority to impose assessments or increase service fees without the consent and authorization of Claimants' landowners (which may be withheld despite the Regulations' mandates).

(G) Identification of prior mandate determinations made by the Board of Control or the Commission on State Mandates that may be related to the alleged mandate

As already noted, this test claim is related to the pending test claim challenging the Water Conservation Act of 2009 (10-TC-12). Except as noted, and after diligent inquiry, Claimants have concluded that no prior test claims have been submitted to the Board of Control and/or the Commission on State Mandates on the issue of whether the Regulations' provisions constitute a reimbursable state mandate.

(H) Identification of a legislatively determined mandate pursuant to Government Code section 17573 that is on the same statute of executive order

After diligent inquiry, Claimants have concluded that no prior joint requests have been made to the California Legislature to determine if the Regulations constitutes a reimbursable state mandate.

EXHIBIT C

Glenn-Colusa Irrigation District

SBX7-7 Water Measurement Compliance Program

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Glenn-Colusa Irrigation District

SBX7-7 Water Measurement Compliance Program

Purpose

In accordance with California Water Code §10106.48(b), Article 2, §597.1(a), GCID is proposing to implement a program to comply with specified requirements within the Agricultural Water Measurement Regulation. This SBX7-7 Water Measurement Compliance Program (Program), which will become a component of the District's Agricultural Water Management Plan, describes how GCID will comply with the SBX7-7 water measurement requirements and adopted regulations, attached hereto as "Exhibit 4." This Program will provide the following pursuant to §597.4 (e):

1. Documentation as required to demonstrate compliance with §597.3 (b), as outlined in section §597.3(b)(2), and §597.4(b)(2).
2. A description of best professional practices about, but not limited to, the (1) collection of water measurement data, (2) frequency of measurements, (3) method for determining irrigated acres, and (4) quality control and quality assurance procedures.
3. If a water measurement device measures flow rate, velocity or water elevation, and does not report the total volume of water delivered, the agricultural water supplier must document in its Agricultural Water Management Plan how it converted the measured value to volume. The protocols must follow best professional practices and include the following methods for determining volumetric deliveries:
    a. For devices that measure flow-rate, documentation shall describe protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery.
    b. For devices that measure velocity only, the documentation shall describe protocols associated with the measurement of the cross-sectional area of flow and duration of water delivery, where volume is derived by the following formula: Volume = velocity x cross-section flow area x duration of delivery.
    c. For devices that measure water elevation at the device (e.g. flow over a weir or differential elevation on either side of a device), the

documentation shall describe protocols associated with the measurement of elevation that was used to derive flow rate at the device. The documentation will also describe the method or formula used to derive volume from the measured elevation value(s).

4. If an existing measurement device is determined to be out of compliance with §597.3, and the agricultural water supplier is unable to bring it into compliance before submitting its Agricultural Water Management Plan, the agricultural water supplier shall provide in its plan, a schedule, budget and finance plan for taking corrective action in three years or less.

Program Components

To comply with the SBX7-7 water measurement requirements and adopted regulations, the Program will include the following critical components:

- Proposed physical measurement alternatives and criteria.
- Proposed measurement protocols, customer billing, and reporting.
- Proposition 218 compliance to address new infrastructure costs and new rate methodologies incorporating in-part volumetric pricing.

Proposed Physical Measurement Alternatives and Criteria

The Program will employ water measurement using a combination of lateral level (upstream) turnout measurement to multiple customers, and measurement to individual customer turnouts. In development of the Program, the District will develop a master plan overview of existing and proposed measurement facilities identifying the water delivery service area served by the lateral level (upstream) measurement turnouts and the service area served by individual turnouts. This master plan will also identify the measurement device at the lateral level (upstream) turnout measurement point (main canal metered laterals, main canal unmetered laterals, main canal lift pumps/pump ditches, pump recapture sites, and gravity recapture sites), or individual turnout measurement points (main canal and certain individual customer turnouts that serve individual fields). The information regarding the proposed metering methods and equipment necessary to comply with the volumetric pricing requirement, are further discussed in "Exhibit 3" which provides general, non-exclusive options for the types of devices that could be utilized to meet §597.3(a), §597.3(b)(1), and elements of §597.4 (e)(2).

A combination of lateral level (upstream) turnout measurement and individual turnout measurement is required because the options in §597.3(a) cannot be met, at the majority of locations, by installing a manufactured or on-site built

device at each downstream individual customer delivery point. This is due to small differentials in water levels from laterals to the fields, and large fluctuations in flow rate that result in poorly functioning devices. This determination shall be evaluated and certified by an engineer in accordance with §597.3(b)(2)(B).

GCID's water conveyance system presents a wide range of physical conditions that make planning for and complying with the SBX7-7 water measurement requirements challenging. In order to address these challenges, GCID will conduct a Pilot Project (See "Exhibit 1") by installing metering equipment at representative sites to identify workable metering solutions, infrastructure modification requirements, and refine costs. Site modification and construction requirements, and costing derived from the Pilot Project will provide important information to support funding requirements and the required Proposition 218 process. The Pilot Project will be funded from the current GCID budget.

It is anticipated that the Pilot Project and subsequent Water Measurement Compliance Program will employ a combination of metering devices best suited to these various physical conditions. For lateral level (upstream) turnout measurement, the District will use a combination of measurement devices, which may include propeller meters, acoustic doppler meters, portable acoustic doppler meters, and weirs with pressure transducers:

A. Propeller meters with electronic flow rate and total quantity indicators will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1). The propeller meters measure velocity in pressurized pipes, which based on the cross-sectional area of the pipe is converted to an instantaneous flow rate. The totalizer on the device will report the total volume of water delivered by summing all of the previous measured instantaneous volumes to yield the total volume measured to date. (Best professional practices shall ensure that manufacturer documentation describes protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery).

B. Acoustic doppler velocity meters with electronic flow rate indicator and totalizer will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1). The acoustic doppler meter averages velocity and cross-sectional area at the measurement site over a specified time interval, which yields an average flow rate for this specified time interval. The totalizer on the device will report the total volume of water delivered by taking this average flow over a period of time. (Best professional practices shall ensure that manufacturer documentation describes protocols used to

measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery.)

C. Portable acoustic doppler meters will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.2(a)(b)(1). The portable acoustic doppler meter averages velocity and cross-sectional area at the measurement site over a specified time interval, which yields an average flow rate for this specified time interval. The average flow rate multiplied by the accumulated time duration at a constant maintained flow will yield the total volume of water delivered during the period of constant flow. (Best professional practices shall ensure that manufacturer documentation describes protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery).

D. Weirs with pressure transducer measurement devices will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1). Weirs with pressure transducer measurement devices measure water elevation. This data is used in conjunction with industry standard equations and/or methodologies specific to the type of weir utilized with the pressure transducer elevation readings to determine flow. The flow shall be either programmed into a data logging device for direct report of volume, or the data will be processed in spreadsheets to obtain volume. (Best professional practices shall ensure that manufacturer documentation describes protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery.) Weir measurement devices, including rectangular or v-notch weir measurement devices, will be certified by an engineer to meet the requirements of §597(a)(2)(B).

Similarly, for individual turnout measurement, the District will use a combination of measurement devices, which may include propeller meters, acoustic doppler meters, portable acoustic doppler meters, and weirs with pressure transducers:

A. Propeller meters with electronic flow rate and total quantity indicators will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1).

B. Acoustic doppler meters with electronic flow rate indicator and totalizer will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1).

C. Portable acoustic doppler meters will be used on existing and future measurement sites consistent with the accuracy standards established in Regulation §597.2(a)(b)(1).

D. Weir with pressure transducer measurement devices will be used on some existing and future measurement sites consistent with the accuracy standards established in Regulation §597.3(a)(b)(1). Rectangular or v-notch weir measurement devices will be certified to meet the water measurement requirements of §597.3(a)(2)(B); (b)(1).

"Exhibit 2" presents the projected timeline for implementation of this Program, factoring in the Pilot Project process, number of metering sites, monetary resources, limited annual construction periods and physical conditions, including weather, during GCID's 6-week winter maintenance period available for the installation of the metering equipment.

Proposed Measurement Protocols, Customer Billing, and Reporting

Currently, GCID has an active and robust measurement program throughout the distribution system including main diversion points, laterals, sublaterals, spill points, drain water recycling stations, etc. in order to effectuate good water management. Annually, the District completes a Water Measurement Report, which summarizes data on a monthly and yearly basis from all the water flow measurement points. This report is developed using a sophisticated and real-time Access database. The District has also made significant investments in Supervisory Control and Data Acquisition (SCADA), measurement reports, conjunctive use programs, conveyance improvements, and reuse facilities, all for the purpose of managing water supplies under a broad range of hydrology, delivery constraints, and ecosystem needs. This information is provided to the State Water Resources Control Board, Bureau of Reclamation, and Department of Water Resources.

A. Measurement Protocol

For this Program, the District will need to collect monthly measurement records, which will be used to develop billings to individual customers. Measurement records will be batched to the District's Water Information System to provide for a complete record of District deliveries, and then to the Water Accounting Program, which will be used to generate water user billings.

For lateral level (upstream) turnout and individual turnout measurement, the acreage and cropping pattern will be used to allocate and apportion flows to water users within a lateral or individual service area. Currently, the District generates an annual crop report that is included in the Water Measurement Report and also calculates the acreage of each crop within

each service area. This information is obtained from water users during the water application process and then is confirmed by District personnel during mid-year field inspections.

B. Customer Billing
Currently, the District utilizes a customer accounting program that bills water users based on a per-acre land based assessment, a standby charge, and volumetric consumption rate based on the planted crop applied water use and evapotranspiration rate. The rates are reviewed on an annual basis and may be increased at the discretion of the Board of Directors, and as approved by landowners pursuant to a Proposition 218 rate setting process.

With a new billing structure required to comply with SBX7-7 water measurement requirements, the District will need to migrate to a new Water Accounting Program that will enable information to be downloaded from the Water Information System and to allow for lateral level and individual turnout measurement, and apportionment processes. Additionally, the District currently bills in five installments but, since in-part volumetric pricing will be required, the billing structure and collection process of the volumetric component may need to change to a monthly billing cycle.

C. Reporting
As required in §531.10(a) of the California Water Code, the District will submit an annual report to the Department that summarizes aggregated farm-gate delivery data on a monthly basis using best professional practices.

Proposition 218 Compliance to Address New Infrastructure Costs and New Rate Methodologies Incorporating In-Part Volumetric Pricing

After the Pilot Project has been completed and the District has selected the type of equipment that will be necessary to comply with SBX7-7 water measurement requirements, the District will undertake a public outreach effort that will include a series of public landowner and water user meetings to educate stakeholders on the costs and the water rate increases that will be necessary to comply with the new law. Through a series of meetings with its water users, the District will ultimately settle on one preferred rate structure, and in accordance with the requirements of California's Proposition 218, an Engineer's Report will be prepared by a registered Civil Engineering Firm. After the Engineer's Report is completed, the District will hold a public meeting to review the Engineer's Report and proposed rate structure. This meeting will trigger the start of a 45-day time period that will allow all landowners to participate in a mail ballot election on the

proposed changes to the rate structure. At the end of the 45-day period, the District will hold a hearing to tally the mail ballot results and set the rates.

It is important to note that compliance with the SBX7-7 water measurement requirements will be based on the rate structure being approved by customers under Proposition 218 as required by Article XIIID of the California Constitution. Under Proposition 218, the District is not able to increase water rates or assessments to fund the Program without the approval of its landowners.

EXHIBIT 1: SBX7-7 METERING ALTERNATIVES PILOT PROJECT COST ESTIMATE FOR WATER YEAR 2013 TESTING

Delivery/Meter Location	Meter Model or System	Pipe Type and Diameter	Meter System Cost	SCADA System Cost and Integrator cost	Infrastructure Cost (includes installation)	Sub-total/Site District Labor & Equipment Not included
MC-58-L	Mace ADVM w/ Combo Sensor System	RCP 24"	$5,118	$4,400 +$400	$1,500	$11,418
MC-52-L	SonTek- IQ Pipe	RCP 18"	$9,925	$4,400+$400	$500	$15,225
MC-57-L	Mace ADVM w/ Insert Sensor	Smooth Steel 12"	$4,396	$4,400+$400	$1,000	$10,196
Lat. 22-1	McCrometer M1700 Digital Propeller Elect. Meter	RCP 30"	$2651	$4,400+$400	$500	$7,951
Lat. 26-2@ Co. Rd. 53 Bridge	SonTek-IQXP	6H'x10'Wx23'L Bridge Xing	$8,500	$4,400+$400	$1,000	$14,300* *($7,150/pipe)
Lat . 35-1	SonTek-SL	5'Hx7'Wx30'L Bridge Xing	$9,000	$4,400+$400	$1,000	$14,800* *($7,800/pipe)
MC 84-L	Mace AgriFlo XCI	24"RCP	$5,200	$4,000+$400	$1,000	$10,600* *($5,300/pipe)
Lat. 29-2	Mace AgriFlo XCI	48"RCP	$5,200	$4,000+$400	$500	$10,500
Lat. 30-1 Sta. 3+00	Long Throated Flume with Transducer	Open Channel 10ft. bottom width	$18,000	$4,000+$400	$500	$23,300** **Flood/Lat. Channel
MC 95-L	"V-Notch" weir w/ transducer	12" RCP	$2,600	$4,400+$400	$1000	$8,400
MC-M. 28.09R Lift Pump	McCrometer MO312 Digital Saddle Meter	12'Smooth Steel	$1989	$4,400+$400	$500	$7,289
MC 100-L	Mace ADVM w/ Insert Sensor	36" CMP	$4,396	$4,400+$400	$1,000	$10,196
Lat. 32-2	SonTek IQ	Open Channel	$7,800	$4,400+$400	$3,500 (liner)	$16,100* *($8,200/pipe)
MC-M.P. 44.93	SonTek IQPipe	Stone Corral 42" Canal Spill	$9,925	$1,000+$400	$500	$11,825
Remote Tracker ADVM w/Bluetooth and WWIN signal to Office Computer	SonTek ADV wireless velocity sensor/Panasonic CF-19 Laptop	All Types of Pipes fitted with weir box	$30,000 for a System that can measure 5-10 sites	$5,000 cost for integrator incorporating program downloads to GCID WIS	5 Weir boxes and Probe brackets @ $1,100/ea. = $5,500	$40,500/five sites equals $8,100 per site
Total for Pilot Project Testing Six Measurement Systems on Full, Partially Full, Open Channel and Lift Pump Scenarios for the 2013 Irrigation Season…… **$212,600**						

EXHIBIT 2: IMPLEMENTATION TIMELINE

Date	Action
December 2012	Complete SBX7-7 infrastructure planning and cost estimates
December 31, 2012	Complete SBX7-7 Water Measurement Compliance Program in preparation for submission to DWR pending USBR approval of Regional Water Management Plan
February 14, 2013	GCID Board of Directors review and consideration of the Regional Water Management Plan, and SBX7-7 Water Measurement Compliance Program
Phase I - Pilot Project	
March to May 2013	Conduct pilot program by installing various metering options at representative sites to assess construction requirements, confirm meter accuracy, and refine costs
May to October 2013	Operate Pilot Project metering site equipment to evaluate overall operation and accuracy
Phase II - Finalize Metering Program	
November 2013 to January 2014	Information from the Pilot Project will be used to: - Identify actual metering solutions by site - Prepare a detailed budget and schedule for implementation
Phase III - Public Outreach and Water Rate Structure	
February 2014	Hold landowner/public meetings on Project cost
March to September 2014	Develop assessment and water rate structure alternatives and continue to gather feedback from GCID water users
Phase IV – Proposition 218 Process	
October 2014 to January 2015	Complete Engineering Report in accordance with Proposition 218 assessment and water rate requirements
February 2015	Hold landowner/public meetings on results of Engineering Report and proposed rate structure
June 2015	Begin 45-day mandatory Proposition 218 notice period
August 2015	Hold final Proposition 218 hearing, and set rates

Phase V – Installation of Metering Infrastructure	
October 2015	Begin full-scale installation of metering infrastructure pending outcome of the Proposition 218 process It is anticipated that a maximum of 30 metering sites can be installed per year due to critical issues that impact design, construction, and installation of metering equipment, including: - Special conditions created by the presence of aquatic weed infestations - Year-round water service confines major construction activities to a 6-week period during January and February, and other limited periods when dry conditions allow - Weather conditions can limit construction activities during the winter months - Installation of metering infrastructure is dependent upon funding and successful completion of the Proposition 218 process

Flow Condition	Measurement Device	Type of Device	Manufacturer Accuracy for New Device	SBX7-7 Accuracy Criteria	Volumetric Conversion Protocol per **§597.4 (e)(3)**	Frequency of Measurements per **§597.4 (e)(2)(2)**	Installation Criteria per **Best Professional Practices**	Collection of Water Measurement Data per **§597.4 (e)(2)(1)**
Open Channel	Measurement Specialties *730S*	Pressure transducer with stilling well	▪ ±0.1 Full Scale Output by Best-Fit Straight Line	<u>As Applicable:</u> New: Requires §597.3 (a)(2); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Stage-Weir discharge relationship	5-15 minutes unless Best Professional Practices determine otherwise	Install in a location with minimal turbulence and appropriate pressure measuring range	Real-time remote acquisition and/or monthly physical connection with device storage for download
	Water Pilot *FMX 167*	Pressure transducer with stilling well	▪ Maximum measured error: ±0.2% of upper range value	<u>As Applicable:</u> New: Requires §597.3 (a)(2); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Stage-Weir discharge relationship	5-15 minutes unless Best Professional Practices determine otherwise	Install in a location with minimal turbulence and appropriate pressure measuring range	Real-time remote acquisition and/or monthly physical connection with device storage for download
	SonTek *IQ (Standard or Plus)*	Acoustic doppler current meter	▪ ±1% of measured velocity, ±0.5 cm/s (0.2 in/s) ▪ 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Install at least ten channel widths upstream and downstream of any flow disturbances (i.e. gates, curves, abrupt changes in elevation)	Real-time remote acquisition and/or monthly physical connection with device storage for download
	SonTek *SL 1500*	Acoustic doppler current meter	▪ ± 1% of measured velocity, ± 0.015 ft/s ▪ ±0.3cm (0.01 ft) of measured depth ±0.1%	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Straight and uniform canal stretch with minimal turbulence	Real-time remote acquisition and/or monthly physical connection with device storage for download
	SonTek *SW*	Acoustic doppler current meter	▪ ±1% of measured velocity, ± 0.015 ft/s ▪ ±0.1% of measured depth, ±0.3 cm (0.01 ft)	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Straight and uniform canal stretch with minimal turbulence	Real-time remote acquisition and/or monthly physical connection with device storage for download
	SonTek *IQ Pipe*	Acoustic doppler current meter	▪ ±1% of measured velocity, ±0.5 cm/s (0.2 in/s) ▪ 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2) (A); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	10 pipe diameters in either direction from an obstruction or flow diversion	Real-time remote acquisition and/or monthly physical connection with device storage for download

Flow Condition	Measurement Device	Type of Device	Manufacturer Accuracy for New Device	SBX7-7 Accuracy Criteria	Volumetric Conversion Protocol per **§597.4 (e)(3)**	Frequency of Measurements per **§597.4 (e)(2)(2)**	Installation Criteria per **Best Professional Practices**	Collection of Water Measurement Data per **§597.4 (e)(2)(1)**
Full Pipe	McCrometer *Mc Propeller M1700*	Propeller Open Flow meter	▪ ±2% of measured velocity with repeatability of ±0.25%	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Positioning: 10 pipe diameters upstream	Real-time remote acquisition and/or monthly physical connection with device storage for download
	McCrometer *Bolt-On Saddle Flowmeter MO300 or M1400*	Propeller meter	▪ ±2% of measured velocity with repeatability of ±0.25%	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Positioning: 10 pipe diameters upstream and two diameters downstream of the meter	Real-time remote acquisition and/or monthly physical connection with device storage for download
	Mace *Doppler Velocity Insert*	Doppler ultrasonic velocity sensor	▪ ±1% of measured velocity, up to 10 ft/s	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1) Existing: Requires §597.3 (a)(1); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Positioning is valve dependent: 6-15 pipe diameters upstream and 2-6 diameters downstream	Real-time remote acquisition and/or monthly physical connection with device storage for download
	SonTek *IQ Pipe*	Acoustic doppler current meter	▪ ±0.1% of full scale pressure ▪ ±1% of measured velocity, ±0.5 cm/s (0.2 in/s) ▪ 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	10 pipe diameters in either direction from an obstruction or flow diversion	Real-time remote acquisition and/or monthly physical connection with device storage for download
	H2o Tech RemoteTracker	Acoustic doppler velocimeter	▪ ±4.6%	<u>As Applicable:</u> New: Satisfies §597.3 (a)(2)(A); (b)(1)	Device reports total volume of water delivered using: $V = \sum_{i=1}^{n} v_i A_i T$	5-15 minutes unless Best Professional Practices determine otherwise	Positioning: Weir box at turnout to ensure full pipe flow with bracket to position sensor at center of pipe	Real-time remote acquisition and/or monthly bluetooth connection with device storage for download

Please Note:

The Volumetric conversion protocol variables are defined below.

$$V = \sum_{i=0}^{n} v_i A_i T$$

V (Volume, ft^3)
Σ (summation sign)
n (final reported measurement for the year)
i=1 (first measurement)
v_i (velocity, ft/s)
A_i (cross sectional area, ft^2)
T (sample time duration of measurement)

Essentially, this equation states that the volume of water measured over a sample time will be totalized to all previous measured volumes to yield the total volume measured thus far at that time in the year.

Exhibit 4

State of California
The Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch

Agricultural Water Measurement

A regulation included under the authority of
Section 10608.48(i) (1) and(2) of the California Water Code

July 11, 2012

Edmund G. Brown Jr.	**John Laird**	**Mark W. Cowin**
Governor	Secretary for Natural Resources	Director
State of California	The Natural Resources Agency	Department of Water Resources

State of California
Office of Administrative Law

In re: **Department of Water Resources**	**NOTICE OF APPROVAL OF REGULATORY ACTION**
Regulatory Action:	**Government Code Section 11349.3**
Title 23, California Code of Regulations	**OAL File No. 2012-0531-01 SR**
Adopt sections: 597, 597.1, 597.2, 597.3, 597.4 **Amend sections:** **Repeal sections:**	

The Department of Water Resources proposed this action to adopt five sections and create a new article in title 23 of the California Code of Regulations for agricultural water measurement. The purpose of the regulatory action is to provide a range of options that agricultural water suppliers may use or implement to comply with the water measurement requirements in Water Code 10608.48(b)(1). These regulations implement amendments to the Water Code made in S.B. 7 (Stats. 2009, 7th Ex. Sess., ch. 4).

OAL approves this regulatory action pursuant to section 11349.3 of the Government Code. This regulatory action becomes effective on 7/11/2012.

Date: 7/11/2012

Richard L. Smith

Richard L. Smith
Senior Counsel

For: DEBRA M. CORNEZ
Director

Original: Mark Cowin
Copy: Kent Frame

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 (Department) is required to 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 states 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 for water customers based at least in part on quantity delivered.*

For further reference, §531.10(a) of the California Water Code requires that:

> *(a) An agricultural water supplier shall submit an annual report to the department that summarizes aggregated farm-gate delivery data, on a monthly or bi-monthly basis, using best professional practices.*

Notes:

(1) Paragraphs (1) and (2) of §10608.48(b) specify agricultural water suppliers' reporting of aggregated farm-gate water delivery and adopting a volumetric water pricing structure as the purposes of water measurement. However, this article only addresses developing a range of options for water measurement.

(2) Agricultural water suppliers reporting agricultural water deliveries measured under this article shall use the "Agricultural Aggregated Farm – Gate Delivery Reporting Format for Article 2" (Rev. 6-20-12), developed for this article and hereby incorporated by reference.

(3) The Department shall report on the availability of new commercially available water measurement technologies and impediments to implementation of this article when reporting to the Legislature the status of adopted Agricultural Water Management Plans in plan submittal years 2012, 2015 and every five years thereafter as required by California Water Code §10845. The Department shall also report the findings to the California Water Commission.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 (b), 10608.48 (i), 10608.52 (b) and 10845 Water Code.

§597.1. Applicability

(a) An agricultural water supplier providing water to 25,000 irrigated acres or more, excluding acres that receive only recycled water, is subject to this article.

(b) A wholesale agricultural water supplier providing water to another agricultural water supplier (the receiving water supplier) for ultimate resale to customers is subject to this article at the location at which control of the water is transferred to the receiving water supplier. However, the wholesale agricultural water supplier is not required to measure the receiving agricultural water supplier's deliveries to its customers.

(c) A water supplier providing water to wildlife refuges or habitat lands where (1) the refuges or habitat lands are under a contractual relationship with the water supplier, and (2) the water supplier meets the irrigated acreage criteria of Water Code §10608.12(a), is subject to this article.

(d) An agricultural water supplier providing water to less than 10,000 irrigated acres, excluding acres that receive only recycled water, is not subject to this article.

(e) An agricultural water supplier providing water to 10,000 or more irrigated acres but less than 25,000 irrigated acres, excluding acres that receive only recycled water, is not subject to this article unless sufficient funding is provided specifically for that purpose, as stated under Water Code §10853.

(f) A canal authority or other entity that conveys or delivers water through facilities owned by a federal agency is not subject to this article.

(g) Pursuant to Water Code §10608.8(d), an 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," is not subject to this article.

(h) Pursuant to Water Code §10608.12(a), the Department is not subject to this article.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 10608.12 (a), 10608.48 (d), 10608.48 (f), 10828, and 10853 Water Code.

§597.2. Definitions

(a) For purposes of this article, the terms used are defined in this section.

(1) "Accuracy" means the measured volume relative to the actual volume, expressed as a percent. The percent shall be calculated as 100 x (measured value – actual value) / actual value, where "measured value" is the value indicated by the device or determined through calculations using a measured value by the device, such as flow rate, combined with a duration of flow, and "actual value" is the value as determined through laboratory, design or field testing protocols using best professional practices.

(2) "Agricultural water supplier," as defined in Water Code §10608.12(a), means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding acres that receive only recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the Department.

(3) "Approved by an engineer" means a California-registered Professional Engineer has reviewed, signed and stamped the plans, design, testing, inspection, and/or documentation report for a measurement device as described in this article.

(4) "Best professional practices" means practices attaining to and maintaining accuracy of measurement and reporting devices and methods described in this article, such as operation and maintenance procedures and practices recommended by measurement device manufacturers, designers, and industry professionals.

(5) "Customer" means the purchaser of water from an agricultural water supplier who has a contractual arrangement with the agricultural water supplier for the service of conveying water to the customer delivery point.

(6) "Delivery point" means the location at which the agricultural water supplier transfers control of delivered water to a customer or group of customers. In most instances, the transfer of control occurs at the farm-gate, which is therefore, a delivery point.

(7) "Existing measurement device," means a measurement device that was installed in the field prior to the effective date of this article.

(8) "Farm-gate," as defined in Water Code §531(f), means the point at which water is delivered from the agricultural water supplier's distribution system to each of its customers.

(9) "Irrigated acres," for purposes of applicability of this article, is calculated as the average of the previous five-year acreage within the agricultural water supplier's service area that has received irrigation water from the agricultural water supplier.

(10) "Manufactured device" means a device that is manufactured by a commercial enterprise, often under exclusive legal rights of the manufacturer, for direct off-the-shelf purchase and installation. Such devices are capable of directly measuring flow rate, velocity, or accumulating the volume of water delivered, without the need for additional components that are built on-site or in-house.

(11) "Measurement device" means a device by which an agricultural water supplier determines the numeric value of flow rate, velocity or volume of the water passing a designated delivery point. A measurement device may be a manufactured device, on-site built device or in-house built device.

(12) "New or replacement measurement device" means a measurement device installed after the effective date of this article.

(13) "Recycled water" is defined in subdivision (n) of §13050 of the Water Code as water that, 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) "Type of device" means a measurement device that is manufactured or built to perform similar functions. For example, rectangular, v-notch, and broad crested weirs are one type of device. Similarly, all submerged orifice gates are considered one type of device.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 10608.12 (a), 10608.12 (m), 10608.48, and 10813 Water Code.

§597.3 Range of Options for Agricultural Water Measurement

An agricultural water supplier subject to this article shall measure surface water and groundwater that it delivers to its customers pursuant to the accuracy standards in this section. The supplier may choose any applicable single measurement option or combination of options listed in paragraphs (a) or (b) of this section. Measurement device accuracy and operation shall be certified, tested, inspected and/or analyzed as described in §597.4 of this article.

(a) Measurement Options at the Delivery Point or Farm-gate of a Single Customer

An agricultural water supplier shall measure water delivered at the delivery point or farm-gate of a single customer using one of the following measurement options. The stated numerical accuracy for each measurement option is for the volume delivered. If a device measures a value other than volume, for example, flow rate,

velocity or water elevation, the accuracy certification must incorporate the measurements or calculations required to convert the measured value to volume as described in §597.4(e).

(1) An existing measurement device shall be certified to be accurate to within ±12% by volume.

and,

(2) A new or replacement measurement device shall be certified to be accurate to within:

(A) ±5% by volume in the laboratory if using a laboratory certification;

(B) ±10% by volume in the field if using a non-laboratory certification.

(b) Measurement Options at a Location Upstream of the Delivery Points or Farm-gates of Multiple Customers

(1) An agricultural water supplier may measure water delivered at a location upstream of the delivery points or farm-gates of multiple customers using one of the measurement options described in §597.3(a) if the downstream individual customer's delivery points meet either of the following conditions:

(A) The agricultural water supplier does not have legal access to the delivery points of individual customers or group of customers needed to install, measure, maintain, operate, and monitor a measurement device.

Or,

(B) An engineer determines that, due to small differentials in water level or large fluctuations in flow rate or velocity that occur during the delivery season at a single farm-gate, accuracy standards of measurement options in §597.3(a) cannot be met by installing a measurement device or devices (manufactured or on-site built or in-house built devices with or without additional components such as gauging rod, water level control structure at the farm-gate, etc.). If conditions change such that the accuracy standards of measurement options in §597.3(a) at the farm-gate can be met, an agricultural water supplier shall include in its Agricultural Water Management Plan, a schedule, budget and finance plan to demonstrate progress to measure water at the farm-gate in compliance with §597.3(a) of this article.

(2) An agricultural water supplier choosing an option under paragraph (b)(1) of this section shall provide the following current documentation in its Agricultural Water Management Plan(s) submitted pursuant to Water Code §10826:

(A) When applicable, to demonstrate lack of legal access at delivery points of individual customers or group of customers downstream of the point of measurement, the agricultural water supplier's legal counsel shall certify to the Department that it does not have legal access to measure water at customers delivery points and that it has sought and been denied access from its customers to measure water at those points.

(B) When applicable, the agricultural water supplier shall document the water measurement device unavailability and that the water level or flow conditions described in §597.3(b)(1)(B) exist at individual customer's delivery points downstream of the point of measurement as approved by an engineer.

(C) The agricultural water supplier shall document all of the following criteria about the methodology it uses to apportion the volume of water delivered to the individual downstream customers:

(i) How it accounts for differences in water use among the individual customers based on but not limited to the duration of water delivery to the individual customers, annual customer water use patterns, irrigated acreage, crops planted, and on-farm irrigation system,

and;

(ii) That it is sufficient for establishing a pricing structure based at least in part on the volume delivered,

and;

(iii) That it was approved by the agricultural water supplier's governing board or body.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 *(i)* (1), and 10826 Water Code.

§597.4 Accuracy Certification, Records Retention, Device Performance, and Reporting

(a) Initial Certification of Device Accuracy

The accuracy of an existing, new or replacement measurement device or type of device, as required in §597.3, shall be initially certified and documented as follows:

(1) For existing measurement devices, the device accuracy required in section 597.3(a) shall be initially certified and documented by either:

(A) Field-testing that is completed on a random and statistically representative sample of the existing measurement devices as described in §597.4(b)(1) and §597.4(b)(2). Field-testing shall be performed by individuals trained in the use of field-testing equipment, and documented in a report approved by an engineer.

Or,

(B) Field-inspections and analysis completed for every existing measurement device as described in §597.4(b)(3). Field-inspections and analysis shall be performed by trained individuals in the use of field inspection and analysis, and documented in a report approved by an engineer.

(2) For new or replacement measurement devices, the device accuracy required in sections 597.3 (a)(2) shall be initially certified and documented by either:

(A) Laboratory Certification prior to installation of a measurement device as documented by the manufacturer or an entity, institution or individual that tested the device following industry-established protocols such as the National Institute for Standards and Testing (NIST) traceability standards. Documentation shall include the manufacturer's literature or the results of laboratory testing of an individual device or type of device.

Or,

(B) Non-Laboratory Certification after the installation of a measurement device in the field, as documented by either:

(i) An affidavit approved by an engineer submitted to the agricultural water supplier of either (1) the design and installation of an individual device at a specified location, or (2) the standardized design and installation for a group of measurement devices for each type of device installed at specified locations.

Or,

(ii) A report submitted to the agricultural water supplier and approved by an engineer documenting the field-testing performed on the installed measurement device or type of device, by individuals trained in the use of field testing equipment.

(b) Protocols for Field-Testing and Field-Inspection and Analysis of Existing Devices

(1) Field-testing shall be performed for a sample of existing measurement devices according to manufacturer's recommendations or design specifications and following best professional practices. It is recommended that the sample size be no less than 10% of existing devices, with a minimum of 5, and not to exceed 100 individual devices for any particular device type. Alternatively, the supplier may develop its own sampling plan using an accepted statistical methodology.

(2) If during the field-testing of existing measurement devices, more than one quarter of the samples for any particular device type do not meet the criteria pursuant to §597.3(a), the agricultural water supplier shall provide in its Agricultural Water

Management Plan, a plan to test an additional 10% of its existing devices, with a minimum of 5, but not to exceed an additional 100 individual devices for the particular device type. This second round of field-testing and corrective actions shall be completed within three years of the initial field-testing.

(3) Field-inspections and analysis protocols shall be performed and the results shall be approved by an engineer for every existing measurement device to demonstrate that the design and installation standards used for the installation of existing measurement devices meet the accuracy standards of §597.3(a) and operation and maintenance protocols meet best professional practices.

(c) Records Retention

Records documenting compliance with the requirements in §597.3 and §597.4 shall be maintained by the agricultural water supplier for ten years or two Agricultural Water Management Plan cycles.

(d) Performance Requirements

(1) All measurement devices shall be correctly installed, maintained, operated, inspected, and monitored as described by the manufacturer, the laboratory or the registered Professional Engineer that has signed and stamped certification of the device, and pursuant to best professional practices.

(2) If an installed measurement device no longer meets the accuracy requirements of §597.3(a) based on either field-testing or field-inspections and analysis as defined in sections 597.4 (a) and (b) for either the initial accuracy certification or during operations and maintenance, then the agricultural water supplier shall take appropriate corrective action, including but not limited to, repair or replacement to achieve the requirements of this article.

(e) Reporting in Agricultural Water Management Plans

Agricultural water suppliers shall report the following information in their Agricultural Water Management Plan(s):

(1) Documentation as required to demonstrate compliance with §597.3 (b), as outlined in section §597.3(b)(2), and §597.4(b)(2).

(2) A description of best professional practices about, but not limited to, the (1) collection of water measurement data, (2) frequency of measurements, (3) method for determining irrigated acres, and (4) quality control and quality assurance procedures.

(3) If a water measurement device measures flow rate, velocity or water elevation, and does not report the total volume of water delivered, the agricultural water supplier must document in its Agricultural Water Management Plan how it converted the

measured value to volume. The protocols must follow best professional practices and include the following methods for determining volumetric deliveries:

(A) For devices that measure flow-rate, documentation shall describe protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery.

(B) For devices that measure velocity only, the documentation shall describe protocols associated with the measurement of the cross-sectional area of flow and duration of water delivery, where volume is derived by the following formula: Volume = velocity x cross-section flow area x duration of delivery.

(C) For devices that measure water elevation at the device (e.g. flow over a weir or differential elevation on either side of a device), the documentation shall describe protocols associated with the measurement of elevation that was used to derive flow rate at the device. The documentation will also describe the method or formula used to derive volume from the measured elevation value(s).

(4) If an existing water measurement device is determined to be out of compliance with §597.3, and the agricultural water supplier is unable to bring it into compliance before submitting its Agricultural Water Management Plan in December 2012, the agricultural water supplier shall provide in its 2012 plan, a schedule, budget and finance plan for taking corrective action in three years or less.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 *(i)* (1), and 10826 Water Code.

Agricultural Aggregated Farm-Gate[1] Delivery Reporting Format for Article 2

Due annually beginning no later than July 31, 2013 from agricultural water suppliers subject to Title 23, Division 2, Chapter 5.1, Article 2 of the CCR - Agricultural Water Measurement

1. Water Supplier Information

Name:

Address:

Phone Number:

Fax:

Total Number of Farm-Gates:

Number of Measured Farm-Gates:

Service Area Acreage:

2. Contact information

Name:

Title:

Address:

Phone Number:

Fax:

E-mail:

Submittal date:

3. Aggregated Farm-Gate Delivery Data[2]: (*provide monthly or bimonthly data, acre-feet*)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Monthly Deliveries													

	Jul-Aug	Sep-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun	Total
Bimonthly Deliveries							

4. Explanations, Comments and Best Professional Practices[3]:

Note: An agricultural water supplier's total water use may be different from Aggregated Farm-Gate deliveries because measurement at these points may not account for other practices (such as groundwater recharge/conjunctive use, water transfers, wheeling to other agencies, urban use, etc).

1. "Farm-gate" means the point at which water is delivered from the agricultural water supplier's distribution system to each of its individual customers as specified in the Agricultural Water Measurement Regulation (Title 23, Division 2, Chapter 5.1, Article 2 of the CCR).
2. "Aggregated farm-gate delivery data" means information reflecting the total volume of water an agricultural water supplier provides to its customers and is calculated by totaling its deliveries to customers.
3. "Best Professional Practices" is defined in Title 23, Division 2, Chapter 5.1, Article 2 of the CCR, Section 597.2.

EXHIBIT D

GCID Agricultural Water Measurement Pilot Project – *Phase 1 Progress Report*

Performance Evaluation of Non-exclusive Water Measurement Devices

September 5, 2013

Prepared By:

Marcus Cardenas

Zac Dickens

Chris Privitera

Aaron Johnson

Contents

List of Acronyms

AWMP	Agricultural Water Management Plan
DSI	Doppler Stream Index
D/S	Downstream
ft/s	Feet per second
GCID	Glenn-Colusa Irrigation District
NEMA	National Electrical Manufacturers Association
PT	Pressure Transducer
PVC	Polyvinyl chloride
RCP	Reinforced Concrete Pipe
SBX7-7	California Senate Bill X7-7 (Water Conservation Act of 2009)
SCADA	Supervisory Control and Data Acquisition
SSP	Smooth Steel Pipe
U/S	Upstream

Executive Summary

The Water Conservation Act of 2009 (California State Senate Bill X7-7 or SBX7-7) requires agricultural water suppliers which irrigate over 25,000 acres to prepare and adopt an Agricultural Water Management Plan (AWMP) to increase water use efficiency. Glenn-Colusa Irrigation District (GCID) prepared the Water Measurement Compliance Program (Program), to comply with the Agricultural Water Measurement component of SBX7-7. This Program, together with the USBR-approved Sacramento Valley Regional Water Management Plan Annual Update 2010-2011 constitute GCID's AWMP. On February 14, 2013, GCID's Board of Directors unanimously approved the resolution to adopt the AWMP. GCID submitted the AWMP in concert with Reclamation District 108 and Sutter Mutual Water Company to the California Department of Water Resources on March 7, 2013.

GCID's Program is comprised of five phases. Phase I (Pilot Project) is the deployment and evaluation of measurement device alternatives at sites representative of GCID's diverse conveyance system. These measurement sites are a combination of lateral level (upstream of delivery points) and farm-gate turnouts, which deliver water to an individual landowner. The Pilot Project has five measurement sites located upstream of the delivery points and five farm-gate turnout measurement sites, each of which is measured using a device from **Table 1**. These Pilot Project sites are positioned central to GCID's Office in Willows, see **Figure 1**. This expedites GCID personnel access to the sites, thereby enhancing the evaluation effort of these devices.

The objectives of the Pilot Project were to include: identify effective measurement solutions which are best suited for GCID's diverse delivery conditions, installation requirements, and refining cost estimates. It has been determined that the average labor cost to install each device is $1,575 and the average equipment cost per site is $510. This information, in conjunction with the cost summary from **Table 2** indicates that the labor and equipment costs make up 21.1% of the $9,862 average site cost. Moderate site modification and construction requirements were required and typically unique to each site. However, measurement device installations in existing concrete culverts proved to be the quickest and most straightforward. Device installations inside pipes often required preliminary silt removal by equipment or District personnel and the smaller pipes restricted the use of certain tools which facilitate installation. Installing pipe insert meters in sub grade pipes requires heavy equipment and impedes immediate access once the assembly has been backfilled. The precast concrete weir box installed at GCID lateral 28-1-1L required manufacturing of the steel weir plate and heavy equipment to place the weir at design grade. The weir box was subject to the greatest amount

of installation error. All of the measurement devices for the first phase of the pilot project were installed by May 3, 2013.

The Pilot Project is not assessing the accuracy of the measurement devices at the deployed locations. The chosen metering devices meet the SBX7-7 laboratory certified accuracy criteria, which is listed in **Table 4**. The devices were installed in accordance with manufacturer installation recommendations so as to adhere to best professional practices.

The performance evaluation of the devices focused on the reliability of the meters to continuously report and record flow data. Throughout Phase 1 of the Pilot Project; one Controller card failed, two acoustic-type meters failed (one has been replaced), and four of the ten devices had gaps in the flow data in excess of twelve hours. Flow data accuracy and reliability is paramount if GCID is to begin billing its customers at least in-part by volume delivered. It is recommended that GCID extend Phase 1 of the Pilot Project into the 2014 irrigation season to include additional and alternative measurement applications to solidify the measurement solutions that could be used in the Program. An accurate accounting of the time spent by staff maintaining, troubleshooting, and managing data will help in estimating the staff hours needed to operate the Program. Extending the first phase of the Pilot Project will also serve to improve planning, cost estimating and implementation efforts.

Non-exclusive Measurement Device Options

Table 1: Flow Parameters Measured per Device

SonTek: Acoustic Monostatic Doppler Current Meters

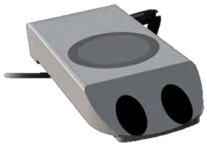
- *IQ-Plus*
  - Velocity
  - Depth
  - Flow Rate
  - Total Flow
  - Temperature

- *IQ-Pipe*
  - Velocity
  - Depth
  - Flow Rate
  - Total Flow
  - Temperature

Mace: Doppler Ultrasonic

- *Doppler Ultrasonic Velocity Sensor*
  - Velocity
  - Flow *
  - Total Flow*

- *Doppler Ultrasonic Area/Velocity Sensor*
  - Velocity
  - Depth
  - Flow
  - Total Flow



- Doppler Ultrasonic Insert Velocity Sensor
  - Velocity
  - Flow*
  - Total Flow*

McCrometer: Mechanical Propeller Meter

- *M1700 Digital Propeller Elec. Meter*
  - Current Flow
  - Total Flow*

Measurement Specialties: Pressure Transducer & Accompanying Data Logger

- *TruBlue 555 Level*
  - Depth
  - Flow (Post Processing)

*Asterisk denotes: Assuming a constant cross section, always full

Figure 1: Pilot Project Measurement Sites

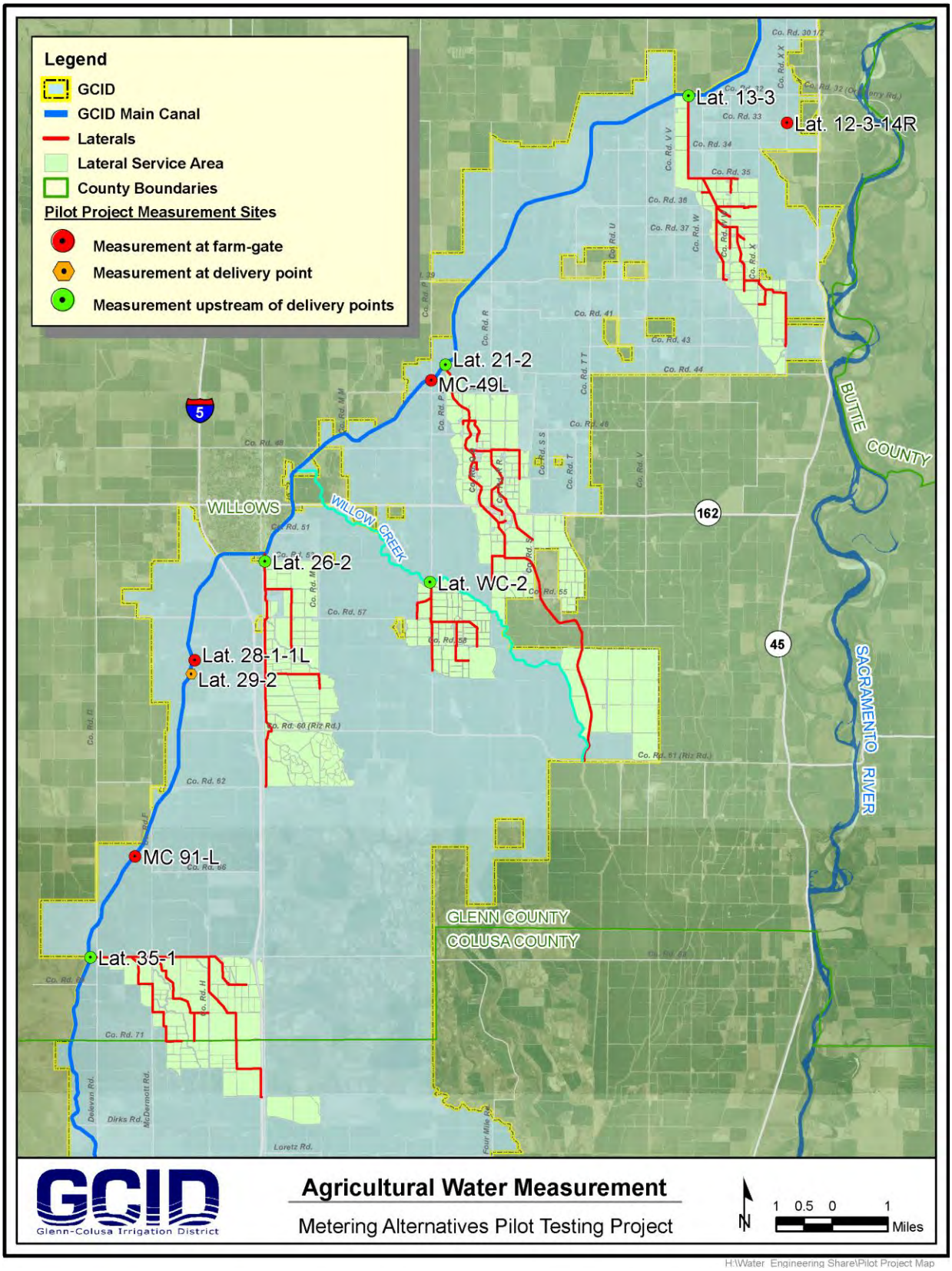


Table 2: Pilot Project Cost Summary

Site	Meter Manufacturer	Meter Type	Total Cost Per Site:
Lateral 12-3-14 R	Mace	Doppler Ultrasonic Area/Velocity Sensor	$ 8,850
Lateral 13-3	McCrometer Propeller	M1700 Digital Propeller Meter	$ 6,210
Lateral 21-2	Mace	Doppler Ultrasonic Velocity Sensor	$ 10,280
Main Canal 49- L	SonTek	IQ Pipe	$ 13,675
Lateral 26-2	SonTek	IQ Plus	$ 12,300
Juney Weir Lift Pump	Mace	Doppler Ultrasonic Insert Velocity Sensor	$ 12,463
Lateral 28-1-L	Measurement Specialties & Briggs Mfg.	Pressure transducer and data logger with suppressed rectangular weir	$ 6,155
Lateral 29-2	SonTek	IQ Pipe	$ 12,035
Main Canal 91-L	Mace	Doppler Ultrasonic Insert Velocity Sensor	$ 7,930
Lateral 35-1	Mace	Doppler Ultrasonic Area/Velocity Sensor	$ 8,720
Total Cost of SBX7-7 Pilot Project			**$ 98,618**
Average Cost Per Site			**$ 9,862**

Table 3: Doppler-Based Meter Cost Comparison

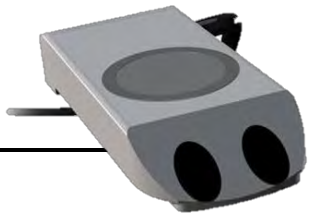
Meter Manufacturer	Average Total Cost Per Site
Mace	$ 9,650
SonTek	$ 12,670
Average Cost Difference	**$ 3,020**

Measurement Sites Overview:

The following pages address site specific details covering: the measurement device installation, total deployment cost, and comments pertaining to the installation and functionality of the device.

Lateral 12-3-14 R

- Mace Doppler Ultrasonic Area/Velocity Sensor
- Crop Type: Corn
- Deployment Date: 4/9/13
- Last Data Extraction: 8/7/13



- Details:
  - 18” RCP
  - Meter Facing Upstream

- SCADA Ready:
  - Yes

- Cost Analysis:
  - Flow Meter : $ 5,295
  - Labor : $1,500
  - Materials & Supplies: $1,570
  - Equipment : $485
  - **Total: $ 8,850**

- Summary:
  - 34.7 Acres Served
  - Total $/Acre: 255

- Comments:
  - There were some initial issues when calibrating the depth, the software was counterintuitive to GCID personnel.
  - When there is no water being delivered past the meter (i.e. there is no water in the pipe) the meter continues to generate a depth measurement.
  - The MACE ZX Snap Strap was utilized at this location to secure the meter in the concrete pipe. The ZX Snap Strap made the meter installation very quick and easy.
  - After initial installation and programming, this meter has performed w/o incident for the duration of the pilot project.

Figure 1. Looking u/s at lateral 12-3-14R

Lateral 13-3

- McCrometer M1700 Digital Display Propeller Meter
- Crop Type: Rice
- Deployment Date: 4/8/2013
- Last Data Extraction: 8/1/2013

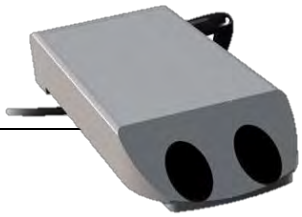
- Details:
  - 48” RCP
  - Meter Facing Upstream
- SCADA Ready:
  - Yes – Currently Online
- Cost Analysis:
  - Flow Meter : $ 2,655
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 6,210**
- Summary:
  - 1,783 Acres Served
  - Total $/Acre: 4

- Comments:
  - Aquatic weeds are a point of concern for propeller meters at GCID. At this location, there is a trash rack on the u/s side of the meter. According to the water operator in this service area, this trash rack was being cleaned 2-4 times per day in order to keep the meter from fouling.
  - This location might be an excellent choice to beta test one of McCrometer’s reverse-style propeller meters.
  - McCrometer has quoted $1,400 to retrofit the existing meter to a reverse-type.

Figure 2. Looking u/s at the head gates of lateral 13-3

Lateral 21-2

- Mace Doppler Ultrasonic Velocity Sensors (quantity 2)
- Crop Type: Rice
- Deployment Date: 4/10/2013
- Last Data Extraction: 8/7/2013



- Details:
  - 48” & 36” RCP
  - Meters Facing Upstream

- SCADA Ready:
  - Yes

- Cost Analysis:
  - Flow Meters : $ 6,725
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $485
  - **Total: $ 10,280**

- Summary:
  - 3,502 Acres Served
  - Total $/Acre: 3

- Comments
  - The meters installed at this location do not have a depth sensor and thus, are operating under the assumption that BOTH pipes run full.
  - Although there have been no incidences yet, this location has a high potential for vandalism.
  - For reasons yet to be determined, after approximately 30 days of operation, the MACE meter in the Southern pipe stopped working properly.
  - On June 28th, the MACE meter in the Northern pipe began generating erroneous flow data. The cause of the poor data has yet to be determined.

Figure 3. Looking at the head gates of lateral 21-2 off the main canal

Main Canal 49-L

- SonTek-IQ Pipe
- Crop Type: Rice
- Deployment Date: 4/29/2013
- Last Data Extraction: 8/7/2013

- Details:
  - 18” RCP
  - Meter Facing Upstream

- Cost Analysis:
  - Flow Meter : $ 10,120
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 13,675**

- SCADA Ready:
  - Yes

- Summary:
  - 21 Acres Served
  - Total $/Acre: 652

- Comments:
  - This is the only SonTek site in the pilot project where SonTek’s stainless-steel scissor-jack strap was used. The scissor-jack strap made the final installation of the meter very quick and easy.
  - Prior to the meter installation, silt removal was required on the discharge side of the pipe by a backhoe in order to allow GCID personnel room to work.
  - After initial installation and programming, this meter has performed w/o incident for the duration of the pilot project.

Figure 4. SonTek IQ Pipe meter location at main canal turnout 49-L

Lateral 26-2

- SonTek–IQ Plus
- Crop Type: Rice
- Deployment Date: 4/30/2013
- Last Data Extraction: 8/7/2013

- Details:
  - 6'H x 10'W x 23'L Bridge
  - Meter Facing Upstream

- SCADA Ready:
  - Yes

- Cost Analysis:
  - Flow Meter : $ 8,745
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 12,300**

- Summary:
  - 2,350 Acres Served
  - Total $/Acre: 6

- Comments:
  - During initial installation, the cable that connects the meter to the digital display was crimped behind the NEMA 4 enclosure's back plate. Luckily, the SonTek cables allow an operator to splice the cables; had this crimping of the cable happened at a MACE site, the entire meter would have been compromised.
  - This location has been vandalized by graffiti once, and maintains a high potential for vandalism in the future.
  - After initial installation and programming, this meter has performed w/o incident for the duration of the pilot project.

Figure 5. Looking u/s at the SonTek meter installation site along lateral 26-2 (the meter is located under the bridge)

Juney Weir Lift Pump

- Mace Doppler Ultrasonic Insert Velocity Sensor (qty. 2)
- Crop Type: Rice
- Deployment Date: 9/6/12
- Last Data Extraction: 7/3/13

- Details:
  - 30” & 20” SSP
  - Meters Facing Downstream

- SCADA Ready:
  - Yes - Online

- Cost Analysis:
  - Flow Meter : $ 7,915
  - Labor : $2,250
  - Materials & Supplies: $ 1,570
  - Equipment : $ 728
  - **Total: $ 12,463**

- Summary:
  - 1,164 Acres Served
  - Total $/Acre: 11

- Comments:
  - Two insert type MACE meters are installed at this location (one meter per pump)
  - Equipment costs and labor costs for this site were elevated because a backhoe was needed to expose the pipes and a welder was required to assist with the meter installation.
  - Approximately 6 weeks into the irrigation season, the MACE Controller card was compromised, and the meters stopped working. The cause of the controller card failure is still under investigation.
  - As of 9-5-2013, this metering site has not yet been repaired.

Figure 6. MACE enclosure at the Juney Weir lift pump station

Lateral 28-1-1L

- Pressure Transducer & Data Logger with Suppressed Rectangular Weir
- Crop Type: Rice
- Deployment Date: 5/3/2013
- Last Data Extraction: 8/1/2013

- Details:
  - Briggs Delivery Box
  - Suppressed Rectangular Weir

- SCADA Ready:
  - No

- Cost Analysis:
  - PT & Datalogger : $ 2,600
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 6,155**

- Summary:
  - 17.1 Acres Served
  - Total $/Acre: 360

- Comments:
  - This location was initially designed to have a v-notch weir. During the grower's initial irrigation, it was determined that the installed weir was not allowing the design flow rate. Thus, the v-notch weir was immediately removed and flashboards were installed.
  - The steel crest of the suppressed weir was not installed level, thus generating unnecessary inaccuracies in the depth measurement.
  - The TruWare software has not been easy to navigate. Gaps in data were initially recorded and brought to the manufacture's attention; an updated software version has since been released.

Figure 7. Lat. 28-1-1L Briggs box and sharp crested suppressed rectangular weir where the PT is located

Lateral 29-2

- SonTek-IQ Pipe
- Crop Type: Rice
- Deployment Date: 4/26/2013
- Last Data Extraction: 8/7/2013

- Details:
  - 48” RCP
  - Meter Facing Upstream

- SCADA Ready:
  - Yes

- Cost Analysis:
  - Flow Meter : $ 8,480
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 12,035**

- Summary:
  - 597 Acres Served
  - Total $/Acre: 21

- Comments:
  - Before the SonTek meter could be installed, a large amount of silt had to be manually removed from the delivery pipe. The manual silt removal took two GCID employees one 8-hour day to complete.
  - After initial installation and programming, this meter has performed w/o incident for the duration of the pilot project.

Figure 8. SonTek IQ Pipe installed immediately u/s of the control structure shown

Main Canal 91-L

- Mace Ultrasonic Doppler Insert Velocity Sensor
- Crop Type: Rice
- Deployment Date: 4/18/2013
- Last Data Extraction: 8/7/2013

- Details:
  - 18” SSP
  - Meter Facing Downstream

- SCADA Ready:
  - Yes

- Cost Analysis:
  - Flow Meter : $ 4,375
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 7,930**

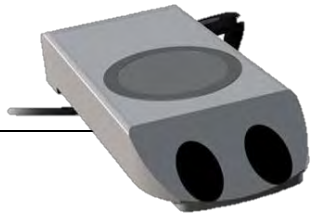
- Summary:
  - 64 Acres Served
  - Total $/Acre: 124

- Comments:
  - This site was a challenging install because of the natural slope of the existing topography.
  - Backhoe work was required prior to and after installation to make servicing of the meter throughout the duration of the project safer for GCID personnel.
  - After initial installation and programming, this meter has performed w/o incident for the duration of the pilot project.

Figure 9. Location of MACE insert type sensor at MC 91-L

Lateral 35-1

- Mace Doppler Ultrasonic Area/Velocity Sensor
- Crop Type: Rice
- Deployment Date: 4/11/2013
- Last Data Extraction: 9/4/2013



- Details:
  - 5'H x 7'W Bridge Culvert
  - Meter Facing Upstream

- Cost Analysis:
  - Flow Meter : $ 5,165
  - Labor : $ 1,500
  - Materials & Supplies: $ 1,570
  - Equipment : $ 485
  - **Total: $ 8,720**

- SCADA Ready:
  - Yes

- Summary:
  - 2,804 Acres Served
  - Total $/Acre: 4

- Comments:
  - From the date of the initial installation, this meter never worked properly. The Doppler Stream Index (DSI) never recorded a value high enough to generate an accurate measurement.
  - The MACE representative came to this site and tried to troubleshoot the problem; it was determined that the meter had been compromised.
  - On July 31st, GCID personnel installed a brand new MACE meter. The newly installed meter appears to be working properly and has performed w/o incident since installation.

Figure 10. Looking u/s at the MACE meter installation site along Lat. 35-1 (meter is located under the bridge)

Results and Findings

GCID's water conveyance system is comprised of a complex and diverse delivery infrastructure. Therefore, GCID instituted the Pilot Project as a means of examining the proposed Program from a manageable level to assist in highlighting the challenges and simultaneously present practical solutions that arise from installing and operating these ten devices. Additionally, the project was conducted to help refine the installation costs.

It has been determined that the average total cost per site is $9,862. The average labor and equipment cost to deploy each device is $1,575 and $510, respectively. The labor and equipment cost make up 21.1% of the average total cost.

As noted within the *Measurement Sites Overview* section, each site had unique preparation requirements to successfully install the meter. Although in general, the open channel concrete culverts had sufficient access room to allow for two technicians to install the devices. Furthermore, the existing concrete structure reduces the presence of weeds and sediment in the immediate area of the device when compared to the earth-lined stretches of open channel. These factors facilitated the device installations in the concrete open channel applications.

Device installations in gravimetric flow pipes often required preliminary removal of sediment in and/or at the pipe outlet. The cleanup was typically performed by a backhoe, but in one case had to be cleaned manually due to space restrictions of the delivery infrastructure. The pipes 36-inches in diameter and smaller restricted the use of certain tools which facilitate installation of flow meter mounting brackets. Mace and SonTek have developed quick-install pipe ring mounts as an alternative to the traditional pipe installation; however they cost an additional $236 and $1,390, respectively.

The insert-type Mace meter requires a welder to facilitate the installation on steel pipes. Installing this type of meter in locations that are below natural grade requires assistance from heavy equipment and careful backfilling. Without building an access vault around the meter, heavy equipment is necessary for meter maintenance as well.

The precast concrete weir box required manufacturing of the steel weir plate as well as heavy equipment to place the weir at design elevation. The weir box has to be set level, as well as to the correct grade, which makes the installation subject to an increased potential for error.

Installation of the McCrometer propeller meter required a carefully installed meter mount which will position the shaft vertically and the propeller in the center of the pipe. Ease of installation, meter cost, and removal of debris from the meter are a few of the benefits of this type of measuring device.

Certain sites required heavy equipment to improve access to the meter and flow display enclosure. Each device was installed in accordance with manufacturer installation recommendations so as to adhere to best hydraulic professional practices.

An effort was made to install the meters out of sight to prevent, or at least minimize vandalism. Laterals 21-2, 26-2, and 35-1 are frequented by unauthorized personnel and maintain the highest potential for vandalism. During Phase 1 of the Pilot Project, there has been only one incident of vandalism.

At this point, the Pilot Project is not assessing the accuracy of the measurement devices at the deployed sites because the devices themselves meet the SBX7-7 laboratory certified accuracy criteria. Five of the measurement devices have been deployed in pipes that assume the cross sectional area is always flowing full. This key assumption requires careful consideration of the sites hydraulic conditions before such a device is deployed. The weir box setup assumes proper weir operating conditions including a proper nappe and a clean weir pool.

All ten of the measurement devices were installed before May 3, 2013, which has allowed for over three months of device operation to date. The Mace, SonTek, and Measurement Specialties equipment required special software to deploy the meters and download the recorded data. By early August, four of the ten sites had at least one gap in data of twelve hours or more during which no flow was recorded, despite flow through the site being confirmed in the field by the area water operator. This information is available in **Table 7**. The data gaps were identified through an evaluation of the raw time-stamped flow rate data. The causes of the data gaps could be attributed to non-ideal flow conditions that cause low Doppler signal strength, meter damage, or operator error.

Three sites have critically failed during the project as a result of user error or non-ideal measurement conditions. The first MACE meter installed at Lateral 35-1 never worked properly and was replaced on July 31st. The newly installed meter has generated measurements and recorded data without incident since installation. The MACE Controller card at Juney Weir was somehow compromised and needs to be replaced. The cause of the failure has yet to be determined. Also, the MACE meter installed in the Southern pipe at Lateral 21-2 has failed and needs to be replaced. However, due to the nature of this location, this replacement will not take place until GCID's winter maintenance shutdown period.

In response to the aforementioned challenges identified during Phase 1 of GCID's Pilot Project, an extended assessment of the measurement devices into the 2014 irrigation season is recommended before proceeding with the next stage of the Program. Additional metering alternatives need to be introduced into the Pilot Project in an effort to enhance the device performance comparisons. The time spent by GCID staff maintaining, troubleshooting, and

managing the data needs to be more accurately documented. More accurate documentation of staff time will provide invaluable insight towards estimating the actual hours necessary to operate a full version of the Program. A thorough Pilot Project is crucial to achieving a robust Program where billing, at least in part by volume delivered, is a viable prospect.

References

The Water Conservation Act of 2009. http://www.water.ca.gov/wateruseefficiency/sb7/

SBX7-7 Compliance Program. http://www.gcid.net/RWMP/SBX7-7.pdf

Non-Exclusive Measurement Device Options - Manufacturers' Accuracy For New Devices:

(Mace) Doppler ultrasonic velocity sensors
http://macemeters.com/pdf/MACE_Doppler_Sensors.pdf

(McCrometer)Specifications - McPropeller
http://www.mccrometer.com/products/specs_mcpropeller.asp

(Measurement Specialties) Water Resources Monitoring - TruBlue 555 Level
http://www.meas-spec.com/product/t_product.aspx?id=9024

SonTek IQ Series – Specifications tab
http://www.sontek.com/iq

Appendix

Table 4: Non-Exclusive Measurement Device Accuracies

Flow Condition	Measurement Device	Type of Device	Manufacturer Accuracy for New Device[1]
Open Channel	Measurement Specialties *TruBlue 555 Level*	Pressure transducer with stilling well	±0.1 Full Scale Output by Best-Fit Straight Line
	SonTek *IQ (Standard or Plus)*	Acoustic Monostatic Doppler Current Meter	±1% of measured velocity, ±0.5 cm/s (0.2 in/s) 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater
	SonTek *IQ Pipe*	Acoustic Monostatic Doppler Current Meter	±1% of measured velocity, ±0.5 cm/s (0.2 in/s) 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater
Full Pipe	McCrometer *Mc Propeller M1700*	Propeller Flow meter	±2% of measured volume with repeatability of ±0.25%
	Mace *Doppler Velocity Insert*	Doppler ultrasonic velocity sensor	±1% of measured velocity, up to 10 ft/s
	SonTek *IQ Pipe*	Acoustic Monostatic Doppler Current Meter	±0.1% of full scale pressure ±1% of measured velocity, ±0.5 cm/s (0.2 in/s) 0.1% of measured depth or ±0.003 m (0.01 ft) whichever is greater

[1] Accuracies acquired from manufacturer websites, please see References.

Table 5: Measurement Site Cost Breakdown

Measurement Site	Meter Model or System	Pipe Type and Diameter	Acres Served	Meter System Cost	Materials And Supplies	Labor and Equipment	Total Cost Per Site	Total Cost / Acre
Lat. 12-3-14R (Corn study – 34.7 ac)	Mace Doppler Ultrasonic Area/Velocity Sensor	RCP 18”	35	$5,295	$1,570	$1,500 $485	$8,850	$253
Lat. 13-3 *Existing meter system*	McCrometer M1700 Digital Propeller Elect. Meter	RCP 48”	1,783	$2,655	$1,570	$1,500 $485	$6,210	$4
Lateral 21-2	Mace Doppler Ultrasonic Velocity Sensor qty. (2)	RCP 48” & 36” Dual Pipe Outlet	3,502	$6,725	$1,570	$1,500 $485	$10,280	$3
MC-49-L	SonTek- IQ Pipe	RCP 18”	21	$10,120	$1,570	$1,500 $485	$13,675	$651
Lat. 26-2	SonTek-IQ Plus	6H’x10’Wx23’L Bridge Xing	2,350	$8,745	$1,570	$1,570 $485	$12,300	$6
Juney Weir Lift Pump *Existing meter system*	Mace Doppler Ultrasonic Insert Velocity Sensor qty. (2)	30” & 20” SSP	1,164	$7,915	$1,570	$2,250 $728	$12,463	$11
Lat. 28-1-1L	Pressure Transducer and Data Logger with Suppressed Rectangular Weir	18” RCP	17.1	$2,600	$1,570	$1,570 $485	$6,155	$360
Lat. 29-2	SonTek IQ Pipe	48”RCP	597	$8,480	$1,570	$1,570 $485	$12,035	$21
MC 91-L	Mace Doppler Ultrasonic Insert Velocity Sensor	18” SSP	64	$4,375	$1,570	$1,570 $485	$7,930	$124
Lat . 35-1	Mace Doppler Ultrasonic Area/Velocity Sensor	5’Hx7’Wx30’L Bridge Xing	2,804	$5,165	$1,570	$1,570 $485	$8,720	$4
						Total Cost:	**$98,618**	

Table 6: Field Installation Details of Non-exclusive Measurement Devices

Meter Manufacturer	Installation[2] Methodology
Mace	1. Pour a 4'x4' concrete pad for the NEMA box (steel enclosure to house electronic components) and solar panel assembly. 2. Route PVC conduit from the meter location to the control pad. 3. Mount the meter in the pipe or channel. 4. Pull the cable through the conduit. Connect all of the power and flow display components. 5. Program the meter.
McCrometer	1. Position and mount the bracket to the downstream headwall. 2. Mount the meter to the bracket, insuring that the shaft is vertical and the propeller is positioned in the center of the discharge pipe.
Measurement Specialties	1. Survey and grade the outflow area. 2. Install the pre-cast concrete weir box and connect the existing pipe outflow to the box stub pipe. 3. Design and manufacture the steel plate based on the weir type, and then slide it in the notched weir boards. 4. Install the pressure transducer at the upstream location at the design elevation. 5. Program the meter.
SonTek	1. Pour a 4'x4' concrete pad for the NEMA box (steel enclosure to house electronic components) and solar panel assembly. 2. Route PVC conduit from the meter location to the control pad. 3. Mount the meter in the pipe or channel. 4. Pull the cable through the conduit. Connect all of the power and flow display components. 5. Program the meter.

[2] Installations performed in accordance with Device Manufacturers' guidelines.

Table 7: Device Measurement Continuity

Measurement Site	Data gaps	Device Replacements
Lat. 12-3-14R	0	0
Lat. 13-3	0	0
Lateral 21-2 (North/South meter)	1 / 6	0 / 1
MC-49-L	0	0
Lat. 26-2	0	0
Juney Weir Lift Pump	1	1
Lat. 28-1-1L	0	0
Lat. 29-2	1	0
MC 91-L	0	0
Lat . 35-1	10	1

EXHIBIT E

Agricultural Water Measurement Pilot Project 2014

Capital Cost Estimate

Site	Measurement Device	Cost per site
Lateral 41-1	Cast in place concrete flume with AquaMetrix Greyline SLT 5.0 (Non-Contacting level and flow monitor, $2,500 with datalogger)	$25,000
Lateral 48-1	Cast in place concrete flume with pressure transducer and data logger	$25,000
Lateral 13-3	McCrometer Reverse propeller style M1700	$8,500
Lateral 54-1	McCrometer Reverse propeller style M1700	$8,500
Lateral 43-1	Teledyne Channel Master H-ADCP (Acoustic Doppler Current Profiler)	$10,000
Lateral 48-1	Acoustic Doppler open channel meter	$10,000
To be determined	McCrometer FPI mag meter for pipe	$10,000
		$97,000

EXHIBIT F

COST ESTIMATE FOR FLOW METER INSTALLATION ON ALL GCID SYSTEM DELIVERIES

CAPITAL COSTS

2,650 electronic flow meters @ avg. cost $9,862*	$	26,134,300.00
Spare meter inventory (10% of 2,620 @ $9,862*)	$	2,613,430.00
Twelve additional vehicles @ $15,000 ea.	$	180,000.00
Meter maintenance workshop	$	100,000.00
Install 1,000 meter boxes @ $1,600 ea.	$	1,600,000.00
Install 1,200 meter boxes w/extension @ $1,800 ea.	$	2,160,000.00
Install 450 new turnouts (headwall, and meter box) @ $8,000 ea.	$	3,600,000.00
24 data loggers to track water usage @ $2,500 ea.	$	60,000.00
Change to new accounting and billing software	$	80,000.00
Conduct engineering study & Proposition 218 mail ballot election to modify assessments	$	500,000.00
Subtotal	$	37,027,730.00
Add 25% Contingency	$	9,256,932.50
Total Capital Cost	**$**	**46,284,662.50**

ANNUAL COSTS

Twelve additonal meter readers and/or water operators @ $72,000 (salary + benefits)	$	864,000.00
One additional mechanic @ $72,000 (salary + benefits)	$	72,000.00
One additional office position for billing @ $72,000 (salary + benefits)	$	72,000.00
Meter maintenance	$	25,000.00
Vehicle O&M 12 vehicles X 25,000 miles ea. X .51/mile	$	153,000.00
Annual maintenance on meter system (assume 5% of total capital cost)	$	891,171.00
Annual maintenance on accounting & billing software (20% of cost)	$	16,000.00
Annual cost of biannial 218 mail ballot elections to increase assessments	$	100,000.00
Total Annual Cost	**$**	**2,193,171.00**

Footnotes:

(1) Meter and meter facility installation costs are based upon using district force account labor. If the intallation schedule is compressed, then outside contractors would be necessary at prevailing wage, and a commensurate increase in cost.

(2) Capital costs are in 2011 dollars and are not indexed for inflation.

(3) * denotes average site capital cost derived from GCID 2013 Agricultural Water Measurement Pilot Project

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

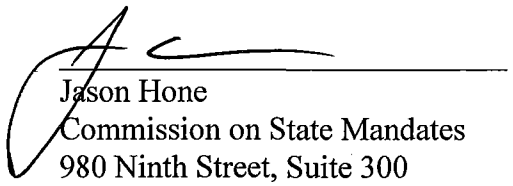
I am a resident of the County of Yolo and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On January 15, 2014, I served the:

> **Glenn-Colusa Irrigation District Request to Take Over Test Claim;**
> **Oakdale Irrigation District Request to Take Over Test Claim; and**
> **Notice of Substitution of Parties and Notice of Hearing**
> *Water Conservation*, 10-TC-12 and 12-TC-01
> Water Conservation Act of 2009 et al.
> South Feather Water & Power Agency, Paradise Irrigation District, Glenn-Colusa Irrigation District, and Oakdale Irrigation District, Co-Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on January 15, 2014 at Sacramento, California.



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COMMISSION ON STATE MANDATES

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Last Updated: 1/15/14

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Matter: Water Conservation

Claimants: Glenn-Colusa Irrigation District
Oakdale Irrigation District
Paradise Irrigation District
South Feather Water and Power Agency

TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.2.)

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