



Transmitted via e-mail

October 23, 2012

Mr. Mark W. Cowin, Director
California Department of Water Resources
P.O. Box 942836, Room 1115-1
Sacramento, CA 94236-0001

Dear Mr. Cowin:

**Final Report—University of California, Santa Cruz and WateReuse Research Foundation
Proposition 50 Grant Audits**

The Department of Finance, Office of State Audits and Evaluations, has completed its audits of the University of California, Santa Cruz's (University) grant 4600004121 and WateReuse Research Foundation's (Foundation) grant 4600004132. These grants were issued by the California Department of Water Resources under Proposition 50. The enclosed report is for your information and use.

The University's and Foundation's responses to the report observations and our evaluation of the responses are incorporated into this final report. This report will be placed on our website.

We appreciate the assistance and cooperation of the University and the Foundation. If you have any questions regarding this report, please contact Diana Antony, Manager, or Lisa Negri, Supervisor, at (916) 322-2985.

Sincerely,

Original signed by:

David Botelho, CPA
Chief, Office of State Audits and Evaluations

Enclosure

cc: On following page

cc: Ms. Dale Hoffman-Floerke, Chief Deputy Director, California Department of Water Resources
Ms. Katherine Kishaba, Deputy Director of Business Operations, California Department of Water Resources
Ms. Gail Chong, Deputy Assistant DWR Executive, Bond Accountability, California Department of Water Resources
Mr. Manucher Alemi, Chief, WateReuse and Efficiency Branch, California Department of Water Resources
Mr. Jeff Ingles, Chief Auditor, California Department of Water Resources
Ms. Tracie Billington, Chief, Financial Assistance Branch, Division of Integrated Regional Water Management, California Department of Water Resources
Mr. Patrick Kemp, Assistant Secretary for Administration and Finance, California Natural Resources Agency
Ms. Julie Alvis, Deputy Assistant Secretary, Bonds and Grants, California Natural Resources Agency
Mr. Bryan Cash, Deputy Assistant Secretary, California Natural Resources Agency
Mr. Kirk Lew, Assistant Vice Chancellor, Financial Affairs, University of California, Santa Cruz
Mr. G. Wade Miller, Executive Director, WateReuse Research Foundation
Ms. Maria Greenly, Accounting Manager, WateReuse Research Foundation
Ms. Julie Minton, Director of Research Programs, WateReuse Research Foundation
Mr. Barry Long, Internal Audit Director, University of California, Santa Cruz

AUDIT REPORT

University of California, Santa Cruz and
WaterReuse Foundation
Proposition 50 Bond Program
Grant Agreements 4600004121 and 4600004132

Prepared By:
Office of State Audits and Evaluations
Department of Finance

MEMBERS OF THE TEAM

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Final reports are available on our website at <http://www.dof.ca.gov>

You can contact our office at:

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BACKGROUND, SCOPE AND METHODOLOGY

BACKGROUND

In November 2002, California voters approved the Water Security, Clean Drinking Water, Coastal and Beach Protection Bond Act of 2002 (Proposition 50), for \$3.44 billion. Bond proceeds provide funds for grants and loans to assist in meeting safe drinking water standards; acquisition, restoration, protection, and development of river parkways; and coastal watershed and wetland protection.

The University of California, Santa Cruz (University), Center for Integrated Water Research, focuses on studies in desalination from economic, policy, and communications perspectives.¹

WaterReuse Research Foundation (Foundation) is an educational, nonprofit corporation whose mission is to conduct and promote applied research on the reclamation, recycling, reuse, and desalination of water. The Foundation's research covers a broad spectrum of issues, including chemical contaminants, microbiological agents, treatment technologies, salinity management, public perception, economics, and marketing.²

The California Department of Water Resources (DWR) awarded the following Proposition 50 grants to the University and the Foundation:

- Grant 4600004121 totaling \$909,051 was awarded to the University (and lead by the Center for Integrated Water Research) to develop a tool to guide state and local desalination planning. The tool was to include a series of templates that systematically list options and their implications. Total project budget was \$2,597,149 (including other match funding sources).
- Grant 4600004132 totaling \$1,000,000 was awarded to the Foundation to leverage DWR's resources with other financial resources and expertise from across the nation. The deliverable was a series of research and development projects which focused on issues and concerns important to desalination in California and across the nation. The results of the projects were expected to be presented at industry conferences and published in peer-reviewed journals. Total value of the projects was \$2,000,000 (including other match funding sources).

¹ University website at: <http://ciwr.ucsc.edu/desalplanning/index.html>

² Foundation website at <http://www.watereuse.org/foundation>

SCOPE

In accordance with the Department of Finance's bond oversight responsibilities, we audited the following grants:

<u>Grant Agreement</u>	<u>Audit Period</u>
4600004121	December 2, 2005 through June 30, 2011 ³
4600004132	December 7, 2005 through June 4, 2011 ⁴

The audit objectives were to determine whether the respective grantees' grant expenditures claimed were in compliance with applicable laws, regulations, and grant requirements; and to determine whether the grants' deliverables were completed as required. We did not assess the efficiency or effectiveness of program operations.

The University and Foundation management are responsible for ensuring accurate financial reporting and compliance with applicable laws, regulations, and grant requirements. DWR and the California Natural Resources Agency are responsible for the state-level administration of the bond programs.

METHODOLOGY

To determine whether grant expenditures were in compliance with applicable laws, regulations, and the grant requirements; and if the grants' deliverables were completed as required, we performed the following procedures for both grants:

- Interviewed key personnel to obtain an understanding of the grant-related internal controls.
- Examined the grant files, the grant agreements, and applicable policies and procedures.
- Reviewed the grantee's accounting records, vendor invoices, and bank statements.
- Selected a sample of expenditures to determine if costs were allowable, grant-related, incurred within the grant period, supported by accounting records, and properly recorded.
- Performed procedures to determine if other revenue sources were used to reimburse expenditures already reimbursed with grant funds.
- Evaluated whether a sample of deliverables required by the grant agreements were met.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

³ During the audit, there was a pending amendment requesting a time extension to June 30, 2011. The audit period was extended to this date to include all claimed expenditures whether or not they have been reimbursed by DWR. Table 1 on the following page includes all expenditures claimed through June 30, 2011.

⁴ An interim audit was conducted on grant 4600004132 as fieldwork was completed prior to the grant end date of September 30, 2012.

The results of the audits are based on our review of documentation, other information made available to us, and interviews with staff directly responsible for administering grant funds.

Except as noted below, the claimed expenditures were in compliance with the requirements of the grant agreements. The Schedules of Claimed and Questioned Amounts are presented in Table 1.

Table 1: Schedule of Claimed and Questioned Amounts, University

Grant Agreement 4600004121		
Category	Claimed	Questioned
Salaries and Wages	\$ 170,848	
Supplies and Expenses	398,563	\$ 266,440
Travel	27,515	
Subcontract	46,179	
Tuition and Graduate Fees	7,662	
Overhead	149,232	
Total Grant Expenditures	\$ 799,999	\$ 266,440
Match	1,051,233	600,000
Total Project Expenditures	\$1,851,232	\$ 866,440

Table 2: Schedule of Claimed and Questioned Amounts, Foundation

Grant Agreement 4600004132		
Category	Claimed	Questioned
Administration	\$ 61,999	\$ 0
Research Projects	816,342	0
Overhead	28,315	0
Total Grant Expenditures	\$ 906,656	\$ 0
Match	1,000,000	510,000
Total Project Expenditures	\$1,906,656	\$ 510,000

Observation 1: The University and the Foundation Claimed the Same Interactive Tool

The interactive tool delivered to DWR by the University is the same deliverable the Foundation claimed for \$510,000 under its matching fund sources.

To develop the interactive tool, the University contracted with Stratus Consulting, Inc., (Stratus) in the amount of \$266,440. The contract required Stratus to, among other tasks, develop a spreadsheet-based benefit-cost framework incorporating workshop results into templates. The University submitted the interactive tool to DWR on March 26, 2012, approximately nine months after the proposed grant deadline of June 30, 2011.

However, this interactive tool was also claimed as part of the Foundation's match. Water Research Foundation (WRF) managed several projects for the Foundation under this contract. In May 2008, WRF entered into a contract with Stratus. The contract included creating a spreadsheet-based "Policy Issues Matrix (PIM)" based on the work Stratus had already completed for the University grant. The match project totaled \$510,000.

According to DWR, the University originally submitted the tool earlier in the grant period; however, DWR found it insufficient and requested the University to resubmit an updated version. The University did not submit the updated version until March 2012, as noted above, after it had already been enhanced by Stratus pursuant to the contract work with WRF. Therefore, it could not be determined if the University met the grant requirements.

California Water Code, sections 79505.5 and 79545(a), state that grantees must provide at least 50 percent of the total project costs in matching funds or donated services from non-state sources.

Recommendations:

- A. The University and the Foundation should work with DWR to determine if the deliverable produced for both grants is more properly attributed as the deliverable for the University grant or as matching costs for the Foundation grant. Once that determination has been made, either the University should remit an appropriate amount of their grants funds to DWR or the Foundation should provide alternative cost share projects in the amount of \$510,000.
- B. DWR should develop and implement procedures to thoroughly review grant and match deliverables to ensure that project scopes are not duplicative.
- C. DWR will make the final determination on which grant did not meet the required deliverable and what the proper remediation should be.

Observation 2: Matching Cost Requirement Not Supported

The University claimed \$600,000 of in-kind services provided by the City of Long Beach towards meeting the grant agreement's matching cost requirement. However, the University did not provide adequate documentation to support the claimed labor, legal, and material cost amounts.

California Water Code section 79545(a) states for desalination projects, grantees must provide at least 50 percent of the total project costs in matching funds or donated services from non-state sources.

In addition, section A-9(d) of the grant agreement requires all grantee and subcontractor records to be available for the purpose of audit for at least three (3) years after the completion of the project.

Recommendations:

- A. The University should ensure cash match or donated services claimed as match expenditures are adequately supported and appropriate documentation is maintained.
- B. DWR will determine the effect, if any, of the unsupported match.



FINANCIAL AFFAIRS

SANTA CRUZ, CALIFORNIA 95064

SENT VIA E-MAIL ATTACHMENT

October 3, 2012

Mr. David Botelho, CPA
Chief, Office of State Audits and Evaluations
915 L Street
Sacramento, CA 95814-3706

RE: Draft Report – University of California, Santa Cruz and WaterReuse Research Foundation
Proposition 50 Grant Audits

Dear Mr. Botelho,

On behalf of the University of California, Santa Cruz campus, I write to you in regards to the draft report issued for the above-referenced audit. We are pleased to provide you with the following response related to it.

Project Overview

The University's objective related to the project and grant agreement with DWR was to advance society's understanding of the feasibility of desalination technology, and how it might be deployed in order to supplement the fresh water supplies of California cities. Included, among other task areas, was the development of a cost-benefit analysis tool, initially in a draft concept, then in a more developed version. The term "tool" was used in the original proposal rather than "quantitative economic cost-benefit analysis spreadsheet" since it was not known at that point the direction the research would lead. The general understanding of desalination at the time indicated that many of the important issues related to it, including environmental and social impacts, would be difficult to quantify using traditional methods. A novel presentation of data and results might be necessary. The project was intended to provide an approach to identifying, categorizing, and explaining the impacts of desalination, without initially knowing what specific form the major project deliverable would take. To overcome the unique challenges presented by the subject matter, significant effort was planned and invested in the conceptualization, design, and building of the analysis tool. An example of this effort was the workshop entitled "Economic and Policy Issues for Water Desalination in California: What are the Core Issues to Consider in a Benefit-Cost Framework?" held at DWR headquarters on November 9, 2006. The state now has the benefit of this research, which is consistent with the wishes of the voters who approved Proposition 50.

Response to "Observation One" and Recommendation

The audit report noted that the Water Research Foundation (WRF) submitted, as cost share to DWR, work that was paid to Stratus Consulting from another fund source related to the creation of the "Policy Issues Matrix." Because of this cost share issue, the audit report recommends a process (Recommendation A) that might have the University remit the questioned expense of \$266,440 paid to Stratus Consulting by the University under its grant agreement with DWR.

We do not concur with this recommendation since it assumes that the University should be liable for actions made by another institution, WRF, which was neither subject to the University's control nor the University's legal responsibility. The Principal Investigator is willing to offer assistance to DWR to clarify issues. But any resolution regarding this cost share matter and the work associated with it would necessarily have to involve WRF, Stratus Consulting and DWR since the University had no involvement or responsibility related to how WRF's cost share on its award with DWR was committed, tracked, and reported.

In addition, the audit report clarifies the University's relationship to the work performed by Stratus Consulting for the cost share claimed by WRF. It states that the contract between WRF and Stratus Consulting was "based on the work Stratus had already completed for the University grant." This statement is supported by the University's record of invoices paid to Stratus Consulting. These invoices show that the University had already been billed for 98% of the total work by Stratus Consulting by the time WRF contracted with Stratus Consulting in May 2008. A description of that work is provided below.

Aside from the questioned payments to Stratus Consulting, it is important to note that the audit states all the other "claimed expenditures were in compliance with the requirements of the grant agreements." These requirements for the University grant involved three task areas that are described in the original proposal and approved scope of work as follows:

Task Area 1: Develop and Demonstrate a Draft Desalination Planning Tool on a Comprehensive Benefit-Cost Framework (1.A Data Gathering and Analysis; 1.B Workshops).

Task Area 2: Revise and Improve Economic and Framework and Planning Tool

Task Area 3: Advanced (Primary) Research on Key Ecological and Environmental Issues

In order to fulfill the approved scope of work and meet the grant requirements, the University accomplished or submitted to DWR the following:

- **Public workshops and meetings** were held that described the purpose, structure, and content of the PIM as a work in progress.
 - Two of these meetings were held in October 2007 in Long Beach and Chino, CA.
 - Other meetings were held in Santa Cruz (September 2006), Santa Barbara (February 2007), and Sacramento (November 2006).
- **Planning Issues Matrix (PIM).** Development of an online tool that enables water agencies, citizen groups, and individuals to quickly identify important research questions

and research results that can be applied to a proposed desalination project. This and all deliverables below are publicly available online at <http://ciwr.ucsc.edu/desalplanning/index.html>. In 2005, society's understanding of desalination was extremely limited. A significant portion of the project period was devoted to research and meetings aimed at arriving at a comprehensive structure and set of topics requiring further investigation. Additional months were then needed to assemble the detailed knowledge and references now conveniently available to the public in the PIM. The PIM's status in relationship to any other project has no bearing on the fact that the University, under its agreement with DWR, proposed, designed, created, and populated the PIM. It was publicly presented and discussed during the project period and eventually submitted to DWR in fulfillment of its grant requirements.

- **Evaluating Environmental Impacts of Desalination in California.** This is the summary of a workshop held in Santa Cruz. It was one of the first comprehensive assessments of environmental impacts of desalination, and informed the structure of the PIM. Stratus subcontractors, among many others, participated in the workshop. Prior to this workshop, there was no agreement over the categories of environmental impacts caused by desalination. This workshop provided a fundamental breakthrough in how communities now think about desalination technology.
- **Annotated Bibliography of Desalination.** This is a collection of research papers on desalination. First established in 2007, it provides important access to current research, especially for Californians without access to online articles databases. Stratus researchers provided advice on development of the bibliography.
- **City of Long Beach Desalination Research Program Archives.** The Long Beach Water Department undertook several million dollars' worth of desalination research over the past decade, giving over thirty presentations and publishing papers. These presentations were not available to the public. The University worked with the Long Beach Water Department to put its research into a form more readily-accessible to the public, which includes the PI's brief annotations as to the content and value of each presentation. Stratus subcontractors participated in the case study work related to Long Beach's (as well as the Inland Empire's) desalination efforts.
- **Research Needs Report.** This report summarizes how the field of ecological economics can inform important policy and economic questions related to desalination. Stratus subcontractors advised on the content of this report.
- **Final Report.** This is a summary report of the process and findings of the overall project.

During the project period, Stratus Consulting made significant contributions to the development of most of these deliverables. They participated in conferences, contributed to the foundational research that clarified important questions, and aided in the conceptualization of the PIM and its early development of chapters. They also provided the technical support behind building the PIM's online database. Each invoice submitted by Stratus was reviewed and approved by the PI's office and a divisional research accountant for the reasonableness of the amounts being billed for the work performed up to that point and for compliance with the terms and conditions of the grant and the budget approved by DWR.

The work products and activities listed above demonstrate that the payments made by the University to Stratus Consulting were, as with the other claimed expenses on this project, necessary to accomplish the award's scope of work and to comply with its terms and conditions. They also demonstrate how the University met the requirements of its grant agreement with DWR.

Response to "Observation Two"

The cost share from Long Beach Water Department was utilized as originally proposed to DWR. The University has provided the auditors with a certified financial report from the Long Beach Water Department Director of Finance detailing the expenses that were incurred for the research that constituted their committed cost share. The Director of Finance also has confirmed that the funding for the cost share was provided solely from non-state sources.

It should be noted that out of the \$917,749.67 certified by the Long Beach Finance Director, the University claimed \$600,000.00 towards its cost share commitment.

We hope that this response provides additional and useful context and clarity. Please let me know if you have any questions.

Sincerely yours,

Original signed by

Kirk Lew
Assistant Vice Chancellor – Financial Affairs
and Campus Controller

cc: Vice Chancellor, Business and Administrative Services Sarah Latham
Vice Chancellor, Research Bruce Margon
Office of Sponsored Projects Director Larry Castro
Internal Audit and Advisory Services Director Barry Long
Special Projects Manager Marcie Coulter



October 3, 2012

Mr. David Botelho, CPA
Chief, Office of State Audits and Evaluations
Department of Finance
915 L Street
Sacramento, CA 95814-3706

Dear Mr. Botelho:

Response to Draft Report – University of California, Santa Cruz and WateReuse Research Foundation Proposition 50 Grant Audits

This is the WateReuse Research Foundation’s (Foundation) response to the draft report on University of California, Santa Cruz and WateReuse Research Foundation Proposition 50 Grant Audits received from the Department of Finance on September 19, 2012.

The Foundation was awarded \$1,000,000 through grant 4600004132 to support eight research projects managed by the WateReuse Research Foundation and the Water Research Foundation (WaterRF, formerly known as AWWA Research Foundation). Those eight projects plus several others managed by the WaterRF and Sandia National Laboratories contributed towards the \$1,000,000 in matching funds.

The project in question, as stated in Table 2 and under Observation 1, is WaterRF managed project 4078: *Guidelines for Implementation of Seawater and Brackish Water Desalination Facilities*. This project did not receive cash from the grant, but contributed \$510,000 towards the 1:1 match. One of the deliverables of this project that Stratus Consulting was contracted to complete was a decision support tool called the “Policy Issues Matrix” (PIM). The Foundation believes that the matching funds were appropriately used for the development of the guidelines, including the enhanced PIM, supported by the following points:

- (1) The WaterRF-managed project 4078: *Guidelines for Implementation of Seawater and Brackish Water Desalination Facilities* (4078) done by Stratus Consulting was completely distinct and different from the University of California-Santa Cruz (University) project. The PIM tool was initially described in the proposal submitted in July 2007 by Stratus Consulting (Exhibit 1.2, page 1-3) as a tool being developed separately in a contract with the CA DWR under the leadership of the University. The initial tool was to be complete through the University project by March 2008 allowing a “seamless” transfer to further enhancements in 4078 (which started May 1, 2008). The 4078 proposal outlined that as case studies and new information and insights were gathered in 4078, they would be incorporated to refine and advance the PIM tool.

WateReuse Research Foundation
Practical Solutions for Water Scarcity

1199 North Fairfax Street ♦ Suite 410 ♦ Alexandria, Virginia 22314
703-548-0880 ♦ 703-548-5085 (fax) ♦ www.WateReuse.org/Foundation

Original Project Advisory Committee (PAC) member Fawzi Karajeh of the CA DWR accepted this approach.

- (2) Stratus Consulting fulfilled all tasks described in their proposal and submitted all deliverables promised. The PIM tool was improved and populated and a social, political, regulatory, and economic perspective was added. The work done for 4078 was well documented and approved throughout the duration of the project. A DWR representative (Fawzi Karajeh, Fethi BenJemaa, then Nancy King), served on the PAC. The PAC received, reviewed, and approved each quarterly progress report and deliverable. All progress reports and deliverables were made available to all of DWR through quarterly progress reports from the Foundation.
- (3) The enhancement of the PIM tool was one portion of 4078. Dr. Robert Raucher of Stratus estimates the budget for this task was \$75,000-\$125,000 (15-25% of the entire project budget).
- (4) It is our understanding that due to a suspension in DWR funds, the University froze work on their project and the PIM. In the meantime, project 4078 was wrapping up and the PIM tool was finalized. Once DWR funds were reinstated, the University (Dr. Brent Haddad) submitted to DWR the enhanced PIM tool that 4078 had published and described it as a final deliverable to WaterRF (project 4078) and as an *interim* deliverable to meeting the University's original project objectives.

In summary, project 4078 was a well managed, high quality project that appropriately accounted for \$510,000 in matching funds towards grant 4600004132. A portion (15-25%) of this project enhanced and populated the PIM, originally developed under separate University led work.

Please contact me if you have additional questions.

Sincerely,

Original signed by
G. Wade Miller
Executive Director
WateReuse Research Foundation

M e m o r a n d u m

Date: October 4, 2012

To: David Botelho
Office of State Audits and Evaluations
Department of Finance
915 L Street
Sacramento, California 95814-3706

From: Manucher Alemi
Department of Water Resources

Subject: University of California, Santa Cruz and WaterReuse Research Foundation
Proposition 50 Grant Audits, Comments on Draft Audit Report

The Department of Water Resources (DWR) has reviewed the draft report entitled "Audit Report: University of California, Santa Cruz and WaterReuse Foundation Proposition 50 Bond Program Grant Agreements 4600004121 and 4600004132" dated August 2012, which was attached to your letter of September 19, 2012 to the University and Foundation. The grants that were the subject of the review are administered by the Water Recycling and Desalination Section within the Water Use and Efficiency Branch of DWR.

We appreciate the findings of the audit report. The findings will be useful to make determinations about the two grant agreements and to improve our program procedures.

If you have any further questions regarding these grant agreements, please contact Nancy King at (916) 651-7200 or king@water.ca.gov.

ORIGINAL SIGNED BY:

Manucher Alemi, Chief
Water Use and Efficiency Branch
Division of Statewide Integrated Water Mgmt.

cc: Gail Chong
Bond Accountability Section

Jeff Ingles
Internal Audit Office

Tracie Billington
Financial Assistance Branch

EVALUATION OF RESPONSES

We reviewed the University of California, Santa Cruz's (University) and the WaterReuse Foundation's (Foundation) responses to the draft report dated September 19, 2012. In evaluating the University's and Foundation's responses we offer the following comments:

Observation 1: The University and the Foundation Claimed the Same Interactive Tool.

The University and the Foundation both state that the tool produced by Stratus for the University and the PIM produced by Stratus for the Foundation's match project are distinct. However, the only version of the tool provided by the University is the same version provided by the Foundation for their match project. Therefore, the observation remains unchanged. The Department of Water Resources will determine the actions to take if any, as a result of this observation.

Observation 2: Matching Cost Requirement Not Supported

The University stated they provided a certified financial report from the Long Beach Water Department detailing the expenses incurred for the cost share. However, the documentation provided did not support whether the costs incurred were related to grant 4600004121. Therefore, the observation remains unchanged.