

DATE: August 21, 2014

TO: Water Supply Advisory Committee

FROM: Water Supply Advisory Committee Subcommittee on the Independent Review Panel
(David Green Baskin, Sue Holt, Rick Longinotti, Sarah Mansergh, Rosemary Menard)

SUBJECT: Recommended Independent Review Panel

Thirteen Statements of Qualifications for the WSAC Independent Review Panel (IRP) were received by the August 14, 2014 deadline. An evaluation form using the criteria in the Request for Qualifications was provided to the subcommittee and all subcommittee members rated all the SOQs received. The subcommittee met on Thursday, August 21, 2014 to discuss the results and develop its recommendations.

The subcommittee identified 8 skill areas that would be desirable in an IRP:

- Hydrogeology
- Hydrology
- Environmental Science
- Utility Management
- Engineering
- Development/Evaluation of Supply Options
- Conservation/Demand Management
- Public Policy especially related to Sustainability

The names of the 8 top scoring candidates were placed under the categories where they provided expertise. The table below shows these results.

Hydrogeology <ul style="list-style-type: none"> • Griggs • Cloud 	Hydrology <ul style="list-style-type: none"> • Griggs • Cloud • Lacy 	Environmental Science <ul style="list-style-type: none"> • Wolfe • Lacy • Griggs • Leonard 	Engineering <ul style="list-style-type: none"> • Ramaley • Ferraro • DiLoreto • Lacy
Conservation/Demand Management <ul style="list-style-type: none"> • Wolfe • Ramaley • DiLoreto • Ferraro 	Development/Evaluation of Supply Options <ul style="list-style-type: none"> • Ramaley • DeLoreto • Leonard 	Utility Management <ul style="list-style-type: none"> • Wolfe • Ramaley • DiLoreto • Leonard 	Public Policy and Sustainability <ul style="list-style-type: none"> • Wolfe • DiLoreto • Cloud • Ramaley • Griggs • Leonard

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Refers to agenda item #5

The subcommittee carefully considered various approaches to creating a well-balanced and diverse Independent Review Panel and is recommending to the WSAC that Mike Cloud, Roy Wolfe, Patrick Ferraro, and Brian Ramaley be contracted with to form the IRP.

Following the WSAC's action on this recommendation, steps would be taken by City staff to contract with the selected individuals and to begin to organize their work plan. For this latter task, City staff recommends that the IRP subcommittee remain involved in preliminary planning and development work associated with the IRP's work plan and the development of the management approach that will be used in managing this group.

Attachments:

- RFQ for IRP
- All SOQs submitted (13)



Request for Qualifications for an Independent Review Panel

Water Supply Advisory Committee
City of Santa Cruz Water Department



Vern Fisher/Herald Archive

Qualifications Due: 3:00 PM, Thursday August 14, 2014

I. Request for Qualifications

The City of Santa Cruz Water Department is soliciting Statements of Qualifications (SOQs) from individuals with expertise in assisting citizen advisory bodies in effectively interacting with a technical consultant support team.

II. Water Supply Advisory Committee Overview

A. Project Description

The City of Santa Cruz Water Department (SCWD) is a municipal utility that provides water service to a geographic area that includes the entire City of Santa Cruz, adjoining unincorporated areas, a small part of the City of Capitola, and coast agricultural lands north of the City limits. The current population served is approximately 94,000.

The SCWD's water supply comes entirely from local sources. Surface water accounts for over 95% of the SCWD's total water supply. Groundwater pumped from wells comprises the remaining 5% of SCWD's water sources. Due to this, the region's water supply is extremely vulnerable to fluctuations in seasonal rainfall. Frequent water shortages and restrictions exemplify the region's vulnerability.

In response to the region's water supply reliability issues, the City has spent decades observing, researching, and reporting on new water supply opportunities and conservation methods. In 2010, after multiple studies, evaluations and reports, SCWD (partnered with Soquel Creek Water District) proposed a sea water reverse osmosis desalination plant (desal) as a potential solution to the region's water shortages.

The public responded to the proposed desalination plant by requesting that it be put to a vote, and gathered enough signatures to qualify a measuring requiring a public vote before funding for construction or acquisition of a desal project could commence. This measure, known as Measure P, was placed on the November 2012 ballot and passed with 72% of the vote.

In the fall of 2013, following continuing expressions of concern about a possible desal project by community interests, the City stepped back from the path it had been on and decided to create a citizens committee to consider the water supply issues, alternative strategies and solutions, and the public policy implications for Santa Cruz and provide recommendations to the Santa Cruz City Council. The Water Supply Advisory Committee (WSAC or Committee) was formed in early 2014 and began meeting in late April. It is made up of 14 citizens with diverse backgrounds and professions and the Santa Cruz Water Department Director is an ex officio member of the committee.

The Committee will have the support of a team of technical consultants throughout its process and the role of the proposed Independent Review Panel (IRP or Panel) is to support the committee by providing critical review of the work products produced by the technical support team and to provide suggestions to the Committee lines of technical inquiry that would be helpful in completing their work.

IRP Role Description

The role of the IRP would be to assist the WSAC in effectively interacting with its consultant support team. To achieve this goal, the Panel would:

- Provide critical review, on an as assigned or as needed basis, of products created by the WSAC technical support team. The goal of the Panel's work is to offer feedback to the Committee on work provided by its technical support team. Specifically, review of the work produced by the technical support team would focus on:
 - The accuracy and appropriateness of analytical, scientific, and technical methods;
 - The clarity and accuracy of statements of assumptions; and
 - The appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner.

- Offer advice or suggestions to the WSAC regarding lines of inquiry or technical questions that should be evaluated by the technical team.

The Panel would work together as a team, or be individually assigned, to review products prepared or created by the technical team and report their findings to the Committee.

For more information on the WSAC please see the following website:

<http://www.cityofsantacruz.com/index.aspx?page=2018>

B. Panel Characteristic:

Panel characteristics would include the following:

- The Panel would include 3 to 5 members;
- Panel members would have scientific or technical training and substantial practical experience in scientific or technical disciplines relevant to the work of the WSAC.
- Panel member experience and expertise would be diverse with the experience and expertise of each panel member complementing and supplementing the experience and expertise of the other. An example of an effective Panel would be made up of:
 - An environmental engineer/scientist, especially with experience related to climate change, watersheds, fisheries, hydrology, hydrogeology, permitting or related issues;
 - A civil engineer with experience related to municipal water systems and resource planning, management, treatment technology, facilities design and operations; and
 - A public policy expert, especially related to environmental and community sustainability issues and decision-making by local governments in light of significant uncertainty.

Other combinations of expertise will be evaluated by the Panel selection team.

- Panel members would be expected to bring their broad knowledge and experience to the process and apply this expertise to the topics the WSAC will be dealing with.
- Panel members would have reasonable availability to work with the WSAC during the coming year, including being willing to at least occasionally attend WSAC monthly meetings, being willing to commit the time needed to review documents, and being willing to prepare and personally present to the WSAC summaries of their review efforts.
- Panel members would have demonstrated ability to explain complicated topics in terms non-technical people can understand as well as the ability to present facts without concealing values and with clear articulation of assumptions.

Additional Panel characteristics that would be desirable include:

- Panel members would have demonstrated skills as technical and/or scientific reviewers through experiences such as providing peer review for articles or other publications on scientific and technical topics; and
- Panel members would have some previous experience supporting, advising, and engaging with citizen groups on topics with public policy implications.

C. Panel Compensation

Compensation would be provided in the form of an honorarium only. The honorarium amount would be limited to \$5,000 per panel member. Direct expenses (mileage, other transportation, per diem, if and as needed) would be reimbursed.

D. Schedule

The WSAC meets at least monthly and is scheduled to complete its work by spring of 2015 unless the work

is extended by the City Council.

III. RFQ Process

A. Process

Parties interested in being considered to provide these services are requested to submit their SOQs on or before 3:00 pm, Thursday, August 14, 2014. SOQs will be evaluated by a Panel selection team made up of City of Santa Cruz staff and WSAC members using the criteria established in Section V. The panel selection team may make its selection entirely based on the SOQs or top rated candidates may be asked for supplemental information or may be invited to interview with the panel selection team. During the interview phase, if it is used,, semi-finalists may be asked to:

- Make an oral presentation, and/or
- Respond to pre-established questions.

All responsive teams will be given equal opportunity to provide any requested additional information to the City. Any interviews will be scheduled on a mutually agreed upon date and will be at no cost to the City. The Evaluation Committee will use all available information to rank the semi-finalists in order of their ability to best meet the needs of the City.

B. Timeline

The tentative timeline for the selection process is as follows.

3:00 pm, Thursday, August 14, 2014 ----- SOQs Due
Week of August 25, 2014 ----- Interviews, if applicable
Friday, September 19, 2014 ----- Contracts with Panel in place

C. Information Disclosure to Third Parties

SOQs are a matter of public record and are open to inspection under the California Public Records Act. If any respondent claims any part of its SOQ is exempt from disclosure and copying, they shall so indicate in the transmittal letter. By responding to this RFQ, respondents waive any challenge to the City's decision in this regard.

If any SOQ contains confidential information, the respondent shall clearly label and stamp the specific portions that are to be kept confidential. The respondent is urged to identify the truly confidential portions of the SOQ and not simply mark all or substantially all response as confidential. Notwithstanding the foregoing, respondents recognize that the City will not be responsible or liable in any way for loses that the respondents may suffer from the disclosure of information or materials to third parties.

D. City Rights and Options

The City, at its sole discretion, reserves the following rights:

1. To reject any, or all SOQs or information received pursuant to this RFQ;
2. To supplement, amend, substitute or otherwise modify this RFQ at any time by means of written addendum;
3. To cancel this RFQ with or without the substitution of another RFQ or prequalification process;
4. To request additional information and/or schedule interviews as part of the selection process;
5. To verify the qualifications and experience of each respondent;
6. To require one or more respondents to supplement, clarify or provide additional information in order for the City to evaluate SOQs submitted;
7. To hire multiple contractors to perform the necessary duties and range of services if it is determined to be in the best interests of the City: and
8. To waive any minor defect or technicality in any SOQ received.
9. City reserves the right to determine the extent, duration and limit of Panel member service

E. Questions/Clarification Request

For the City, the primary contact is:

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite C, Santa Cruz CA 95060
Email: RMenard@cityofsantacruz.com
Phone: (831)420-5205

During the SOQ process, interested parties shall direct all questions via email to the City's primary contact listed above.

IV. Submittal of SOQs

The SOQs shall provide the information requested and be organized into sections as follows:

- Cover letter describing:
 - How they fit the Panel Characteristics
 - Their willingness to accept the offered compensation
 - Their availability to work with the WSAC over the coming year
- Resume or curriculum vitae.

V. Evaluation Criteria and Selection

The City will evaluate each respondent's experience and expertise in relation to the panel characteristics described in section II B above. Candidates will be evaluated on the information presented in the SOQ. Final selection may be based on the SOQ as well as any supplemental information or interviews conducted. Evaluation factors used to select the semi-finalists shall include the following:

1. Experience and qualifications as they relate to this project (100%).
 - a. The match of individual qualifications and experience to the Panel characteristics described in this RFQ, and
 - b. An individual's availability to participate.

If a clear choice is not evident, interviews will be scheduled with those semi-finalists of exceptional rating.

VI. Response Format

One copy of the Statement of Qualifications shall be submitted and are to be no longer than 20 individual sheets in length (proposal may be printed on both sides of sheet), including resumes and attachments. Submitters are encouraged to use a double-sided format and recycled paper when possible.

Parties interested in being considered for this project are requested to submit their Statements of Qualifications **by 3:00 pm, Thursday, August 14, 2014**

to: City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060
Attention: Rosemary Menard

City of Santa Cruz Water Department

August 13, 2014

212 Locust Street, Suite C

Santa Cruz, CA 95060

Attn: Rosemary Menard

RE: Statement of Qualifications (SOQ) for Independent Review Panel

Dear Ms. Menard,

Introduction

My name is Mike Cloud and I am interested in assisting the City Water Supply Advisory Committee (WSAC) as a member of an Independent Review Panel (IRP). I recently retired from Santa Cruz County Environmental Health Services (EHS) where I held the position of Registered Geologist. At EHS, I worked in the Water Resources group under the supervision of John Ricker, the County Water Resources Division Director.

I have lived in this region most of my life and am intimately aware of our regional water resource issues. I was born in San Jose, raised in Santa Clara, and graduated from San Jose State University in 1982. Most of my professional working career was based out of the San Francisco Bay Area. I moved to Aptos in January 1991 and continued working as a geologic consultant until late 1997. In November of that year I was hired as Resource Planner with the Santa Cruz County Planning Department. I spent 16-years working with Santa Cruz County including service with Planning, Public Works and EHS (Department of Health Services). I retired from the County at the end of December 2013.

Panel Qualifications

I believe my extensive technical expertise makes me well suited for a position on the IRP. Specifically:

- I have over 14-years of consulting experience dealing with geologic site characterization and groundwater protection in which I conducted technical analyses and reviewed and wrote numerous technical reports.
- I worked as a resource planner with Santa Cruz County Planning Department where I became familiar with County policies, the County General Plan and County Code.
- As a hydrologist and geologist with Santa Cruz County my primary function was to provide technical review and comment on water agency consultant reports, including the City Water Department reports. As part of this work I conducted independent analyses of county groundwater basins.

- I was the administrative staff to the County Water Advisory Commission for 14-years. In addition to organizing meetings, I supplied water-related articles and studies and explained technical water-related concepts to the commission members.
- For many years I was a key staff on the county-wide flood monitoring system (ALERT). My work with ALERT allowed me to gain understanding of timing and volume of stream flow through the major watersheds in the county. This information is critical to the understanding of surface and groundwater interactions as well as the timing availability of surface flows for municipal use.
- I served as a member of numerous technical advisory committees for various county water agencies
- I developed and oversaw several components of the Northern Santa Cruz County Prop 50 Integrated Regional Water Management Plan dealing with maintaining sustainable water supply for the County water agencies.
- In addition to developing a mid-county groundwater management program, I coordinated with the majority of our county water agencies, including the City Water Department, to develop a county-wide groundwater monitoring program for the State (CASGEM).
- I was lead staff on the County Water Conservation program for many years where I had significant public contact.
- I conducted a detailed quantitative analysis of water usage in Santa Cruz County that included variables such as sources, timing, and users.
- I conducted the initial quantitative analysis of a potential water sharing arrangement between the City of Santa Cruz, Scotts Valley and Soquel Creek water districts. To conduct this analysis I had to become familiar with the City water infrastructure and water rights.
- I have made several public presentations regarding water resource management in this county including presentations to Engineers for Water Alternatives, the Santa Cruz County Board of Realtors, the San Lorenzo Valley Rotary Club, and the Docents of Henry Cowell State Park; tailoring the technical aspects of the messages to the audiences.
- And finally, I have working relationships with staff of the U.S. Geological Survey, California Department of Water Resources, California Regional Water Quality Control Board, and numerous technical consultants. Additionally I established working relationships with all the local water agencies, County Planning, Public Works, and Environmental Health staff and management.

Position Compensation

It is my understanding that as compensation, a \$5,000 honorarium will be paid to those individuals who the City Water Department hires for these positions. Plus, direct expenses incurred for this job will also be reimbursed by the City. I am agreeable to these terms.

Work Availability

I understand that the position will require approximately 15- to 20-hours per month and will continue until at least spring of 2015. The time required to complete the IRP work will consist of attending monthly WSCA meetings, reviewing and commenting on technical documents identified by the WSAC, and personally presenting the findings to the WSAC.

As I previously indicated, I am retired and therefore have a very flexible schedule. I feel confident that I can be available as needed to complete these duties.

Closing

Although I am retired, I maintain a great interest in the vitality of my community/county and the sustainability of our water resources. I have gained a great deal of knowledge about those resources over the past 16-years and would like to continue helping the local water agencies find ways to manage them sustainably. It would be my pleasure to help the City of Santa Cruz Water Department and WSAC develop water supply recommendations for the City Council.

Sincerely,



Michael Cloud

Professional Geologist

CA 4660

(831) 684-2412

Michael A. Cloud

RESUME

554 Ranchitos del Sol, Aptos, CA 95003

(831) 685-1543
mike-cloud@sbcglobal.net

EDUCATION

B.A. Geology, Chemistry Minor, California State University, San Jose (1982)

PROFESSIONAL LICENCE

Registered (Professional) Geologist, State of California, R.G. 4660

SUMMARY OF EXPERIENCE

I have 30 years of professional experience, and I have developed a broad background of technical expertise in hydrology, geology, hydrogeology, and engineering geology, especially as these disciplines apply to environmental issues. I have been a Professional Geologist in the State of California since 1989.

To work within the community in which I lived, I accepted a position as a Resource Planner for the County of Santa Cruz in 1997. My work consisted of reviewing building and land development applications for conformance with the County General Plan and specific environmental ordinances as they relate to geologic/geotechnical hazards, and grading, erosion control, watershed, riparian, and sensitive habitat issues.

Most recently I was the Hydrologist and later a Registered Geologist for Santa Cruz County. In these positions I served in the Planning, Public Works, and the Health Services Departments. As the Hydrologist/Geologist with Santa Cruz County, my main function was to provide technical peer review of hydrogeologic studies conducted in the county by water agencies and their consultants. I regularly served on technical review committees for the various agencies. By providing technical review I was able to complete geologic structural and stratigraphic analyses of two of the main aquifer systems in the county.

Prior to joining the County I worked for various consulting firms in the state. This work primarily involved geologic site characterizations for landfills, industrial sites and gas stations so that groundwater monitoring systems could be developed and, if necessary remedial action programs could be designed. During this phase of my career I became adept at geologic field techniques, including drilling, mapping, and contractor supervision. In the office I developed skills in data analysis, cost estimating, scheduling and report writing.

As a self employed consulting geologist, I operated and maintained a computer aided design (CAD) system in which site, operational, and geologic graphic information was maintained. For my clients I prepared maps for inclusion into my technical reports and large scale graphics for public presentations. I stored the site data in a database management program from which I produced graphs and charts.

I spent a year performing the investigation and interim cleanup of four petroleum contaminated sites for the California North Coast Water Quality Control Board, using State Clean-up and Abatement Account Funds. While working for the Regional Board, I completed a State training course on Contract Management, prepared a scope of work, put it out to bid, hired a contractor, oversaw their work, analyzed the collected data, prepared a report and presented my findings to the Board members.

I spent a short time working for the California Department of Conservation. As an Associate Engineering Geologist, I performed field reviews of proposed timber harvest plans (THPs) with a multidisciplinary team.

My role was to determine if the plans would have negative impacts on slope stability and watersheds. This job included reviewing THPs in Santa Cruz County.

REFERENCES:

John Ricker, Santa Cruz County Environmental Health Services, (831) 454-2750

Chris Coburn, Resource Conservation District of Santa Cruz County (831) 464-2950 x17

Bruce Laclergue, Santa Cruz County Public Works, (831) 454-2807

Stephen Janes, The Janes Network, (831) 454-9757

DETAILED DESCRIPTION OF WORK EXPERIENCE

2008-2013 **Registered Geologist, County of Santa Cruz** (Duties the same as the Hydrologist position)

1999-2008 **Hydrologist, County of Santa Cruz**

Most recently I was the Hydrologist and later, Registered Geologist for Santa Cruz County in Environmental Health Services. As the Hydrologist/Geologist with Santa Cruz County, I was responsible for the review, analysis, and reporting on issues related to water policy including groundwater and surface water quantity and quality, water supply analysis, and flooding.

My main function with the County was to provide technical peer review of hydrogeologic reports prepared for the various projects within the County and participate on various county technical advisory committees. In my capacity as Hydrologist/Geologist I acquired an extensive technical knowledge of the main aquifer units within the county. My structural analyses of the Purisima and Santa Margarita groundwater basins were integral to developing groundwater model for the Scotts Valley area. A formal model of the Purisima has yet to be developed, but when it is, my analyses will be incorporated into that model.

For several years I oversaw the County flood monitoring network (ALERT). Experience with the ALERT allowed me to gain understanding of timing and volume of stream flow through the major watersheds in the county. This information is critical to the understanding of surface and groundwater interactions as well as the timing availability of surface flows for municipal use. I was also responsible for updating the County ALERT manual and training junior staff on the system.

Since 1999 I served as administrative staff to the County Water Advisory Commission. In this position I was responsible for preparing agenda packets, coordinating meetings, taking minutes of the proceedings and preparing annual reports to the County Board of Supervisors. As staff it was my responsibility to explain the technical issues of our water resources to the Commission members, who typically did not come from technical backgrounds.

I was responsible for updating the County Primary Groundwater Recharge map, application procedure and review criteria. Work on this map made me more knowledgeable about the various county aquifers, their interactions with streams, and their recharge capabilities.

I was responsible for administering the County Water Conservation/Plumbing Retrofit program. In addition to tracking home plumbing retrofit documents, I was responsible for public communication to explain the program to home owners and the real estate professionals.

I developed and oversaw three components of a Prop 50 grant to promote Integrated Regional Water Management Planning in Northern Santa Cruz County. These components included 1) a feasibility analysis for conjunctive use of water resources in the Lower San Lorenzo Valley, 2) the design and construction of storm water recharge facilities, and 3) the protection and enhancement of groundwater recharge.

In 2010 I began a detailed analysis of the Santa Cruz City Water supply system to determine the feasibility of 'water sharing' with neighboring water districts. This analysis was critical because the City at that time was jointly pursuing the construction of a seawater desalination plant with the Soquel Creek Water District. However, there was significant community opposition to that project and there was a demand for alternative sources of water supply.

I conducted a detailed quantitative analysis of water usage for the entire Santa Cruz County. This analysis identified all the sources of available water, the timing of each sources usage, and which group was using the water sources. Because the type and volume of water usage changes annually, this analysis can be periodically updated to reflect current trends.

1997-1999 Resource Planner, County of Santa Cruz

Reviewed building and land development applications for conformance with the County General Plan and specific Environmental Ordinances as they relate to geologic/geotechnical hazards, and grading, erosion control, watershed, riparian, and sensitive habitat issues. Interacted with the public, performed site inspections, wrote site evaluations, assisted code compliance officers with environmental code violation, and independently scheduled work assignments.

1994-1997 Independent Geologic Consultant

Conducted research on historic landfill operations for the purpose of developing site-wide model of waste fill thickness, modeling fluid occurrence and movement through refuse, and identifying potential contaminant source areas.

Designed and directed extraction test program to evaluate feasibility of long term leachate extraction from refuse and optimum well design and placement within a landfill. Prepared analysis of test results and developed model of waste fluid movement within refuse.

Participated in detailed geologic mapping using trenches to define site stratigraphy and structure. This geologic characterization was used to define groundwater and contaminant flow constraints.

Designed and directed a waste fluid sampling program to establish a waste constituent database and identify potential contaminant source areas. Program specifically evaluated occurrence of LNAPLs and DNAPLs.

Participated in the collection of geologic data for an Environmental Impact Report of a proposed major Southern California landfill site. Work included field mapping, fault trenching and logging, and development of the overall site geologic stratigraphic/structural model and hydrogeologic model.

Operated a CAD system. Generated maps and graphics for inclusion into technical reports and/or for display at public presentations.

1991-1994 Senior Hydrogeologist, MEREDITH/BOLI & ASSOCIATES, INC.

Responsible for the oversight of project technical issues as they pertain to geology and/or hydrogeology. This oversight included the design, implementation, and management of field investigations as well as the review and analysis of geologic and hydrogeologic data.

Provided technical overview for a deep soil investigation at a large solvent processing facility. Conducted a study of the complex hydrogeologic setting and designed a site groundwater monitoring system. From the results of the groundwater monitoring, developed a model of contaminant migration in the vicinity of the site.

Finalized an on-going study to assess the nature and occurrence of leachate at a Southern California landfill to determine if remediation was necessary. Based on his analysis and presentation of the data, the local regulatory agency, and their consultant, concluded that the phenomena was sufficiently characterized and that no additional characterization or remediation would be required.

Participated in the geologic characterization of a proposed landfill for the EIR/ES process. Characterization included aerial photographic analysis, field mapping, stratigraphic analysis, structural analysis, and fault age-dating.

Performed peer review of other consultant's geologic/hydrogeologic work including site characterizations and environmental impact reports for proposed landfills.

Participated in the development of several site feasibility studies regarding the practicality of soil gas and groundwater remediation.

1990-1991 Associate Engineering Geologist, California Department of Conservation.

Accompanied interdisciplinary teams on pre-harvest inspections of proposed timber harvesting areas. Identified and evaluated potential effects of logging practices on watersheds and in unstable geologic environments. Prepared maps and reports for each Timber Harvest Plan.

1989-1990 Associate Engineering Geologist, California State Regional Water Quality Control Board.

Prepared and managed a State contract to perform underground leaking tank site cleanups and site hydrogeologic characterizations using State Cleanup and Abatement Account Funds. Responsibilities included: preparation of site investigation workplans per LUFT guidelines and Regional Board recommendations; direction of contractor and subcontractor activities for leaking underground fuel tank and gasoline contaminated soil removal and drilling and well installation activities; analysis of field data and prepared recommendations for additional required field work; presentations to the North Coast Regional Board on the progress and results of field work and investigations; and preparation of a final report on work performed, results of investigations, and recommendations for additional work.

1983-1989 Senior Project Geologist, EMCON Associates.

Typical responsibilities included: performed geologic and hydrogeologic site assessments; prepared work proposals and cost estimates; scheduled staff and subcontractor work and maintained project budget and objectives; supervised office and field work of staff; designed site groundwater monitoring systems per CAC, Title 23, Subchapter 15 requirements; prepared project reports including site specific groundwater monitoring plans and Solid Waste Assessment Test (SWAT) reports; and oversaw scheduling and field operations for leaking underground fuel tank (LUFT) group of Geology Division.

Selected projects include: analysis of surface geophysical survey for landfill saturation investigation; geologic mapping of major hazardous waste disposal facility in California; design of groundwater monitoring systems for sites underlain by anisotropic dipping aquifers; and analysis of the effect of faulting on groundwater flow in confined aquifers.

SELECTED PUBLICATIONS AND REPORTS

I have been the principal or a primary contributing author on numerous environmental assessment documents while working as a consultant. Examples of these efforts include:

The Janes Network. Interim Remedial Measures Study Progress Reports 1 through 3, West Covina Landfill, West Covina, CA, 1994, 1995, and 1996.

MB&A. Property Assessment and Supplemental Investigation Workplan, Kahr Bearing Facility, Burbank, California. April 1993.

MB&A. Landfill Fluids Evaluation Study, Simi Valley Landfill, Ventura County, California. October 1992.

MB&A. Engineering Feasibility Study for the Bradley Landfill and Recycling Center, Sun Valley California. December 1991.

MB&A. RCRA Facility Investigation (Phase IIB), Deep Soil Sampling Program, Oil & Solvent Process Company. Azusa, California. November 1991.

EMCON. Verification Monitoring Report for the Lancaster Landfill, Los Angeles County, California, 1989.

EMCON. Solid Waste Assessment Test Report for the Buena Vista Landfill, Santa Cruz County, California, 1989.

EMCON. Groundwater Monitoring Plan for the Lancaster Landfill, Los Angeles County, California, 1988.

EMCON. Verification Monitoring Program for the Ben Lomond Landfill, Santa Cruz County, California, 1988.

EMCON. Solid Waste Assessment Test Report for the San Ardo Landfill, Monterey County, California, 1988.

EMCON. Solid Waste Assessment Test Report for the Luis Road Landfill, Monterey County, California, 1988.

EMCON. Hydrology and Ground-Water Monitoring, Simi Valley Sanitary Landfill, Ventura County California. February 1988.

EMCON. Evaluation of Hazardous Waste Disposal Grid Area. Simi Valley Landfill Expansion, Ventura County California. November 1986.

MB&A and EMCON. Groundwater Monitoring Program for the Simi Valley Landfill. July 1986.

EMCON. RCRA Part B Permit Application, Hydrogeology, Chemical Waste Management, Kettleman Hills Facility, Kings County, California. 1986.

1900 Sunburst Terrace
West Linn, OR 97068
503-650-0770, (c) 503-320-5284
gdiloreto@hotmail.com

City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060
Attention: Rosemary Menard

Dear Ms. Menard:

I am pleased to respond to your Request For Qualifications for an Independent Review Panel for the City of Santa Cruz regarding water supply issues, alternative strategies and solutions. Below is my response to the three areas requested in the RFQ.

How I fit the Panel Characteristics

As you can see from my attached resume I am a licensed civil and environmental engineer in Oregon. I recently retired after serving 14 years as the Chief Executive Officer for the Tualatin Valley Water District located in metropolitan Portland Oregon. TVWD serves over 200,000 customers and is Oregon's second largest water utility. We received many awards for our work including being one of the first utilities to receive the Association of Metropolitan Water Agencies Platinum Award for Effective Utility Management. I have an additional 17 years as a public works director and city engineer for three Oregon communities ranging in population from 3,500 to 90,000 people where the water system was one of the divisions under my direction. Additionally, last year I served as the President of the 145,000 member American Society of Civil Engineers, where I worked to form increased relationships between ASCE and the American Water Works Association.

I have served in a similar capacity related to your RFQ on three different occasions. From 1997 to 1999 I served on the City of West Linn's Utility Advisory Board. Our purpose was to advise the city council on matters relating to West Linn's water and sewerage systems. In 2002 I served on the City of Portland Oregon's Bull Run Treatment Citizens Panel where I represented west side Portland wholesale water purchase customers in recommending to the city council the method of water treatment for the City's water system that would place them in compliance with the EPA Long Term 2 Surface Water Treatment Rule. In 2006 I served on the review panel for a Water Research Foundation Project: Decision Process and Trade-off Analysis Model for Supply Rotation and Planning for Tampa Bay Water. My role was to participate with the researchers in reviewing their research on this project.

I also believe that I meet your criteria for a public policy expert, especially related to environmental and community sustainability. I hold a master's degree in Public Administration from Portland State University. Additionally TVWD received many awards for our environmental and sustainability programs, including a silver award for Leadership in Environment and Energy Design for the District Headquarters Building in 2003. The District was one of the first to rate its' capital improvement plan based on the triple bottom line. During my term as ASCE President I traveled around the world promoting the Institute of Sustainable Infrastructure, of which ASCE is one of the three founding members, and its' rating tool Envision™ as a means for rating the sustainability of our infrastructure projects. Beginning this fall I will become one of the nine Board members of ISI. As a public works

director and CEO for the past 37 years it has been my responsibility to develop and provide recommendations on public policy to the city councils and boards that I served.

Willingness to Accept the Offered Compensation

I accept the proposed honorarium amount and reimbursement of direct expenses for efforts I undertake in my work on this Panel.

Availability to Work With the WSAC Over the Coming Year

I am available during the week of August 25th 2014 should interviews be required and I would have no problem meeting the contract deadline of September 19th. I am available during the period fall through spring of 2015 for this work although I will be out of the country the first three weeks of October. However, I will be available by phone and email during that time.

Conclusion

I am excited about the opportunity to participate with you and the City in this effort. It fits with my past experiences as well as my interest in public policy. I am available should you have further questions or need additional information.

Sincerely:

A handwritten signature in blue ink, appearing to read "Greg DiLoreto". The signature is stylized and written in a cursive-like font.

Greg DiLoreto, P.E., P.L.S., D. WRE

Resume

Name: Greg DiLoreto, P.E., P.L.S., D. WRE

1900 Sunburst Terrace
West Linn, OR 97068
503-320-5284
gdiloreto@hotmail.com

Employment:

2013 President of the American Society of Civil Engineers. In this volunteer position I served as President for the 145,000 member ASCE global organization. As President I represented ASCE to the members, other professional organizations and before Congress. I also served as the principle liaison between the Board and the executive director. During my term, ASCE released the 2013 Report Card on America's Infrastructure and I served as chief spokesperson for that effort, including testifying before congress on the importance of infrastructure in America. Additionally I have worked in the promotion of our sustainability program through the Institute for Sustainable Infrastructure. Based on the triple bottom line this organization has developed an infrastructure rating tool, Envision, for infrastructure projects.

1999 to 2013 Tualatin Valley Water District Oregon, population 205,000. General Manager and Chief Executive Officer, Retired. As CEO I am responsible for the overall management of the second largest water utility in Oregon. I report to a 5 member elected Board of Commissioners for the development and administration of policy and strategic long range planning for the District. The District organization consists of six Departments, which include: Administration; Customer and Support Services; Engineering; Field Operations; Finance and Information Technology; Office of Community and Intergovernmental Relations. The District has 120 employees and a 2011-13 budget of \$175 million. The capital improvement budget for 2011-13 is \$34 million.

1986 to 1999, City of Gresham Oregon, population 85,000. Director, Dept. of Environmental Services 1991 – 1999; City Engineer from 1986 to 1991. As Director I had overall responsibility for the water system; sanitary sewer and 15 million gallon per day wastewater treatment plant, expanded to 20 mgd in 1999; 200 mile transportation system; storm and surface water management; parks and recreation; solid waste and recycling; and building and property management. The Department consisted of 150 employees, an operating budget of \$25 million, and a capital budget for 1998-99 of \$27 million.

1983 - 86, City of Newberg Oregon, Director of Public Works, 1985-86 and City Engineer from 1983-85. As Public Works Director, I had overall responsibility for the water system and water treatment, sanitary sewer and wastewater treatment,

streets, and storm water system. The Department consisted of 25 employees and an operating budget of \$3.5 million.

1982- 83, City of Sandy Oregon, Director of Public Works. As Public Works Director I had overall responsibility for the water system and water treatment, sanitary sewers, streets, storm water system, and park maintenance.

1977 - 82, Whiteley-Jacobson and Associates. I served as a consulting municipal engineer for the cities of St. Helens, Rainier, and Clatskanie Oregon. Performed general civil engineering master planning, design and construction and administration of water, sewer, storm water and street projects.

1976 - 77, Haner, Ross, and Sporseen. I served as an entry level civil engineer.

Schools and Universities attended/ Degrees held:

- Bachelor of Science Civil Engineering, Oregon State University, Dec. 1975
- Masters of Public Administration, Portland State University, Jun. 1985 (graduated with honors)
- Rocky Mountain Program, Center for the Improvement of Public Management, University of Colorado at Denver, 1992
- Program on Negotiation for Senior Executives, Harvard University 2003

Professional Licenses Held:

Registered Professional Engineer, Civil and Environmental, Oregon
Registered Professional Land Surveyor, Oregon

Organizations

Fellow, American Society of Civil Engineers
Life Member, American Public Works Association
City Club of Portland

Related Accomplishments:

American Society of Civil Engineers

- President, Oregon Section 1986-87
- Chair, Pacific Northwest District Council 1989-90
- Historian/Treasurer Pacific Northwest District Council 1996 – 2003
- Director District 12, National ASCE Board 2003-2006
- Have served on sixteen ASCE national professional activities committees, since 1987
- ASCE Society President 2013
- AWARDS
 - Outstanding Younger Member Oregon Section 1985
 - ASCE Edmund Friedman Young Engineer Award, 1986
 - Outstanding Civil Engineer, Oregon Section 1995

- Government Engineer of the Year Oregon Section 2004
- ASCE Government Civil Engineer of the Year 2005

League of Oregon Cities

- Water/Wastewater Legislative Committee, 1992 – 1999
- Transportation Legislative Committee, 1983 – 1999

City of West Linn

- Library Board 1989-1997, 2008 – 2011
- West Linn Library Foundation 2009-2011
- Chair, Library Building Expansion, 1999 to 2001
- Member, Water Utility Advisory Board (1997 - 1999)
- 10th Street Task Force 2007

Special Districts Association of Oregon

- President of the Board 2008 – 2011
- Board member 2003 – Present

Association of Metropolitan Water Agencies

- Chair Management Committee 2008-09

Miscellaneous

- Appointed by Oregon Gov. Victor Atiyeh to Governor's Public Works Task Force, 1985
- Appointed by Oregon Gov. John Kitzhaber to Community Right to Know Task Force, 1997
- 2002, Chair of the Regional Water Providers Consortium Technical Committee
- 2003 Awarded membership to the Oregon State University Academy of Distinguished Engineers
- 2003 – 2007, Metro's Transportation Policy Alternatives Committee – citizen representative

PUBLICATIONS

- "Regional Detention Basins to Control Storm Water" Public Works Magazine, April 1982
- "Local Conditions and Needs, City Street Systems in Oregon" League of Oregon Cities 1984
- "Gaining Contracts for Operating, Managing and Providing Water Services to Other Public Agencies" Association of Metropolitan Water Agencies, Making Waves, Vol. 4 Spring 2002
- "Career Development from an Employer's Perspective" Journal of Engineering Management, American Society of Civil Engineers, Vol. 2, Issue 2, April 2002
- "Providing Water Service to Other Public Agencies" Journal of the American Water Works Association, September 2003

- “Water Supply, Water Treatment, Water Storage and Distribution, Water Conservation chapters of the Planning and Urban Design Standards”, American Planning Association, John Wiley and Sons, 2006

Patrick T. Ferraro
351 Brookwood Ave.
San Jose, CA 95116-2742
PtFerraro5@gmail.com

August 4, 2014

Water Director Rosemary Menard
212 Locust St., Suite A
Santa Cruz, CA 95060

Subject: Statement of Qualifications submitted in response to RFQ re. Independent Review Panel for City of Santa Cruz Water Supply Advisory Committee

Dear Ms. Menard:

I am honored to have received your RFQ for service to the City of Santa Cruz as a member of an Independent Review Panel for the Water Supply Advisory Committee. I hope the following gives you adequate information to decide that I possess the qualifications you are seeking in a panelist to achieve all the elements listed in the RFQ,

My education and experience in water resource management has accrued over forty-five years, beginning with a classic engineering curriculum augmented with over a dozen courses in philosophy and ethics. After completion of my graduate work at San Jose State University in Environmental Engineering, my work and spiritual path merged and has since guided my professional work, my involvement in water politics and my lifestyle, which I hope leads by example.

My engineering career began in 1966 doing earthwork and drainage systems construction for Caltrans in Southern California. My first employer after graduate school was with the firm of Consoer-Townsend Consulting Engineers. During my employment with this firm, I performed design, surveying and construction management for numerous wastewater treatment plants throughout California (San Jose, EBMUD, Hunter's Point Naval Facility, Madera)

In 1970, I was also assigned as key project engineer for a comprehensive analysis of the disposition of all wastewater discharges into South San Francisco Bay projected to the year 2000. This assignment, which also included an in-depth evaluation of the potential for wastewater recycling in Santa Clara County, lead directly to my leaving the employ of the Consoer-Bechtel Consortium managing this study and began my long-term involvement in local water politics.

In early 1972, our study team gave a presentation to the Santa Clara Valley Water District Board of Directors on the technical and financial feasibility for a 100 mgd wastewater recycling system to augment the local groundwater yield with a safe, reliable and drought-proof supply of water, financed with 87.5% State and Federal grants under the newly passed Clean Water Act. The response by the District was fear that such an alternative would be a serious threat to future funding of the San Felipe Division of the Central Valley Project, authorized to deliver CVP supplies to four out-of-basin counties: Santa Clara, San Benito, Santa Cruz and Monterey.

The SCVWD staff then hired the consortium to prepare an addendum study on the recycling component of the plan. The staff directed me, as the project engineer, to

size a smaller recycling system with very high unit costs, which the Board could then cite as an infeasible alternative to the San Felipe Project. Believing this to be a serious breach of ethics, I chose to seek election to the SCVWD Board, gain access to the local media and promote a closed-loop water management system over the linear model that had dominated most water systems in Bay Area, California and the nation.

Once elected to the SCVWD Board, I formed my own environmental consulting company and prepared EIR's for various types of projects throughout California, including several in Santa Cruz County. In addition to preparing EIR's on several large mountain subdivisions and a 200 ft. sediment containment dam for Granite Rock Co. in Aromas, I was hired by the County of Santa Cruz in 1975 to prepare an EIR for the County Master Wastewater Plan.

This plan proposed to build force mains to transport most of the coastal communities' wastewater to the City of Santa Cruz wastewater treatment plants and discharge the treated effluent into Monterey Bay through an extended outfall pipeline. It was common knowledge that the majority of the County Supervisors at the time (and today) realized the cost of conveying CVP water to the coast was too expensive (and, as we've learned, also too unreliable), the EIR demonstrated that an alternative plan for major water recycling for agricultural use and groundwater protection was preferable to the proposed project plan.

After twenty-three years (nearly six terms) I resigned from the SCVWD Board in 1995 to be appointed as Executive Director of the newly formed Silicon Valley Pollution Prevention Center (SVP2C). This NGO was created as part of a consent

decree settling a Clean Water Act lawsuit filed by a coalition of environmental groups calling themselves Clean South Bay. The Board of Directors consisted of equal numbers of executives from government, business and officers of the coalition members and served as a *de facto* ongoing mediation process to identify sources of water pollution and pursue actions to reduce or eliminate practices causing these pollution discharges. In addition, The SVP2C also held periodic conferences and training seminars for elected officials and public agency staff on various water management and land use strategies, which reduced the impacts on water quality and water demand.

The Center operated successfully for eight years, but the industrial members chose to terminate the organization in 2004 rather than address serious pollution discharge issues connected to land use, extended product stewardship and maximizing non-potable water reuse in the South Bay communities.

Since 2009, I have served as an adjunct faculty member at San Jose State University and, in 2013 I was hired at Santa Clara University, lecturing to both engineering and environmental science students in courses in Water Law & Policy and Water Resources Management. Teaching these courses requires I remain current on developments in the field of water policy and management, reading daily news reports and newly released studies from government agencies and NGO's.

I believe my experience is broad enough to qualify for all three categories of expertise listed in the RFQ:

- I am an environmental engineer with experience related to climate change, watersheds, fisheries, hydrology, hydrogeology, permitting or related issues;

- I have worked many years as a civil engineer with experience related to municipal water systems and resource planning, management, treatment technology, facilities design and operations; and
- I have extensive public policy experience, especially related to environmental and community sustainability issues and decision-making by local governments in light of significant uncertainty.

My current teaching load is limited to one course per semester or quarter and I currently have no other consulting contracts in place, so I am available to work with the WSAC as needed during the next year and to attend the WSAC monthly meetings and make presentations of the review efforts as requested.

As an elected representative of 20% of the population of Santa Clara County, I gained years of practice in the art of explaining engineering and other scientific concepts to my constituents and many of my colleagues with less training and experience in the field of water resources management. One of my goals in teaching environmental science students is to familiarize them with engineering jargon to enable them to fully participate in discussion of water management issues in the communities in which they will reside.

I have decades of experience interfacing with citizen advisory committees as a Board member of the Santa Clara Valley Water District. The agency connects with its customers by maintaining many specialized advisory committees for sectors such as agriculture, landscape irrigation, watershed management, oversight of expenditure of flood protection parcel tax revenues, and a County Water Commission comprised of elected officials to review water rates and supply/demand forecasts.

While I have not been called upon to do peer review of technical journals, I read and

comment continuously on water issue reports prepared by both government agencies and NGO's. As the news media reports on many of these reports, I often post comments in social media (LinkedIn Focus Groups, Facebook, Google+) along with the links to the report and/or news article, encouraging others to read the report and engage in further dialogue.

I attended part of most recent WSAC meeting on July 31 and found the format most admirable. The commitment of the committee members is extraordinary and the facilitators and the consultant presentations were of the highest caliber. I especially was impressed with the presentations concerning uncertainty, climate change, sea level rise and adaptive management, which I have found seriously inadequate in other water supply planning efforts.

Attached, please find my Curriculum Vitae for a list of professional history and academic assignment during my career. Please contact me and request any additional information you may need for your evaluation of my qualifications.

I can be reached by phone at 408.293.1852 or by email at ptferraro5@gmail.com

Sincerely yours,

Patrick T. Ferraro

Curriculum Vitae of Patrick T. Ferraro

Contact Information:

Mailing Address: 351 Brookwood Avenue, San Jose, CA 95116-2942

Telephone: 408.293.1852

E-Mail: ptferraro5@gmail.com

Career Objective:

Teaching positions that can allow me to share my accumulated expertise and motivate others to more fully participate in the field of ecosystem protection, water management and water policy development and related fields such as low impact urban development and sustainable agriculture.

Education:

Master of Science, Civil Engineering (Environmental Engineering), San Jose State University, 1970. Focus on pollution prevention and water resource recovery systems.

Bachelor of Science, Civil Engineering, Loyola University of Los Angeles, 1968. Four-and-a-half year curriculum of classic engineering disciplines.

Professional History:

1995-2004: Executive Director, The Silicon Valley Pollution Prevention Center. The primary mission was to educate all community sectors in the South San Francisco Bay watersheds about the sources of pollution in the southern end of the estuary, to identify methods of preventing pollution from identified sources, and to promote the use of methods, which reduce or eliminate pollutants.

1973-1995: Director on the Board of the Santa Clara Valley Water District. Directed the water resources management for the San Jose (Silicon Valley) Metropolitan area's 1.5 million people, with a staff of 600 and an annual operating budget of \$180 million; District representative on EPA's Integrated Environmental Management Project; six years as District representative on Intergovernmental Council; District representative on Tanner Committee, which evolved into the County Pollution Prevention Committee; leading board advocate for water recycling and watershed management.

1972-present: Owner and Project Coordinator, Water Brothers Environmental Consultants. Prepare EIRs and provide water and sewage expertise for state, county and local government agencies and private industry.

1970-1972: Project Engineer, Consoer, Townsend & Associates. Design and construct inspection of various wastewater treatment projects. In joint venture with Bechtel Inc., studied effects of all discharges to South San Francisco Bay and the reuse potential in Santa Clara County.

1967-1969: Caltrans, Engineering Student Trainee, Junior Civil Engineer, Construction surveys and inspection

Academic Contracts:

1974-1977: Instructor, Santa Clara University. Graduate and undergraduate courses in water resources management.

Curriculum Vitae of Patrick T. Ferraro (Page 2)

1977-1981: Instructor, San Jose Community College District. Environmental science course taught in conjunction with related curriculum.

1987-1988: Instructor, San Jose State University, Department of Environmental Studies. Course in groundwater restoration techniques, *vis a vis* current politics and legal requirements.

2009- 2013: Lecturer, San Jose State University, Department of Environmental Studies. Courses in Water Policy in the Western United States (EnvS 129) and Water Resources Management (EnvS 128)

2013-2014: Lecturer, Santa Clara University, Departments of Civil Engineering and Environmental Sciences. Course title: Water Law and Policy (CENG 124, CENG 258 & ENVS 124)

Professional Affiliations:

1969-2004: Water Environment Federation and California Water Pollution Control Association.

1979-1993: Director and Executive Committee, Association of California Water Agencies; Chairman, Special Agencies Section; 1993-1995: Secretary, Region 5 (Central Coast agencies)

1991-1995: Director, California WateReuse Association: Co-Chair of Education Committee and Video Project Coordinator in charge of fund raising, production house selection process and contract negotiations, and script reviews.

Honors:

Fellowship, Federal Water Quality Administration, San Jose State Foundation, 1969-1970

Water Recycling Leader of the Year, 1992, California WateReuse Association

Personal Profile:

Age: 66 (d.o.b. 9/4/47)

Place of birth: Niagara Falls, N.Y.

United States of American citizen

Married 32 years to Cari Lynn Ferraro, two children, Nicholas (SCU '12) ages 24 and Chrysalis Rose, 29

Valid California Driver's License

Professional References:

Terry Christensen, Retired SJSU Political Science professor t.chris@comcast.net

Mr. Ted Smith, former Executive Director, Silicon Valley Toxics Coalition and past vice president, Silicon Valley Pollution Prevention Center tsmith@igc.org

Eric Rosenblum, Former Project Manager, South Bay Water Recycling and President of Envirospectives
Cell: 408 656-6666 rewater@aol.com

Ken Mackay, retired SJSU Meteorology professor mackaykp@hotmail.com

Stephanie Hughes, Engineering consultant and SCU Lecturer steifehughes@yahoo.com

Terry Trumbull, Environmental Lawyer and University lecturer terryt1011@aol.com

July 22, 2014

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite C, Santa Cruz, CA 95060

RE: Statement of Qualifications for Water Supply Advisory Committee Independent Review Panel

Ms. Menard,

I am responding to your email message soliciting applicants to be considered for the Independent Review Panel. The following letter summarizes my qualifications. I have tried to address each of the three elements separately and have also attached a resume.

1] Fit to panel characteristics

My experience and expertise may be a bit different than others who may apply in that I have some overlap into all three of the areas listed, but believe I am strongest in the Environmental Scientist role. Because I have lived and worked in the county for the past 45 years and much of my work, both through University teaching and research, as well as consulting, speaking and public service has been related to the geology and hydrology of the region, much of the following experience overlaps. I feel it is probably more direct to list my relevant experience in bullet form as it relates to the Review Panel rather than trying to describe each of these in a letter format.

- My undergraduate degree is in Earth Sciences and my Ph.D. is in Oceanography, which includes a minor in Civil Engineering. The minor included courses in hydrology, sanitary engineering and soil mechanics among other courses.
- I have been on the faculty in the Earth Sciences Department at UCSC for 45 years and taught Hydrology for about 25 of those years. The course covered all of the basics of surface and groundwater hydrology (weather, precipitation, runoff, flooding, dams and reservoirs, erosion and sedimentation, groundwater and wells, water quality, and water supply and treatment) and was focused on Santa Cruz County. Part of this teaching involved laboratory and field exercises throughout the county, including stream gaging, flood frequency analysis, dams and water storage (proposed dams on both Soquel Creek and Zayante Creek), as well as the Santa Cruz city water supply sources and treatment plant and wastewater treatment facilities.
- I taught Environmental Geology for about 30 years, which also covered runoff, flooding and water quality. As a result of teaching his course for a number of years I wrote a commonly used textbook: *The Earth and Land-Use Planning* and several years

later, revised this book with a new title: *Geologic Hazards, Resources and Environmental Planning*. Part of teaching both courses and writing these two books was spending a lot of time explaining fundamental hydrologic principles and processes to undergraduate students in understandable terms. My co-author on both books, John Gilchrist, was the Santa Cruz County Environmental Planner at the time. Many of the examples used in the book were local and all involved environmental planning and policy.

- For about 18 years I served as a geological consultant to the Santa Cruz County Planning Department as part of an interdisciplinary panel, reviewing proposed land use change and geologic consulting reports and rendering opinions of sites and their limitations or hazards. From 1982 to 1991, I served in a similar role for the Department of Environmental Health Services, reviewing a regular set of consulting reports and proposals for water and septic systems.
- Over the 45 years of both teaching and living in Santa Cruz County I have been involved firsthand with a number of water supply projects and issues, some of which include: participation in the operation of two different small rural water systems (in Bonny Doon, including streams, wells, storage, distribution and metering use); member of a consulting team that investigated potential groundwater supplies on Wilder Ranch (for city of Santa Cruz); drilling for groundwater on the UCSC campus and monitoring off site springs and streams for responses to well pumping tests; combined with living in Bonny Doon and teaching hydrology, I have become familiar with the North Coast water streams/springs and water supplies (Liddell, Majors and Laguna creeks); following the Loma Prieta earthquake I was part of small team investigating the hazard posed by a large landslide that was initiated above the Loch Lomond reservoir; I also was involved in the early 1970s supervising a Ph.D. thesis on the risks posed by the Zayante Fault, which passes through the original proposed Zayante reservoir site; I supervised and worked closely with a research project involving a complete inventory of all ground water wells throughout the entire Bonny Doon and San Lorenzo Valley areas (depths, rocks types, yield and drawdown, quality and quantity issues).
- I am a Registered Geologist and Certified Engineering Geologist in California and have consulted on numerous sites, developments, hazards assessment and related issues over the past 45 years throughout Santa Cruz County. Several of these projects involved investigations advising property owners or small water companies of potential groundwater drilling sites, and then working with drillers in the actual well drilling.
- For several years I was on the San Lorenzo River Task Force (one of several such Task Forces over the years), working with Joe Hall of the Redevelopment Agency, with consultants and city officials on the issues of flooding, flood control, and river front development and plans for redevelopment.
- Prior to and following the 1982 storms and flooding throughout Santa Cruz County I was involved investigating flood hazards throughout the San Lorenzo Valley, the

downtown stretch of the river, and Soquel Creek, assessing flood frequency analysis and risk; following the flooding I directed a team which mapped the high water marks, completed flood frequency analysis and evaluated impacts of the flooding throughout the county.

- I was funded by a state agency to look carefully at coastal hazard policies and practices along California's 1100 mile coastline, which involved reviewing each coastal city and county policies as they related to coastal hazards, interviewing planning department staff in each city and county, comparing how Coastal Commission land use practices compared with written policies, and then preparing a final report: *California Coastal Hazards: A Critical Look at Existing Policies and Practices*.

- More recently (2010-2011) I was one of two consultants hired by the Santa Cruz City Redevelopment Agency to carry out a Climate Change Vulnerability Assessment for the city of Santa Cruz, which included: sea-level rise, coastal storm damage and erosion; changes in precipitation, flood potential and water availability; changing temperatures; wild fires; natural resource impacts; risk assessment; impediments to climate change adaptation; principles for adaptation and adaptive capacity; and climate change adaptation strategies for Santa Cruz. This project involved meeting with various city agency staff, reviewing reports and data involving climate change impacts and history in Santa Cruz, preparing a comprehensive final report and then making presentations to the City Council as well as the County Planning Commission and County Environmental Commission.

- Following the Climate Change Vulnerability Assessment for Santa Cruz, I was asked by the California Energy Commission Public Interest Environmental Research program to submit a proposal to develop a Sea-Level Rise Vulnerability Assessment and Adaptation Guide for California's coastal communities. This led to the preparation, printing and distribution of a manual for local governments, as well as a specific Sea-Level Rise Vulnerability Assessment for the City of Santa Barbara.

Throughout virtually all of my professional career at the University of California Santa Cruz, my research, teaching, writing, public presentations and consulting have involved both science and policy. I have also given hundreds of public lectures over the past 45 years, ranging from k-12 schools, life-long learners, other colleges and universities, service clubs, realtor groups, public entities (e.g. California Coastal Commission, California Ocean Protection Council, planning commissions and other similar groups), conservation organizations and others, so that explaining science in understandable terms has been core to my work. Over the past 6 years I have also been writing a bi-weekly column for the Santa Cruz Sentinel focused on the coastal ocean and which requires regular writing and explaining science in an understandable format.

An important part of my professional work over the past 45 years has involved a significant amount of technical review of manuscripts for professional journals, of

chapters for proposed textbooks, of proposals for research funding from state and federal agencies, of consulting reports, of institutional/departmental/research organizations.

As described above, I have also worked over the period I have served as a professor at UCSC in a wide range of roles involving advising and engaging with citizen's groups, local government staff, as well conservation or environmental groups on issues involving policy.

2] Willingness to accept the compensation

I am quite willing to accept the compensation as listed in the Statement of Qualifications

3] Availability to work with the WSAC over the coming year

While I have several business/professional trips that will require my being out of town for several days to as much as 10 days, I am otherwise available throughout the next year to work with the WSAC.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Griggs". The signature is written in a cursive, somewhat stylized font.

Gary Griggs

GARY B. GRIGGS

Distinguished Professor of Earth and Planetary Sciences
Director- Institute of Marine Sciences
University of California, Santa Cruz, California 95064
(831) 459-5006; cell (831) 432-9318; fax (831) 459-4882; email: griggs@ucsc.edu

EDUCATION

1965 B.A. Geological Sciences, University of California, Santa Barbara
1968 Ph.D. Oceanography, Oregon State University, Corvallis; Minors:
Civil Engineering and Geology

PROFESSIONAL REGISTRATIONS

Registered Geologist in California (No. 3277)
Certified Engineering Geologist in California (No. 1282)

PROFESSIONAL AFFILIATIONS

American Shore and Beach Preservation Association
American Geophysical Union
Coastal Research Foundation

PROFESSIONAL EXPERIENCE

1965-66: Graduate Research Assistant in Oceanography, Oregon State University
1966-68: National Science Foundation Graduate Fellow in Oceanography, Oregon State University
1969-present: Assistant to Full Professor of Earth Sciences, University of California, Santa Cruz
1981-84: Chairman of Department of Earth Sciences, University of California, Santa Cruz
1975: Participant and advisor to Gulf of Naples Ecological Program, Naples Biological Station, Naples, Italy
1980: Participant in United States-New Zealand Joint Oceanographic Research Program, New Zealand Oceanographic Institute, Wellington, New Zealand
1973-1991: Geological Consultant to Santa Cruz County Planning Department
1982-1991: Hydrological Consultant to Santa Cruz County Department of Environmental Health Services
1984 & 1996: Visiting Professor, Semester at Sea Program, University of Pittsburgh
1987: Guest Lecturer, World Explorer Cruises
1990-present: Editorial Board- *Journal of Coastal Research*
1991-2000: Board of Directors: American Shore and Beach Preservation Association
1991-1999: Editorial Board-*Shore and Beach*
1991-present: Director-Institute of Marine Sciences, University of California, Santa Cruz

1991-1994: Associate Dean-Division of Natural Sciences, University of California, Santa Cruz
 1995-1997: Editorial Board-*Geology*
 1995-2006: Consortium for Oceanographic Research and Education: Member of Executive Committee and Governor, Central California Consortium.
 1997-98: National Academy of Sciences-National Research Council Committee on Coastal Engineering Research & Education Needs
 1998: Chair-California Sea Grant Program Review Committee
 1999-2009: Chair-University of California Marine Council
 2002-07: Chair of Steering Committee and Principal Investigator-Center for Integrated Marine Technologies
 2003-2004: Board of Directors- Island Conservation
 2003-2004: Chair- Strategic Futures Committee, University of California, Santa Cruz
 2003-2010: Advisory Board-California Center for Ocean Science Education Excellence, Lawrence Hall of Science
 2003-2010; 2014: Advisory Board-California Sea Grant
 2002-07: Executive Committee Central and Northern California Ocean Observing System
 2007- present: Save-Our-Shores Science Advisory Council
 2007-09: Consortium for Ocean Leadership-Board of Trustees and Executive Committee
 2007-08: Planning Committee: California Current Ecosystem-Based Management Initiative
 2008-present: Scientific Advisory Team to the California Ocean Protection Council; (2009-2013 Co-Chair of Team and Executive Committee member)
 2010-2011: Cooperation Across the Atlantic for Marine Governance Integration (CALAMAR). American Co-Chair for Working Group on Oceans and Climate Change.
 2010-2012: Member of National Academy of Sciences-National Research Council Committee on Sea-Level Rise for Coasts of California, Oregon and Washington.
 2012: Chair, Geological Society of America Panel on Developing Position Paper: The Role of Geology in Managing U.S. Coastal Hazard Risk.
 2104: Visiting Professor-Semester at Sea, University of Virginia

AWARDS

1974-75: Fulbright Fellow- Institute of Oceanographic Research, Athens, Greece
 1998: University of California, Santa Cruz, Division of Natural Sciences- Outstanding Faculty Award (for combined teaching, research and service)
 2001: Distinguished Alumnus Award- Geological Sciences Department, University of California Santa Barbara
 2003: American Shore and Beach Preservation Association: Joe Johnson Coastal Research Award
 2006: University of California Santa Cruz Alumni Distinguished Teaching Award
 2006: University of California Santa Cruz Pioneer Faculty Award
 2007: Ed Ricketts Award for Sustained Research in Marine Science- Monterey Bay National Marine Sanctuary
 2009: California Coastal Commission/Sunset Magazine California Coastal Hero award

2010: Elected to California Academy of Science

RESEARCH AREAS

- Geologic and hydrologic hazards, processes and policies
- Coastal Processes: Littoral drift, sand budgets and littoral cells; evaluation of long-term shoreline changes and geomorphic evolution of coastlines.
- Coastal Erosion and Protection: sea cliff and beach erosion; coastal engineering; coastal protection structures and their effectiveness and impacts; coastal hazard analysis and planning; Impacts of sea-level rise on coastlines and adapting to sea-level rise.

COURSES TAUGHT

Oceanography
Geologic Hazards
Hydrology
Coastal Geology
Geologic Principles
Tectonic Geomorphology
Frontiers in Earth Sciences
Coastal Processes

SELECTED PUBLICATIONS (175 total but only local or more relevant publications included)

10. Griggs, G.B. and other, 1970. SANTA CRUZ AND THE ENVIRONMENT, Big Trees Press, Felton, 28 p.
15. Griggs, G.B., 1973. THE EFFECT OF COASTAL CURRENTS ON OCEAN OUTFALLS, Effluent and Water Treatment Jour. 14:29-32.
19. Griggs, G.B., 1974. NEARSHORE CURRENT PATTERNS ALONG THE CENTRAL CALIFORNIA COAST, Estuarine and Coastal Marine Science, 2: 395-405.
20. Griggs, G.B. and McCrory, P., 1974. COMPARITIVE FRESH AND WASTE WATER DICHARGES ALONG THE CALIFORNIA COAST, Environ. Geology 1: 89-95.
24. Griggs, G.B. and Johnson, R.E., 1976. THE EFFECTS OF THE SANTA CRUZ SMALL CRAFT HARBOR ON COASTAL PROCESSES IN NORTHERN MONTEREY BAY, CALIFORNIA, Environ. Geology 1: 229-312.
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August 13, 2014

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

Re: Statement of Qualifications for Water Supply Advisory Committee Independent Review Panel

Dear Ms. Menard:

I am responding to the City of Santa Cruz Water Department's Request for Qualifications for Independent Review Panel Members to support its Water Supply Advisory Committee. I have attached my resume for your consideration. I retired at the end of May from Seattle Public Utilities, closing out my career there as the Drinking Water Director.

Here are my responses to the three topic areas in the SOQ Submittal:

I. How do I fit the Panel Characteristics?

First, I believe my general qualifications and experience fit the second type of panelist described B. Panel Characteristic. I am an engineer by training (BSCE in Civil Engineering and MSCE in Environmental Engineering, with a focus on drinking water treatment). I have over 30 years of water utility experience in Seattle, which provides drinking water to over 1.3 million people primarily from surface water (~99%) supplemented by groundwater (~1%). Since about 1996, I was at a director level within Seattle Public Utilities (SPU) with responsibility for drinking water quality, including regulatory compliance, for water resource management (including the conservation program), for 24/7 water supply operations and, more recently, for oversight of drinking water system planning and water capital improvement programs. I have had leadership roles in the development of most of SPU's major drinking water projects over the last 20 years, including 2 water treatment plants, a reservoir covering program, a new WQ Laboratory and a major Supervisory Control and Data Acquisition (SCADA) Upgrade. SPU has one of the first Habitat Conservation Programs in the country. That program was managed from my division.

Second, I see some similarities between the Seattle and Santa Cruz. Both are primarily surface water (local sources), supplemented by groundwater. Both have had or are having surface water supply challenges. In 1992, Seattle experienced a drought that changed the way the utility and city viewed water supply. Major choices at that time for Seattle were to either develop a major new source of supply and/or to implement conservation measures. For Seattle, the focus since that time has been on conservation efforts, on water supply flexibility (optimizing existing supplies) and on maintaining new source options.

Finally, I have had recent experience with a citizen panel. In my final year with SPU, the utility was developing a 6 year strategic plan for all 3 lines of business (drinking water, drainage & wastewater and solid waste). A nine member citizen review committee was recruited to assist the utility in developing this 6 year plan. As the Drinking Water Director, I attended most of the committee meetings and was regularly involved in educating the committee about the drinking water system and on the options for O&M and capital projects and programs for the next 6 years.

II. My willingness to accept the offered compensation.

I would have no concern with the compensation.

III. My availability to work with the WSAC over the coming year.

Since I am retired, I have fairly good availability with the exception of planned vacations and AWWA conferences: September 10-29, 2014; AWWA Water Infrastructure Conference (Oct 27-28); AWWA Water Quality Technology Conference (November 14-20); February 18-27, 2015; May 20-29; AWWA ACE (June 5-10); June 22-30.

I trust that this cover letter and resume are responsive to the RFQ. Please feel free to contact me for additional information, if needed.

Sincerely,

David J. Hilmoie, P.E. BCEE
Cell Phone: (206) 713 0690
Email: watervet@q.com

DAVID J. HILMOE, P.E. BCEE

11723 Corliss Avenue N, Seattle, Washington 98133

watervet@q.com

(206) 713-0690

Education and Certifications:

B.S.C.E. South Dakota State University

M.S.C.E in Environmental Engineering. Iowa State University

Washington Registered Professional Engineer (#21656)

American Academy of Environmental Engineers – BCEE (#98-20058)

Washington DOH Certified WDM IV & Cross-connection Control Specialist

ICS 100, 200, 300, 400, 700, 800 and Planning Section Chief Training

Organizational Involvement

AWWA, including current Trustee of Water Quality & Technology Division (2011-17)

American Academy of Environmental Engineers

Seattle Management Association

Engineers Without Borders

Water for People, Seattle area Chapter

PROFESSIONAL EXPERIENCE

2005 – May, 2014 Seattle Public Utilities. Drinking Water Director. I was responsible for the Drinking Water Line of Business (LOB) Division which is responsible for drinking water system and asset management planning, CIP development and water resource and drinking water quality O&M management for 1.3 million retail and wholesale customers. This division is the primary point of contact for Washington State Departments of Health and Ecology regulators as well as management of the 2 source water treatment operations contracts (about \$5M/year). The water capital program is about \$60 million/year. This Division of about 50 staff has 5 sections – Water Planning; Major Watersheds; Water Resources; Transmission and Distribution and Water Quality & Treatment.

1997 - 2005 Seattle Public Utilities. Water Quality and Supply Director. I was responsible for drinking water regulatory compliance; the largest state certified drinking water laboratory, water resource management and 24/7 water supply and water treatment operations. The Water Management Section had responsibilities for managing SPU's sources of supply and for managing anadromous fisheries on the S. Fork Tolt and Cedar Rivers. I was the water quality and operational lead for the 120 MGD Tolt and 180 MGD Cedar Water Treatment Facilities Design Build Operate (DBO) project teams. My division completed a \$17M Supervisory Control and Data Acquisition (SCADA) strategic planning and implementation project. In 1999, a new 24,000 SFT Water Quality Laboratory was completed. The Division had about 80 people with an annual operating budget of about \$7 million.

1983-1997 Seattle Water Department. Three positions: Water Treatment Supervisor, Water Quality Manager and then Water Quality Director.

1977-81. Buell Winter Mousel. Project Engineer. BWM, Associates is a general municipal consulting firm in Sioux City Iowa.

Significant roles within Seattle Public Utilities and the Water Industry:

- Drinking water quality lead for the utility between 1995 and 2013, responsible for the water quality program in general (regulatory compliance, relationships to state and local health, water quality operational strategies) and as lead for major water quality emergencies. My primary focus in this role was on public health protection, regulatory compliance and customer confidence in its drinking water quality.
- Managing the water quality and supply operations relationship. I think I was relatively unique in larger utilities in the country in having had responsibility for both water quality and water supply operations, managing the project and O&M interfaces between these two critical functions.
- Transition management. I was responsible for establishing transition plans for several major capital projects, ensuring that customer service impacts would be minimized as new facilities were constructed and brought on line. This includes a program to cover 8 large drinking water reservoirs, new Tolt and Cedar Water Treatment Plants, a new Water Quality Lab and a major SCADA upgrade.
- Capital Program Management, including prioritization, downsizing and refocusing efforts. From 2010 to May 2014, the Water CIP has been transitioning from major projects to a focus on the distribution and transmission infrastructure. It was my division's responsibility to manage this transition.
- System Planning & Strategic Planning. Two Water System Plans (2007 and 2013) were led out of my division. Additionally, I was involved in Transmission and Distribution System strategic planning, strategic asset management plan (SAMP) development and the 2013-14 SPU effort to develop a 2015-2020 department strategic business plan (I was the line of

business lead for this effort), which involved support to a 9 member citizen advisory committee.

- Emergency Preparedness and Response. I have over 30 years of experience in planning for and responding to drinking water emergencies. I have multiple ICS certifications, including Planning Section Chief certification (taken early in 2013). I have been the water quality lead for multiple emergencies, including water treatment plant failures, watermain breaks and e-coli positive samples. I was a water utility lead for the response to the 1990 Goodwill Games, Y2K, continuity of operations planning (COOP) in response to bird flu and the development of several incident action plans (IAPs) in support of the highest consequence or most likely water utility emergencies.
- Management of a division with multi-million dollar budgets. For almost 20 years, I have been a division director with a range in staff of 30 to 80 people, operating budgets from \$2 to \$7 million. I have experienced multiple reorganizations, dealing with impacts on programs and on staff transitions.
- AWWA. I have been a member of AWWA for over 30 years and I am in my second 3 year term (2014-17) as a Trustee of the Water Quality and Technology Division. I am currently on the planning committee for AWWA's first Water Infrastructure Conference in Atlanta, Georgia.

Jessica Lacy
U.S. Geological Survey
400 Natural Bridges Drive
Santa Cruz, CA 95060
jlacy@usgs.gov

August 12, 2014

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060

Dear Ms. Menard:

I would like to be considered for the Independent Review Panel for the Water Supply Advisory Committee. I am a physical oceanographer at the U.S. Geological Survey's Pacific Coastal and Marine Science Center in Santa Cruz. I conduct research in hydrodynamics and sediment transport in estuaries and coastal waters, including San Francisco Bay, Puget Sound, and Monterey Bay. I have always been interested in the interface between science and environmental policy. I've served on numerous scientific advisory panels for wetlands restoration projects and estuarine resource management. Before earning a Ph.D. in Civil and Environmental Engineering at Stanford University, I worked in water quality regulation for the State of California for eight years as a professional engineer.

As a government scientist, one of my responsibilities is to explain technical concepts to local agencies, journalists, and the public. I served as the technical consultant to nonprofit environmental groups participating in the Total Maximum Daily Load (TMDL) process for regulating copper discharge to South San Francisco Bay, explaining technical issues to environmental group members and representing their concerns to engineers and policy makers. As an engineer at the State and Regional Water Quality Control Boards I frequently interacted with citizen groups and other stakeholders interested in water quality, and presented at public hearings.

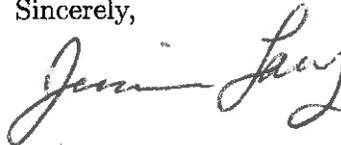
I regularly review research proposals for the National Science Foundation and other granting organizations, and scientific articles for journals as well as for colleagues and coauthors. As a member of the Science Panel for the Elkhorn Slough Tidal Wetland Plan and as consultant on the TMDL process I reviewed consultant proposals and reports.

I live and work in Santa Cruz and my work schedule is somewhat flexible, so I can attend WSAC meetings when needed. I'm interested in reviewing documents and am willing to prepare and present summaries of my reviews.

If I participate in the Review Panel it would be as a citizen of Santa Cruz, not as a representative of USGS. Because of federal guidelines governing outside work by civil servants I would not accept compensation other than reimbursement for direct expenses.

As a resident of Santa Cruz for more than ten years I am very interested in the ongoing planning process for water supply. My C.V. is attached. If I can provide any other information, let me know.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jessica Lacy".

Jessica Lacy

Jessica R. Lacy

U.S. Geological Survey
Pacific Coastal and Marine Science Center
400 Natural Bridges Drive
Santa Cruz, CA 95060
jlacy@usgs.gov
<http://walrus.wr.usgs.gov/staff/jlacy/>
831.460.7520

Registered Professional Engineer in Civil Engineering in the State of California

EDUCATION

Ph.D. in Civil and Environmental Engineering, Stanford University Environmental Fluid Mechanics and Hydrology Program	2000
M.S. in Water Science, University of California, Davis Emphasis in aquatic ecology	1987
B.S. in Environmental Engineering, California State University, Humboldt	1983

FELLOWSHIPS

John K. Vennard Civil Engineering Fellowship, Stanford University	1994–95
Distinguished Scholar Fellowship, University of California, Davis	1985–86

RESEARCH TOPICS

- Hydrodynamics of the coastal ocean, estuaries, and lakes
- Lateral dynamics in estuaries with complex topography, and their influence on mixing
- Sediment dynamics of estuarine shallows
- Estimation of bottom roughness, bottom shear stress, and sediment resuspension in wave-dominated environments
- Interaction between aquatic vegetation and hydrodynamics

RESEARCH APPOINTMENTS

Research Oceanographer, Pacific Coastal and Marine Science Center, U.S. Geological Survey	2003 – present
Research Associate, Institute of Marine Sciences, Univ. of California, Santa Cruz	2005 – present
Visiting Scientist, Terrestrial Environment Research Center, University of Tsukuba, Ibaraki, Japan	January 2005
Postdoctoral Researcher, Coastal and Marine Geology, U.S. Geological Survey	2001–02
Postdoctoral Researcher, Environmental Fluid Mechanics Laboratory, Stanford University	2000

Research Assistant, Environmental Fluid Mechanics Laboratory, Stanford University 1995–2000
Hydrologist, U.S. Geological Survey, California District Office, Sacramento, CA Summer 1995
Research Assistant, Department of Land Air and Water Resources, Univ. of California, Davis 1986–87

TEACHING EXPERIENCE

Lecturer, Department of Civil and Environmental Engineering, Stanford University Winter 2000
Transport and Mixing in Surface Water Flows: Graduate class in hydrodynamics
Teaching Assistant, Department of Civil and Environmental Engineering, Stanford University 1994–98
Introductory Fluid Mechanics, Open Channel Flow, Transport and Mixing in Surface Water Flows

PROFESSIONAL EXPERIENCE

Technical Consultant, South Bay TMDL Workgroup 1998–2000
Associate Water Resource Control Engineer, California Regional Water Quality Control Board, San Francisco Bay Region, Planning Division, Oakland, CA 1990–95
Water Resource Control Engineer, State Water Resources Control Board, Division of Water Quality, Sacramento, CA 1987–90
Sanitary Engineer, Massachusetts Department of Environmental Quality Engineering, Wetlands Division, Worcester, MA 1984–85

PROFESSIONAL ACTIVITIES AND ASSOCIATIONS

Facilitator of the Science Advisory Panel on Sand Mining in San Francisco Bay convened by the San Francisco Bay Conservation and Development Commission January 2014
 Member of the Science Panel for the Pescadero Lagoon 2012–present
 Member of the Science Panel for the Elkhorn Slough Tidal Wetland Plan 2004–present
 Participant in the Climate Ready Estuaries Workshop convened by U.S. EPA and BCDC, San Francisco, CA March 2010
 Participant in the Envisioning the Future of the Gulf Coast Symposium, New Orleans LA April 2006
 Participant in the National Research Council Workshop on Mitigating Shore Erosion along Sheltered Coasts, Seattle, WA October 2005
 Member of the Science Team convened by the California Coastal Conservancy for the South San Francisco Bay Salt Pond Restoration Project 2003–05
 Participant in the Dissertations Initiative for the Advancement of Coastal and Estuarine Science Symposium, Guanica, Puerto Rico October 2002
 Member of American Geophysical Union, Estuarine Research Federation, and American Society of Limnology and Oceanography

PUBLICATIONS

- A. Brand, J.R. Lacy, S. Gladding, R. Holleman, and M.T. Stacey. Model-based interpretation of sediment concentration and vertical flux measurements in the shoals of South San Francisco Bay. In review, *Limnology and Oceanography: Fluids and Environments*.
- D. Buscombe, D.M. Rubin, J.R. Lacy, C.D. Storlazzi, G.Hatcher, H. Chezar, R. Wyland, and C.R. Sherwood. 2014. Autonomous bed-sediment imaging systems for revealing temporal variability of grain size. *Limnology and Oceanography – Methods* 12: 390–406. doi:10.4319/lom.2014.12.390.
- L. MacVean and J.R. Lacy. 2014. Interactions between waves, sediment, and turbulence on a shallow estuarine mudflat. *Journal of Geophysical Research – Oceans* 119, 1534–1553. doi:10.1002/2013JC009477.
- J.R. Lacy, S. Gladding, A. Brand, A. Collignon, and M.T. Stacey. 2014. Lateral baroclinic forcing enhances transport of sediment from shallows to channel in an estuary. *Estuaries and Coasts* 37 (5): 1058–1077. doi:10.1007/s12237-013-9748-3.
- J.R. Lacy, D.M. Rubin, and D. Buscombe. 2012. Currents, drag, and sediment transport induced by a tsunami. *Journal of Geophysical Research* 117 (C09028). doi:10.1029/2012JC007954.
- A.W. Stevens and J.R. Lacy. 2012. The influence of wave energy and sediment transport on seagrass distribution. *Estuaries and Coasts* 35: 92–108. doi:10.1007/s12237-011-9435-1.
- J.R. Lacy and R.S. Dinicola. 2011. Aquatic environment: Circulation, water quality, and phytoplankton concentration. Chap. 2 in R.K. Takesue, ed., *Hydrography of and biogeochemical inputs to Liberty Bay, a small urban embayment in Puget Sound, Washington*. U.S. Geological Survey Scientific Investigations Report 2011-5152. <http://pubs.usgs.gov/sir/2011/5152/>.
- J. Figurski, D. Malone, J.R. Lacy, and M. Denny. 2011. An inexpensive instrument for measuring wave exposure and water velocity. *Limnology and Oceanography: Methods* 9: 204–214. doi:10.4319/lom.2011.9.204.
- J.R. Lacy and D.J. Hoover. 2011. Wave exposure of Corte Madera Marsh, Marin County, California: A field investigation. U.S. Geological Survey Open-File Report 2011-1183. <http://pubs.usgs.gov/of/2011/1183/>.
- J.R. Lacy and S. Wyllie-Echeverria. 2011. The influence of current speed and vegetation density on flow structure in two macrotidal eelgrass canopies. *L & O: Fluids and Environments* 1: 38–55. doi:10.1215/21573698-1152489.
- A. Brand, J.R. Lacy, K. Hsu, D. Hoover, S. Gladding, and M.T. Stacey. 2010. Wind-enhanced resuspension in the shallow waters of South San Francisco Bay: Mechanisms and potential implications for cohesive sediment transport. *Journal of Geophysical Research* 115 (C11024). doi:10.1029/2010JC006172.
- A.W. Stevens, J.R. Lacy, D.P. Finlayson, and G. Gelfenbaum. 2008. Evaluation of a single-beam sonar system to map seagrass at two sites in northern Puget Sound, Washington: U.S. Geological Survey Scientific Investigations Report 2008-5009. <http://pubs.usgs.gov/sir/2008/5009/>
- J.R. Lacy, D.M. Rubin, H. Ikeda, K. Mokodai, and D.M. Hanes. 2007. Bedforms created by simulated waves and currents in a large flume. *Journal of Geophysical Research* 112 (C10018). doi 10.1029/2006JC003942.
- C.R. Sherwood, J.R. Lacy, and G. Voulgaris. 2006. Shear velocity estimates on the inner shelf off Grays Harbor, Washington, U.S.A. *Continental Shelf Research* 26:1995–2018. doi 10.1016/j.csr.2006.07.025.
- J.R. Lacy, C.R. Sherwood, D. Wilson, T. Chisholm, and G. Gelfenbaum. 2005. Estimating hydrodynamic roughness in a wave-dominated environment with a high resolution acoustic Doppler profiler. *Journal of Geophysical Research* 110 (C06014). doi 10.1029/2003JC001814.

M. Martini, F.L. Lightsom, C.R. Sherwood, J. Xu, J.R. Lacy, A. Ramsey, and R. Horwitz. 2005. Hydratools, a Matlab based data processing package for Sontek Hydra data. *IEEE/OES/CMTC 8th Current Measurement Technology Conference Proceedings*.

M. Martini, C.R. Sherwood, R. Horwitz, A. Ramsey, F. Lightsom, J. Lacy and J. Xu. 2005. Hydratools Manual Version 1.0, Documentation for a MATLAB-based Post-processing Package for the Sontek Hydra. U.S. Geological Survey Open-File Report 2005-1026. <http://pubs.usgs.gov/of/2005/1026/>

J.R. Lacy and C.R. Sherwood. 2004. Accuracy of a pulse-coherent acoustic Doppler profiler in a wave-dominated flow. *Journal of Atmospheric and Oceanic Technology* 21 (9): 1448–1461.

L.A. Landerman, C.R. Sherwood, G. Gelfenbaum, J.R. Lacy, P. Ruggiero, D. Wilson, T. Chisholm, and K. Kurrus. 2004. Grays Harbor Sediment Transport Experiment Spring 2001 Data Report. USGS Data Series Report 98.

P. Ruggiero, G. Gelfenbaum, C.R. Sherwood, J.R. Lacy, and M.C. Buijsman. 2003. Linking nearshore processes and morphology measurements to understand large scale coastal change. In *Proceedings of the International Conference on Coastal Sediments 2003*. CD-ROM. Corpus Christi, Texas: World Scientific Publishing Corp. ISBN 981-238-422-7.

J.R. Lacy, M.T. Stacey, J.R. Burau, and S.G. Monismith. 2003. The interaction of lateral baroclinic forcing and turbulence in an estuary. *Journal of Geophysical Research* 108 (C3), 3089. doi 10.1029/2002JC001392.

J.R. Lacy and S.G. Monismith. 2001. Secondary currents in a curved, stratified, estuarine channel. *Journal of Geophysical Research* 106 (C12): 31283–31302.

M.T. Stacey, J.R. Burau, M.L. Brennan, J.R. Lacy, S.G. Monismith, and C.C. Tobin. 2000. Spring-neap variations in stratification and turbulent mixing in a partially stratified estuary. In G.A. Lawrence, R. Pieters, and N. Yonemitsu, eds., *Fifth International Symposium on Stratified Flows*, 939–944. Vancouver: Department of Civil Engineering, University of British Columbia.

J.R. Lacy. 2000. Circulation and transport in a semi-enclosed estuarine subembayment. Ph.D. thesis, Department of Civil and Environmental Engineering, Stanford University.

J.R. Lacy, M.T. Stacey, S.G. Monismith, and J.R. Burau. 1997. Stratification and turbulence over a tidal cycle in northern San Francisco Bay. In S.S.Y. Wang and T. Carstes, eds., *Proceedings of the 27th IAHR Biennial Congress*, vol. 1, 1108–1113. New York: American Society of Civil Engineers.

J.R. Lacy, D.H. Schoellhamer, and J.R. Burau. 1996. Suspended-solids flux at a shallow-water site in South San Francisco Bay, California. In C.T. Bathala, ed., *Proceedings of the North American Water and Environment Congress*, June 23–28, 1996. New York: American Society of Civil Engineers.

CONFERENCE PRESENTATIONS

J.R. Lacy, D.M. Rubin, and A. O'Neill. Influence of combined waves and currents on bedform orientation and evolution. Submitted to AGU Fall Meeting, San Francisco CA, December 2014.

J.R. Lacy, L.M. Schile, J.C. Callaway, and M.C. Ferner. Sediment flux between San Francisco Bay shallows and marshes. Accepted oral presentation at Bay Delta Science Conference, Sacramento CA, October 2014.

J.R. Lacy. Wave attenuation by the eelgrass *Zostera marina*: dependence on wave energy. Coastal and Estuarine Research Federation Conference, San Diego CA, November 2013.

L. MacVean and J.R. Lacy. Interactions between waves, sediment, and turbulence on a shallow estuarine mudflat. Coastal and Estuarine Research Federation Conference, San Diego CA, November 2013.

- J.R. Lacy, D.M. Rubin, and D. Buscombe. Currents, drag, and sediment transport induced by a tsunami. AGU Fall Meeting, San Francisco CA, December 2012.
- J.R. Lacy. Sediment dynamics in the shallows of San Francisco Bay. Bay Delta Science Conference, Sacramento CA, October 2012.
- J.R. Lacy and L. MacVean. Wave-height evolution in the shallows of San Francisco Bay. Physics of Estuaries and Coastal Seas Symposium, New York City NY, August 2012.
- L. MacVean and J.R. Lacy. Sediment dynamics in the shallowest regions of an estuary. Physics of Estuaries and Coastal Seas Symposium, New York City NY, August 2012.
- J.R. Lacy, S. Gladding, A. Brand, A.G. Collignon, and M.T. Stacey. Suspended sediment transport from shallows to channel in an estuary. AGU Ocean Sciences Meeting, Salt Lake City UT, February 2012.
- L. MacVean and J.R. Lacy. Estuarine sediment dynamics in intertidal and subtidal environments: Similarities in forcing and response. Poster. AGU Ocean Sciences Meeting, Salt Lake City UT, February 2012.
- S. Buckley, J.R. Lacy, and E. McPhee-Shaw. The effect of wave variability on bedform dimensions. Poster. AGU Fall Meeting, San Francisco CA, December 2011.
- L. MacVean and J.R. Lacy. Controls on transport of suspended sediment into and out of the estuarine intertidal zone. Coastal and Estuarine Research Federation Conference, Daytona Beach FL, November 2011.
- M.T. Stacey, A.G. Collignon, A. Brand, and J.R. Lacy. Anisotropy of mixing in stratified estuarine flows. Seventh International Symposium on Stratified Flows, Rome Italy, August 2011.
- J.R. Lacy and A.W. Stevens. A field study of the influence of the eelgrass *Zostera marina* on wave velocities. 15th International Workshop on Physical Processes in Natural Water, Burlington Ontario, Canada, July 2011.
- J.R. Lacy and A.W. Stevens. Interactions between eelgrass, currents, and waves in Puget Sound. 9th USGS Conference on Science in the Pacific Northwest, Vancouver WA, March 2011.
- A.G. Collignon, C.D. Holleman, A. Brand, J.R. Lacy, and M.T. Stacey. Development of a transverse circulation in a shoal-channel system under partially stratified conditions. Bay Delta Science Conference, Sacramento CA, September 2010.
- A. Brand, J.R. Lacy, K. Hsu, D. Hoover, S. Gladding, and M.T. Stacey. Seasonal variation of mechanisms governing sediment dynamics in South San Francisco Bay. Physical Processes in Natural Waters 14, Reykjavik Iceland, June 2010.
- J.R. Lacy, A. Brand, A.G. Collignon, and M.T. Stacey. Suspended-sediment flux in the shallows of South San Francisco Bay. Bay Delta Science Conference, Sacramento CA, September 2010.
- A. Brand, S. Gladding, J.R. Lacy, and M.T. Stacey. Model-based interpretation of sediment concentration and vertical flux measurements in the shoals of South San Francisco Bay. Bay Delta Science Conference, Sacramento CA, September 2010.
- S. Gladding, A. Brand, J.R. Lacy, J. Hunt, and M.T. Stacey. Measurements of water column and sediment bed interactions in the South San Francisco Bay Estuary. Bay Delta Science Conference, Sacramento CA, September 2010.
- J.R. Lacy. Waves and resuspension on the shoals of San Francisco Bay. San Francisco Bay Sediment Science Workshop: State of the Sediment, sponsored by BCDC and USGS, Menlo Park CA, April 2010.

- J.R. Lacy, D. Buscombe, and D.M. Rubin. Tsunami-enhanced sediment resuspension on the inner shelf in northern Monterey Bay. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- D. Buscombe, J.R. Lacy, and D.M. Rubin. Fractional resuspension and sediment flux on a wave-dominated, non-cohesive, inner continental shelf. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- D.M. Rubin, D. Buscombe, and J.R. Lacy. Seafloor sediment observatory on a cable and a shoestring. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- A. Brand, S. Gladding, J.R. Lacy, K. Hsu, D. Hoover, and M.T. Stacey. Wind-induced formation of turbidity gradients along the shoal channel transition in south San Francisco Bay and potential implications for sediment transport. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- A. Collignon, C. Holleman, A. Brand, J.R. Lacy, and M.T. Stacey. Development of a transverse circulation in a shoal-channel system under stratified conditions. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- S.M. Gladding, A. Brand, K. Hsu, J.R. Hunt, J.R. Lacy, and M.T. Stacey. Particle flocculation during tidal cycles on the shoals of the San Francisco Bay Estuary. Poster. AGU Ocean Sciences Meeting, Portland OR, February 2010.
- J.R. Lacy and A.W. Stevens. Relating wave-induced sediment mobility to seagrass distribution. Poster. Coastal and Estuarine Research Federation Conference, Portland OR, November 2009.
- A.W. Stevens and J.R. Lacy. Hydrodynamic controls on seagrass distribution along a high energy Puget Sound shoreline. Poster. Coastal and Estuarine Research Federation Conference, Portland OR, November 2009.
- A.W. Stevens, J.R. Lacy, D.P. Finlayson, and G. Gelfenbaum. Evaluation of a single-beam echosounder to map seagrass at two sites in northern Puget Sound, Washington. Puget Sound Georgia Basin Ecosystem Conference, Seattle WA, February 2009.
- R.K. Takesue, J.R. Lacy, E. Carrington, and S. Wyllie-Echeverria. Eelgrass *Zostera marina* and light availability in Puget Sound: Adaptation or limitation? Puget Sound Georgia Basin Ecosystem Conference, Seattle WA, February 2009.
- P. Dowty, J.R. Lacy, and A. Schanz. Causes of reduced underwater light availability and their role in limiting eelgrass distribution in Westcott Bay, San Juan Island, WA. Puget Sound Georgia Basin Ecosystem Conference, Seattle WA, February 2009.
- T.L. Liedtke, C.D. Smith, D.W. Rondorf, R.S. Dinicola, J.R. Lacy, R.K. Takesue, and R.D. Watts. Forage fish spawning habitat selection: First steps toward a predictive model in an urbanized Puget Sound embayment. Puget Sound Georgia Basin Ecosystem Conference, Seattle WA, February 2009.
- J.R. Lacy and D.M. Rubin. Influence of current on suspended-sand concentration profiles in combined flows. Poster. AGU Fall Meeting, San Francisco CA, December 2008.
- Y.J. Chou, O.B. Fringer, and J.R. Lacy. Numerical study of sediment suspension over bedforms in combined flows. Poster. AGU Fall Meeting, San Francisco CA, December 2008.
- J.R. Lacy and D.M. Rubin. Evolution of suspended-sand concentration profiles produced by simulated waves and currents in a large flume. International Conference on Coastal Engineering 2008, Hamburg Germany, September 2008.

- R.T. Takesue, J.R. Lacy, S. Talbot, and S. Wyllie-Echeverria. Small eelgrass (*Zostera marina*) plants along a high-boat traffic shoreline: Light limitation due to sediment resuspension, or genetics? Poster. ASLO Summer Meeting, Newfoundland Canada, June 2008.
- J.R. Lacy and S. Wyllie-Echeverria. Field measurements of current attenuation and vertical mixing in eelgrass meadows. Poster. AGU Ocean Sciences Meeting, Orlando FL, March 2008.
- J.R. Lacy, S. Wyllie-Echeverria, and G. Gelfenbaum. Interaction of eelgrass with nearshore tidal currents. Georgia Basin–Puget Sound Research Conference, Vancouver B.C., March 2007.
- J.R. Lacy, D.M. Rubin, H. Ikeda, and D.M. Hanes. Predicting ripple wavelength in wave-current flows. AGU Fall Meeting, San Francisco CA, December 2006.
- J.R. Lacy, D. Finlayson, A. Stevens, and G. Gelfenbaum. Nearshore processes at Posession Point. USGS Multidisciplinary Coastal Habitats in Puget Sound Project Meeting, Port Townsend WA, November 2006.
- J.R. Lacy, D.M. Rubin, H. Ikeda, and D.M. Hanes. Bedforms produced in the laboratory by varying combinations of waves and currents. AGU Ocean Sciences Meeting, Honolulu HI, February 2006.
- J.R. Lacy, J.N. Harney, S. Wyllie-Echeverria, and G. Gelfenbaum. A field study of the influence of eelgrass on currents and waves in Puget Sound. Estuarine Research Federation Conference, Norfolk VA, October 2005.
- J.R. Lacy, D.M. Rubin, H. Ikeda, and D.M. Hanes. Bedforms produced in the laboratory by waves and currents at varying angles. ONR Ripples DRI Project Meeting, La Jolla CA, September 2005.
- J.R. Lacy, J.N. Harney, S. Wyllie-Echeverria, G. Gelfenbaum, and T. Mumford. The influence of eelgrass on currents and waves in the nearshore region. Puget Sound–Georgia Basin Conference, Seattle WA, March 2005.
- J.R. Lacy, D.R. Rubin, and D.M. Hanes. Bedforms produced in the laboratory by waves and currents at varying angles. ONR Progress Review Southwest Region, MBARI, Moss Landing CA, March 2005.
- J.R. Lacy, J.N. Harney, and G. Gelfenbaum. Temporal variability in the influence of eelgrass on currents in the bottom boundary layer. Poster. ASLO Aquatic Sciences Meeting, Salt Lake City UT, February 2005.
- J.R. Lacy, C.R. Sherwood, and G. Gelfenbaum. Estimating hydrodynamic roughness in a wave-dominated environment with a high resolution acoustic Doppler profiler. AGU Ocean Sciences Meeting, Portland OR, January 2004.
- J.R. Lacy, J.A. Warrick, J. Xu, and M. Noble. Internal tidal bores at the Santa Monica Bay shelf break. Poster. Eastern Pacific Ocean Conference, Catalina Island CA, September 2003.
- J.R. Lacy, M.T. Stacey, J.R. Burau, and S.G. Monismith. The interaction of lateral baroclinic forcing and turbulence in an estuarine channel. Estuarine Research Federation Biennial Conference, Seattle WA, September 2003.
- J.R. Lacy. Circulation in Honker Bay, a natural shallow water habitat. Invited talk. CalFed Science Conference, Sacramento CA, January 2003.
- J.R. Lacy, C.R. Sherwood, D. Wilson, T. Chisholm, and G. Gelfenbaum. Estimates of hydrodynamic roughness and bedform heights in a wave-dominated flow. Poster. AGU Fall Meeting, San Francisco CA, December 2002.
- J.N. Harney, J.R. Lacy, and D.M. Rubin. Time-varying record of sediment resuspension under waves on the inner shelf of Santa Cruz, California. Poster. AGU Fall Meeting, San Francisco CA, December 2002.

C.R. Sherwood and J.R. Lacy. Comparison of three independent estimates of bottom stress on the inner shelf. Poster. AGU Fall Meeting, San Francisco CA, December 2002.

J.R. Lacy, M.T. Stacey, J.R. Burau, and S.G. Monismith. The interaction of lateral baroclinic forcing and turbulence in an estuarine channel. AGU Ocean Sciences Meeting, Honolulu HI, February 2002.

J.R. Lacy and C.R. Sherwood. Estimates of bottom shear stress on a high-energy, wave-dominated ebb-tidal delta using three methods. AGU Fall Meeting, San Francisco CA, December 2001.

J.R. Lacy, C.R. Sherwood, P. Ruggiero, and G. Gelfenbaum. Seasonal changes in near-shore flow and sediment transport near Grays Harbor, Washington. Eastern Pacific Ocean Conference, Stanford Sierra Camp, September 2001.

J.R. Lacy. How do circulation and transport in shallows and channels differ? Presentation to CalFed Expert Review Panel on Hydrodynamics and Salinity Response to Levee Breaches in Suisun Marsh, Sacramento CA, June 2001.

J.R. Lacy, J.R. Burau, M.T. Stacey, and S.G. Monismith. Lateral variability and secondary currents in Suisun Cutoff, San Francisco Bay. Poster. AGU Fall Meeting, San Francisco CA, December 2000.

J.R. Lacy and S.G. Monismith. Lateral variability in two channels in Suisun Bay. CalFed Science Conference, Sacramento CA, October 2000.

J.R. Lacy and S.G. Monismith. Wind, sea level, and a sudden increase in salinity in northern San Francisco Bay. AGU Ocean Sciences Meeting, San Antonio TX, January 2000.

J.R. Lacy and S.G. Monismith. Lateral variability and secondary currents in an estuarine channel. Estuarine Research Federation Biennial Conference, New Orleans LA, September 1999.

J.R. Lacy and S.G. Monismith. Secondary currents in a tidal flow around a bend. Poster. AGU Fall Meeting, San Francisco CA, December 1998.

J.R. Lacy, J.R. Burau, and S.G. Monismith. The influence of complex bathymetry on circulation and mixing in Northern San Francisco Bay. AGU Ocean Sciences Meeting, San Diego CA, February 1998.

J.R. Lacy, S.G. Monismith, and J.R. Burau. The physical environment of estuarine shallows. Interagency Ecological Program Annual Meeting, Asilomar CA, February 1998.

INVITED SEMINARS

Sediment dynamics in the shallows of San Francisco Bay. Environmental Fluid Mechanics and Hydrology Seminar Series, Stanford University, January 2013.

Sediment dynamics in the shallows of San Francisco Bay. Mary and Louise Riley Seminar Series, UC Davis Bodega Marine Laboratory, September 2012.

Interactions among eelgrass, currents, and waves in Puget Sound. Peninsula Geological Survey, Stanford University, December 2011.

Field measurements of current attenuation and vertical mixing in eelgrass meadows. Environmental Fluid Mechanics and Hydrology Seminar, Stanford University, March 2008.

Bedforms produced in the laboratory by varying combinations of waves and currents. Environmental Fluid Mechanics and Hydrology Seminar, Stanford University, February 2006.

Interactions of waves, currents, and bedforms in coastal bottom boundary layers. Ocean Sciences Seminar, University of California, Santa Cruz, April 2005.

Influence of lateral variability on hydrodynamics in San Francisco Bay. University of Tsukuba, Ibaraki, Japan, January 2005.

The influence of complex bathymetry on estuarine hydrodynamics. Department of Marine Sciences, Moss Landing Marine Laboratories, Moss Landing CA, May 2004.

Estimating hydrodynamic roughness for sediment transport models of wave-dominated environments. Department of Civil and Environmental Engineering, University of Delaware, April 2004.

Complex bathymetry and estuarine hydrodynamics. Department of Marine Sciences, University of Connecticut, Avery Point, February 2004.

The influence of complex bathymetry on estuarine hydrodynamics in San Francisco Bay. Ocean Sciences Seminar, University of California, Santa Cruz, October 2003.

Estimating hydrodynamic roughness in a wave-dominated environment using a pulse-coherent acoustic Doppler profiler. Fluid Mechanics and Hydrology Seminar, Department of Civil and Environmental Engineering, Stanford University, June 2003.

Complex bathymetry and estuarine hydrodynamics. Department of Civil and Environmental Engineering, University of Washington, May 2003.

Complex bathymetry and estuarine hydrodynamics. SMAST Seminar, University of Massachusetts, Dartmouth, November 2002.

Estimates of shear stress and bottom roughness on a wave-dominated ebb-tidal delta. Physical Oceanography Seminar, Oregon State University, June 2002.

The physical environment of estuarine shallows. Department of Environmental Engineering, California State University, Humboldt, March 1999.

Steven Leonard

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RECEIVED

AUG 13 2014

CITY OF SANTA CRUZ
WATER DEPT.

August 10, 2014

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

Re: Independent Review Panel--Statement of Qualifications

Dear Ms. Menard,

I am pleased to submit my Statement of Qualifications for the Independent Review Panel announced in your recent RFQ. Having reviewed the RFQ, I believe I meet the qualifications to be a panel member and appreciate the opportunity to be considered.

I have worked in the water utility industry for over forty years. During this time, I have gained significant expertise in most facets of the industry, including operations and maintenance; water quality, engineering and other technical aspects of the business; utility administration; utility policy development at the state, federal and local levels; and the public involvement in drinking water systems. I have worked in large, medium, and small utilities. I have directed public systems as well as privately owned water systems. I have operated water, wastewater, and combined systems that included recycled water. I have participated extensively in the national and state water utility associations on an array of capacities on a variety technical, policy, and utility communication issues. My experience is from the ground up, and my approach is both practical and effectiveness oriented.

As detailed further in the attached resume most of my career was with the City of San Francisco Public Utilities Commission (SFPUC) working in both water and wastewater. I began my career as a Microbiologist, monitoring the water supply reservoirs, watersheds and water distribution systems; progressed through a series of increasingly responsible technical, supervisory, and managerial positions.

While serving concurrently as Manager of the Water Quality Division and interim Manager of the Suburban Operations Division, in response to an order from the California Department of Public Health (CDPH), I undertook the challenge of bringing San Francisco into compliance with the Surface Water Treatment Regulations. Over the next ten years I led a planning and regulatory compliance unit that worked with the CDPH and the US Environmental Protection Agency to develop regulations that protected public health while ensuring an appropriate level of treatment for San Francisco's main water supply, Hetch Hetchy. Building on that success, I turned my attention to other strategic water supply and environmental issues confronting the SFPUC, several of which were highly contentious and required extensive public processes to resolve.

In 2001, I was asked by the Commission to act as the SFPUC General Manager. In that role, I steered the utility through the 9/11 terror and its aftermath and readied a \$4.2B capital infrastructure initiative for the ballot.

I began working as the Manager of California American's Coastal Division in Monterey in 2002, a privately owned water system that is regulated by the California Public Utilities Commission. The Monterey District is approximately the same size as the Santa Cruz Water District and shares many of the same characteristics, including a small coastal watershed, inconsistent water supplies, endangered fish issues, and an informed and concerned consumer base. Monterey has other issues that compound the marginal supply: the threat of saltwater intrusion in key well fields, diminishing water rights to the primary Carmel River supply, and significantly impaired supply dams. In addition, the Monterey District is in a permanent state of water conservation (current per capita use is 80% of 1978 levels), has high water rates, and extensively integrates the use of recycled water. Monterey also has a very complex political landscape, including nine local public entities. The Monterey District shares water supply jurisdiction with a public agency, the Monterey Peninsula Water Management District (MPWMD), and serves six cities and parts of Monterey County. To successfully meet these challenges, I regularly met with public boards, public interest groups, regulators, the media, and the interested public. During my tenure, we initiated a multipronged water supply development plan to address the diminishing ground water levels and to comply with the increasing SWRCB restrictions. The water supply review looked at the development of additional recycled water, importation of water, purchase of water rights, the seasonal storage of rainwater in Aquifer Storage and Recovery systems (ASR), and an exploration of desalination.

After leaving Cal-Am, I worked a short time for the consulting firm Black & Veatch, where I collaborated with a wide array of clients and project teams in the San Francisco and Monterey Bay areas. The projects we reviewed and proposed on were generally water treatment facilities upgrades, development of Advanced Water Treatment (AWT), and development of supplemental drinking water from ultra-treated wastewater. Among other responsibilities, I monitored the water supply development activities of the Monterey, Santa Cruz and Soquel water utilities.

As the Manager of the Sewer Authority Mid-Coastside, a joint powers agency sewer utility, I was tasked with developing new water supply in conjunction with the two local water agencies. In many ways, the Half Moon Bay Area is a microcosm of other coastal regions where the water supply is inconsistent, and urban interests and agriculture compete for water. While we were not successful developing additional water, we managed to help the sewer board and interested parties better understand the issues and hurdles to the development of the needed infrastructure and to the establishment of financial viability to develop the water reuse project.

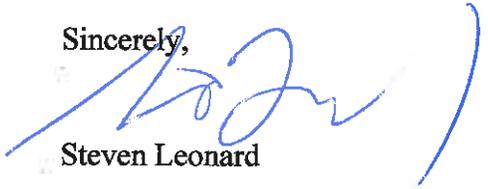
Throughout my career I have been able to effectively communicate water issues. I have served on many industry technical committees and expert panels, many of which were specifically focused on communicating issues that were difficult to understand and, from the consumer's standpoint, often difficult to accept. I have extensive experience presenting technical, operational, and financial issues to elected and appointed boards. More importantly, I have participated in more than a hundred public meetings to discuss the difficult issues of high rates, public health threats, water conservation, and new water supply development. I have been able to work with a wide array of interest groups to reach understanding, if not agreement.

In my attached resume I have outlined my utility experience, education, and other water utility qualifications. I have listed my technical, policy, and communication contributions to the water industry, my participation in expert water panels, and links to my online profile and data.

In conclusion, I have the technical background, the utility experience, and the communication skills necessary to be an effective member of the Independent Review Panel in support of the work of the Water Supply Advisory Committee. I am willing to accept the honorarium as proposed and I live within fifty miles of Santa Cruz and have availability to attend the committee's meetings. If you have further questions or need more information, please do not hesitate to contact me.

Thank you for your consideration.

Sincerely,



Steven Leonard

STEVEN D. LEONARD

Water Utility Management

*Water Quality
Water Utility O&M
Water Supply Planning and
Development
Water Conservation
Water Reuse
Utility Communication
Watershed Management
Policy Development*

Water Utility Experience

42 years

Education

M.A., Biology, Humboldt State University

B.A., Zoology, (with honors) University of California, Santa Barbara

Water Wastewater Leadership Certificate, University of North Carolina

Professional Certifications

Grade 5, Water Treatment Operator, California Department of Public Health

Grade 4 Wastewater Treatment Operator, California State Water Resources Control Board

California Community College Instructor Credential, Water Treatment and Related Technologies

LinkedIn Profile

www.linkedin.com/pub/steven-leonard/9/706/86a/

Located in

Redwood City, California

SUMMARY OF QUALIFICATIONS

Experienced utility manager with long career in water operations, administration, and stakeholder communications with the City of San Francisco, supplemented with experience as the Manager of two smaller regional utilities, an investor-owned water system in Monterey and a joint powers wastewater agency in Half Moon Bay. Has successfully and sustainably operated these utilities through normal and extraordinary times. Has been successful working with unionized staff, diverse agency boards of directors, regional utility partners, water consumer and constituent groups. Has demonstrated skills as a utility spokesperson, with a proven record of success connecting with a broad variety of stakeholders on a wide range of challenging water resource issues.

WORK HISTORY

Sewer Authority Mid-Coastside, Half Moon Bay, California

Manager 2010-2013

Directed the regional Joint Power Authority wastewater agency serving 28,000 customers in the communities of the Half Moon Bay region. SAM provides wastewater treatment and contract collection systems O&M for the member agencies. Worked with local water districts on the feasibility of regional recycled water development.

Black & Veatch Corporation, Walnut Creek, California

Client Services Manager 2008-2010

Provided client communication, project support, and utility expertise to project teams working for water and wastewater utilities in the San Francisco and Monterey Bay Areas. Black & Veatch is an engineering firm specializing in engineering and management services for water and wastewater utilities.

California American Water Company, Monterey, California

Manager 2002-2007

Managed the operation and maintenance of the private water utility serving the 110,000 water users in six cities on the Monterey Peninsula. CAW produces water from two highly impacted water sources, the Carmel River and the Seaside Groundwater Basin. Worked with local, state, and federal agencies to address environmental issues affecting water supply, including diminished water rights, endangered species, and a seismically unstable dam. Developed regional options for water supply augmentation, utilizing recycled wastewater from the Carmel Area Wastewater District in Pebble Beach, by collaborating with the MPWMD to develop and operate the first Aquifer Storage and Recovery (ASR) project and by leading the initial evaluation of a desalination plant for the region. Led the local effort to adjudicate the Seaside Groundwater Basin and was a founding Director of the Seaside Basin Water Master.

STEVEN D. LEONARD

San Francisco Public Utilities Commission

Manager, Strategic Programs 1999-2002

Responsible for development and management of strategic initiatives and programs including a variety of operational, regulatory, capital planning, and management issues that faced the SFPUC. No direct reports and no specific budget. Accepted the position of Acting SFPUC General Manager for a period in 2001.

Project Manager, Treatment Improvement Program 1992-1999

Managed capital planning program to bring the Hetch Hetchy water treatment systems into compliance with state and federal drinking water regulations. Managed the SFPUC's negotiations with federal and state agencies on water quality regulations. Secured favorable regulatory changes to state and USEPA regulations that saved the SFPUC over a billion dollars. Appointed "Operations Manager" to direct all SFPUC water system operations following two treatment plant failures.

Manager, Water Quality Division 1986-1992

Manager, Suburban Operations Division 1988-1989

Managed two SFPUC divisions, located on the SF Peninsula, responsible for the operations and maintenance of major (>100 MGD) water treatment and transmission facilities serving the City and the water districts on the Peninsula, in Silicon Valley, and in Southern Alameda County. Managed watersheds, water quality and environmental engineering, and compliance monitoring. Combined staff of the two divisions averaged about 250 personnel.

Manager, Water Quality Laboratory 1985-1986

Supervised all activities within a water quality laboratory that conducted watershed, regulatory compliance, monitoring, and research studies.

Supervisor of Laboratories, Water Pollution Control 1982-1985

Managed three wastewater laboratories supporting the wastewater treatment functions of one 50 MGD primary, a 40 MGD secondary, and a 100 MGD wet weather plant serving San Francisco.

Senior Microbiologist 1972-1982

Conducted water quality, watershed, and environmental monitoring of SFPUC water supply reservoirs.

STEVEN D. LEONARD

PROFESSIONAL ASSOCIATION ACTIVITIES

American Water Works Association (AWWA) Life Member

Stage 2 M/DBP USEPA Federal Advisory Committee Act (FACA),
Unfiltered Utilities, Alternate Negotiator

AWWA Disinfection By-Product Technical Advisory Workgroup (TAW)

Moderator on AWWA M/DBP & ESWTR Website

CA/NV AWWA/ Ad Hoc Committee: Surface Water Treatment Rule

CA/NV AWWA Water Quality Analysis Committee

CA/NV AWWA Certification of Water Quality Analysts Committee.

AWWA Reservoirs Committee

AWWA Source Water Committee

AWWA Member "Standard Methods Committee"-Chloride Analysis

Water Research Foundation (WRF)

Panel Member, "Using Watershed Stakeholder Alliances in the Context
of *Cryptosporidium*: Melding Research and National Perspectives with
Local Watershed Realities"

PAC Member, "Protocol for *Cryptosporidium* Risk Communication for
Drinking Water Utilities"

Panel Member, "*Cryptosporidium* Research Issues Workshop"

Chair, Workshop, "Role of Drinking Water in Cryptosporidiosis and the
Immuno-compromised"

Las Vegas, Nevada, *Cryptosporidium* Outbreak Peer Review

PAC Member, "Lead Control Strategies" Manual

Association of Metropolitan Water Agencies (AMWA)

Chair, Resolutions Committee

Regulatory Oversight Committee Liaison

Committee on M/DBPs

Committee on Source Water Protection

AMWA representative to National Drinking Water Advisory Committee
on "Health Care Providers Outreach and Education Working Group"

AMWA alternate to National Water Quality Monitoring Council

Association of California Water Agencies (ACWA)

Water Quality Committee

Safe Drinking Water Act Subcommittee

Water Quality Communications Subcommittee

STEVEN D. LEONARD

EXPERT PANELS

Shanghai Water/Wastewater Master Plan Review: Member of a month long technical exchange between the cities of San Francisco and Shanghai to consult on Shanghai's water and wastewater master plans.

Peer review of suspected *Cryptosporidium* outbreak in Las Vegas, Nevada: Participated in a WRF group that investigated the source of a suspected waterborne outbreak of disease in the Las Vegas.

"Waterborne Cryptosporidiosis and the Immuno-Compromised." Co-Chaired WRF panel of medical professionals and water treatment experts developing strategies to evaluate the risks of *Cryptosporidium* to immune-compromised water consumers.

Group Chair for WRF Workshop at George Washington University that produced **"Water-Related Health Risk Communication: Lessons Learned and Emerging Issues."**

San Francisco Board of Supervisors Task Force on Waterborne *Cryptosporidium*: Member of a multidisciplinary panel tasked to publicly review the SFPUC's treatment plan for Hetch Hetchy water and the potential impact of waterborne *Cryptosporidium* on the City's HIV/AIDS and immuno-compromised community.

Member of WRF Project Advisory Committee (PAC): **"Critical Evaluation of *Cryptosporidium* Research and Research Needs."**

Chaired SFPUC Blue Ribbon Panel of water industry experts investigating two complex water treatment failures of the Sunol Valley Filter Plant.

Member of AMWA task force to develop **strategies for utilities' release of Information Collection Rule (ICR) data to the public and public interest groups.**

Project Advisory Committee member on WRF project to develop the **"Lead Guidance Manual,"** aimed at improving monitoring and data analysis for a toxic plumbing material.

Member of WRF Project Advisory Committee (PAC): **"Protocol for *Cryptosporidium* Risk Communication."**

WRF Project Advisory Committee (PAC): **"Guidance to Utilities on Building Alliances with Watershed Stakeholders."**

Member of the Joint CDPH/AWWA **Ad Hoc Surface Water Treatment Committee** charged with implementing the USEPA Surface Water Treatment Regulations in California.

Disinfection By-Product Technical Advisory Workgroup (TAW): Reviewed proposed regulatory language, EPA guidance manuals, and regulatory data for the AWWA as a part of the M/DBP regulation development.

Utility representative on local talk radio and news programs: Participated in shows that discussed water rates, conservation, public health matters, water supply development, and general issues relating to home water use.

STEVEN D. LEONARD

PROFESSIONAL

PRESENTATIONS &

PUBLICATIONS

“The Truth About Water: Communicating with ‘At Risk’ Drinking Water Consumers,” AWWA Conference. Presentation provided a detailed history of the SFPUC’s successful and unsuccessful efforts to communicate with politically sensitive and active stakeholders.

“Public Outreach Programs to Utility Stakeholder Groups.” USEPA National Drinking Water Advisory Council. Discussed the SFPUC’s approach to public outreach with “at risk” and other stakeholder groups.

“Steer Wars”: San Francisco’s Watershed Stakeholders Process,” AWWRF Workshop. Discussed the SFPUC’s groundbreaking effort to balance the effect of cattle grazing with the quality of local water supplies. SFPUC staff worked with a broad group of stakeholders, including ranchers, academics, and ACT UP activists to evaluate the pros and cons of grazing cattle in the local watersheds, ultimately reaching agreement among all parties.

“Successful Watershed Strategies,” AWWA Pathogens and Source Water Protection Symposium. Moderated panel discussing successful utility efforts to protect watersheds from parasites.

“Public Information about *Cryptosporidium* in San Francisco,” CA/NV AWWA Conference. Review of the public information and communication strategies used by the SFPUC to discuss *Cryptosporidium*. Strategies included a focused Water Quality Report, development of Internet materials, and the posting of ICR data on the Internet.

“The Politics of *Cryptosporidium* in San Francisco,” AMWA Legislative Conference. Discussed the failures of early efforts to enlist the support of ACT UP and local health advocacy groups and eventual success in partnering with these constituencies on the issue of *Cryptosporidium* and cattle grazing.

“The First Barrier: Watershed Protection,” AWWA Resources Conference. Discussed San Francisco’s successful watershed protection program for its unfiltered water supply. Success of the program involved intensive water quality monitoring, cooperation of the CDPH, and a strong partnership with the US Park Service.

“Impacts of Filtration Avoidance on Water Supply Planning,” AWWA Resources Conference. Discussed the interaction of watershed management, water supply planning, and thorough public debate as key elements in the development of an unfiltered water supply.

“Strategic Watershed Planning for Filtration Avoidance,” AWWA. Outlined the development of a strategic watershed plan for an unfiltered water supply within Yosemite National Park.

“Managing *Cryptosporidium* in San Francisco,” AWWA/WEF Joint Management Conference. Discussed the SFPUC’s strategy for addressing *Cryptosporidium* risk with a combination of treatment, education, and public health involvement.

“San Francisco’s Experience with *Cryptosporidium*,” Water Quality Technology Conference Poster.

STEVEN D. LEONARD

“Anatomy of a Water Treatment Plant Failure,” AWWA/WEF Joint Management Conference. Reviewed the technical issues and management failures that combined to cause a major water quality treatment incident.

“EPA’s Risk Reduction Paradigm: Implications for Decision-Making,” AWWA. Outlined SFWD’s strategy to evaluate water quality factors and risks in an analysis of the treatment alternatives for the Hetch Hetchy Aqueduct.

“The Role of Drinking Water in Cryptosporidiosis in the Immuno-Compromised Population.” Co-Chair of expert WRF panel to review water’s role in the transmission of *Cryptosporidium* to HIV/AIDS victims.

“San Francisco Water, Filtration and *Cryptosporidium*,” USEPA/National Drinking Water Advisory Council. Presentation to inform USEPA on what San Francisco learned how best to address customer concerns.

“Is San Francisco Boiling?,” Washington Metropolitan Council of Governments. Outlined the SFPUC’s effort to address the *Cryptosporidium* issue through a community-based task force and proactive public health initiatives.

WRF Panel Report on the Peer Review of the Las Vegas *Cryptosporidium* Outbreak. Member of AWWA Cal-Nevada Section/WRF select team that reviewed a CDC investigation of a waterborne *Cryptosporidium* outbreak in Las Vegas, NV.

“San Francisco’s *Cryptosporidium* Task Force,” ACWA. Discussed San Francisco’s successful efforts to identify technical, political, and social issues related to *Cryptosporidium*.

“*Cryptosporidium* Inactivation: An Assessment of Methods,” Water Quality Technology Conference. Discussed the SFPUC’s efforts to evaluate disinfection of the parasite.

“Doing More with Less!,” Cal-Nevada AWWA. Outlined SFPUC’s highly successful \$84 million capital improvement program to upgrade the San Andreas Filter Plant.

“San Francisco’s Response Loma Prieta Earthquake,” Cal-Nevada AWWA. Outlined the SFPUC’s successful response to water quality and operational problems following the massive Loma Prieta earthquake.

“San Francisco Gets the Lead Out!,” Cal-Nevada AWWA. Outlined San Francisco’s measures to reduce lead in the City’s drinking water supply.

“Shanghai’s Water/Wastewater Master Plan,” Cal-Nevada AWWA. Reported on San Francisco’s Sister City efforts to help Shanghai develop a water supply and wastewater master plans.

“Tastes and Odors in Public Water Supplies,” in *The Analysis and Control of Less Desirable Flavors in Foods and Beverages* (Academic Press, Inc.).

“Aqua Pura”: A Cultural Overview of the Development of Water Systems on the San Francisco Peninsula.

STEVEN D. LEONARD

Supplemental

Materials

The attached news item in the Monterey Herald summarizes the views of local water officials on Steve Leonard's tenure as the manager of the Monterey system, especially his ability to work with groups and organizations.

Cal Am vice president resigns

By KEVIN HOWE Herald Staff Writer

Posted: 08/25/2007 01:27:34 AM PDT

MontereyHerald.com

Steve Leonard, vice president and Monterey division manager for California American Water, has announced he is leaving his position after five years with the company, effective Sept. 10.

He joined Cal Am in fall 2002 as vice president and general manager of the Monterey Coastal Division. He was previously with the San Francisco Public Utilities Commission, a water, wastewater and hydropower utility, for 30 years.

Employees at the Cal Am division office in Monterey heard the news Thursday, said water company spokeswoman Catherine Bowie.

Leonard's position is being temporarily filled by Thomas Bunosky of Chula Vista, director of network services for Cal Am since January, who is responsible for the operation of various water systems throughout the state. Bunosky was previously vice president and regional manager for Aqua Illinois Inc. in Kankakee, Ill.

Cal Am has begun a search for Leonard's replacement, Bunosky said, adding that anyone from within the company can apply and the position will be advertised nationally.

"I hope the process will move forward quickly," he said. "It's a challenging job."

Leonard said he plans to stay at his home in Pacific Grove and has no immediate plans to retire. The decision to resign was his, he said.

During his five years with Cal Am, Leonard said, the company pushed water resources issues toward a more regional approach, working with other water agencies and the state Public Utilities Commission.

"Keeping the water on is a 24/7 job," he said, made possible by "an outstanding staff with a good attitude."

The company has pursued several major projects, including a desalination plant and aquifer storage and recovery system "in an environment of uncertainty and high costs," Leonard said. Now the desalination issue boils down to "not whether the plant will be built, but where and how big."

Many problems involving water, he said, lie "in the values people have and their ideas about the future." Water supply on the Peninsula has to be approached in a manner "that is not detrimental to the way people live their lives."

Officials of the Monterey Peninsula Water Management District expressed shock, surprise and disappointment at the news of Leonard's departure.

"He's going to be missed," said Dave Berger, general manager of the water management district. "He's been a great communicator with the district on a whole variety of technical and operational policy issues and a good partner in the aquifer storage and recovery project."

In that project, excess water is pumped into aquifers to recharge them to prevent seawater intrusion and provide a dry-season water supply.

Leonard, Berger said, was a person who could effectively work through disagreements between the district

Joint Powers Agreement Members

Inland Empire
Utilities Agency

Irvine Ranch
Water District

Los Angeles
Department of
Water and Power

Orange County
Sanitation District

Orange County
Water District

West Basin
Municipal Water District

Jeffrey J. Mosher
Executive Director

E-mail:
jmosher@NWRI-USA.org

August 14, 2014

Ms. Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060

Subject: NWRI submittal of Statement of Qualifications for the Independent Review Panel for the City of Santa Cruz's Water Supply Advisory Committee

Dear Ms. Menard:

The National Water Research Institute (NWRI) of Fountain Valley, California, is pleased to submit this State of Qualifications (SOQs) in response to the Request for Qualifications (RFQ) released by the City of Santa Cruz Water Department (SCWD) for an Independent Review Panel (IRP) to support a community-based Water Supply Advisory Committee (WSAC) in its efforts to consider water supply issues, alternative strategies and solutions, and the public policy implications for the City. The WSAC will provide recommendations to the Santa Cruz City Council.

The role of the IRP will be to support the WSAC in effectively interacting with a technical consultant team by providing:

- Critical review of the work products produced by the technical support team.
- Suggestions to the WSAC's lines of inquiry that will assist the WSAC in completing their work efforts.

NWRI has over 10-years of experience in managing independent review panels for water resources and water supply projects throughout California and other locations. Although the RFQ requests SOQs from individual panel members, we are proposing an approach where NWRI coordinates, manages, and facilitates the IRP on behalf of SCWD. As shown in the attached proposal (**Attachment A**), the advantages of this approach will provide SCWD and the WSAC with many benefits. The NWRI panel method will provide an independent and credible approach for IRP members to collaborate and reach consensus on specific recommendations and findings regarding the review of work and products produced by the City's technical support team (such as scientific methods, reports, and other analyses and/or documents).

As part of this cover letter, I would like to take a moment to briefly describe NWRI, our history with managing and facilitating independent expert panels, and our proposed IRP members. As noted above, more detail is provided in the proposal in Attachment A.

18700 Ward Street
P.O. Box 8096
Fountain Valley, California
92728-8096

(714) 378-3278
Fax: (714) 378-3375

www.nwri-usa.org

About NWRI

NWRI is a 501c3 non-profit research organization governed by water and wastewater agency members. We sponsor projects and programs focused on ensuring safe, reliable sources of water now and for future generations. One of our research interests includes reviewing alternatives, such as potable reuse and desalination, as a means to develop drought-proof, sustainable water supplies – a vital concern as drought conditions spread across California and the United States and impact the quality and quantity of traditional supplies, like surface water and groundwater. As a result, we support leading-edge research on technologies, water quality, public health, and related topics in collaboration with other local, state, and national funding agencies.

About NWRI Panels

NWRI has extensive experience in organizing and facilitating independent, third-party expert peer review panels for scientific studies and projects on behalf of water/wastewater utilities, counties, and state agencies. These NWRI expert panels provide peer review of a wide range of scientific and technical areas, including areas crucial to water supply projects (such as recycled water, constituents of emerging concern, public health, protection of the environment, and regulatory requirements). Panel members include industry experts in areas such as economics, engineering, water resources management, microbiology, chemistry, risk assessment, and public health.

Examples of recent relevant NWRI expert panels include:

- *Surface Water Augmentation and Direct Potable Reuse Panel* for State Board Division of Drinking Water (formally the California Department of Public Health) (2014-Present)
- *Groundwater Recharge Scientific Study* for the LOTT Clean Water Alliance (Washington) (2013-Present)
- *Groundwater Replenishment System Program Review* for the Orange County Water District (California) (2004-Present)
- *Indirect Potable Reuse/Reservoir Augmentation Project Review* for the City of San Diego (2009-Present)
- *Recycled Water Master Plan* for Tucson Water (Arizona) (2011-2013)
- *Groundwater Replenishment Project Review* for the Los Angeles Department of Water and Power (California) (2010-Present)

About the Proposed IRP

NWRI proposes that the following experts from California serve on the IRP to support the WSAC:

Name	Affiliation
Katherine Cushing, Ph.D.	Director of Sustainability and Associate Professor, Environmental Studies Department, San Jose State University (San Jose, CA)
Martin Feeney, P.G., CHG,	Consulting Hydrogeologist (Santa Barbara, CA)
Brent Haddad, Ph.D.	Associate Dean of Engineering and Founding Chair of the Department of Technology Management, UC Santa Cruz (Santa Cruz, CA)
Kurt Schwabe, Ph.D.	Water Resource Economist, UC Riverside (Riverside, CA)
George Tchobanoglous, Ph.D.	Professor Emeritus, Department of Civil and Environmental Engineering, University of California, Davis (Davis, CA)

The proposed IRP fulfill the following requested characteristics from the RFQ:

- The IRP includes five (5) members with relevant expertise and backgrounds.
- As professors and consultants within the water industry, they have the required scientific and technical training, as well as substantial practical experience, in the scientific and technical disciplines relevant to the work of the WSAC.
- Their experience and expertise is diverse and complimentary, representing the areas of civil and environmental engineering, hydrogeology, water resources economics, environmental studies, environmental planning and management, and public policy.
- They have served on expert panels and committees for other organizations, and have the correct understanding and experience in applying their broad knowledge to the review process and applying their expertise to topics relevant to the WSAC.
- They have expressed a willingness and availability to (a) work with WSAC during the coming year (including attend meetings), (b) commit to review the needed documents, and (c) prepare and present summaries of their review efforts.
- The IRP has a broad teaching background, as well as experience serving on committees and panels for city, state, and national or international organizations; therefore, they have strong communication skills, which include the ability to explain complicated technical topics clearly and concisely to the general public.
- They have broad experience providing peer review for articles and other publications on scientific and technical topics.
- They have had previous experience supporting, advising, and engaging with citizens groups on topics with public policy implications.

Letter to R. Menard
August 14, 2014
Page 4

Altogether, these characteristics satisfy the requirements listed in the RFQ, as well as indicate their willingness to work with the WSAC over the coming year. The proposed IRP members also understand that the honorarium is limited to \$5,000 per member and direct travel expenses will be reimbursed.

Proposed IRP Process and Approach

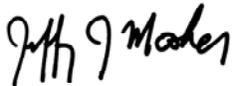
The attached proposal (**Attachment A**) provides the following information:

- Description of the proposed NWRI-facilitated IRP approach.
- Description of the proposed IRP members (with the provision that the actual IRP members would be finalized based on input from SCWD).
- Summary of information on meeting the IRP characteristics in the RFQ, compensation, and availability.

Please contact me directly at jmosher@nwri-usa.org or (714) 378-3278. Thank you for your time and consideration.

Sincerely,

NATIONAL WATER RESEARCH INSTITUTE



Jeffrey J. Mosher
Executive Director

Enclosure: **Attachment A**

ATTACHMENT A

NATIONAL WATER RESEARCH INSTITUTE

**Statement of Qualifications
for an Independent Review Panel (IRP)**

**for the
City of Santa Cruz Water Department's
Water Supply Advisory Committee**

Prepared for:

City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060

Prepared by:

National Water Research Institute
18700 Ward Street
Fountain Valley, CA 92728
Phone (714) 378-3278
www.nwri-usa.org

August 14, 2014

ABSTRACT

The National Water Research Institute (NWRI), a 501c3 nonprofit research organization based in Fountain Valley, California, is submitting this Statement of Qualifications (SOQs) to the City of Santa Cruz Water Department (SCWD) in response to a Request for Qualifications (RFQ) to form an Independent Review Panel (IRP) to support the SCWD's Water Supply Advisory Committee (WSAC) in effectively interacting with a technical consultant support team. Formed in 2014, the WSAC is made up of 14 stakeholders tasked with considering water supply issues, alternative strategies and solutions, and public policy implications for the City of Santa Cruz and providing recommendations to the Santa Cruz City Council.

The IRP will assist the WSAC by undertaking the following:

- Provide critical review of the work products produced by the team of technical consultants supporting the WSAC.
- Provide suggestions to the WSAC's lines of inquiry that would be helpful in completing their work.

As detailed below, NWRI proposes coordinating and administering the IRP on behalf of SCWD. The IRP would be comprised of five experts in areas relevant to supporting the WSAC, including civil and environmental engineering, hydrogeology, water resources economics, environmental studies, environmental planning and management, and public policy.

During the coming year, it is anticipated that the IRP will perform the following tasks on an as-needed basis:

- Work with the WSAC and attend WSAC meetings. This commitment includes attending WSAC meetings in person and/or using conference calls or web-enabled conference calls (as needed) to participate in meetings.
- Prepare and present summaries of the IRP review efforts at these WSAC meetings.
- Commit the time needed to review relevant documents.

This proposal also provides information on:

- Description of the IRP approach as facilitated by NWRI.
- Description of the proposed IRP members (with the provision that the actual IRP members would be finalized based on input from SCWD).
- Summary of information on meeting the IRP characteristics in the RFQ, compensation, and availability.

1. DESCRIPTION OF THE PROJECT

SCWD is in the process of evaluating options for providing a sustainable water supply that meets long-term demand requirements, as well as addresses changes in environmental conditions, climate change, persistent drought, and other factors. SCWD's water supply is

comprised of 95-percent surface water and 5-percent groundwater, leaving the water supply susceptible to water scarcity due to variations in seasonal rainfall.

After researching new water supply opportunities, including a proposed ocean desalination plant, the City of Santa Cruz established a citizens committee, the Water Supply Advisory Committee (WSAC), to provide advice on water supply issues, alternatives strategies and solutions, and public policy implications. Formed in early 2014, the WSAC is made up of 14 citizens with a variety of backgrounds, representing a diverse set of stakeholders.

Throughout this process, which involves monthly meetings, the WSAC will be supported by a team of technical consultants led by Stratus Consulting. In addition, an Independent Review Panel (IRP) will be established to assist the WSAC in interacting with the consulting support team. Specifically (and as detailed in the RFQ), the IRP will provide the following:

- Critical review of the work products produced by the team of technical consultants supporting the WSAC.
- Suggestions to the WSAC's lines of inquiry that would be helpful in completing their work.
- Offer feedback to the WSAC's questions that may be evaluated by the technical support team.

On an assigned or as-needed basis, the IRP will also provide responses to the WSAC in the form of written findings and recommendations.

Specific items that will be evaluated by the IRP include:

- The accuracy and appropriateness of analytical, scientific, and technical methods.
- The clarity and accuracy of statements of assumptions.
- The appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner.
- Offer advice or suggestions to the WSAC's lines of inquiry or technical questions that may be evaluated by the technical support team.

2. NWRI'S PROPOSED IPR PROCESS

The RFQ requests individual panel member submittals. However, NWRI proposes to form and administer a five-member IRP to provide support to the WSAC in effectively interacting with a technical consultant support team. As listed below, the NWRI-administered IRP approach has added value and benefits for the WSAC.

2.1 Benefits from an NWRI-Facilitated IRP

Overall, the IRP process will be designed to provide the following benefits:

- **Objective Review.** The IRP will provide independent, third-party feedback to the

WSAC and SCWD.

- **Expert Advice.** The IRP will provide scientific, technical, and policy advice by knowledgeable experts in the field.
- **Direct Support.** The IRP will help address challenging questions and issues that pertain to WSAC's review efforts and products.
- **Timely Guidance.** The role of the IRP is to provide findings and recommendations in a timeframe that supports the WSAC's schedule.

2.2 *NWRI Administrative Responsibilities*

As the IRP administrator, NWRI would be responsible for the following:

- **Coordination with WSAC/SCWD.** NWRI will serve as liaison between the IRP and WSAC (on technical matters) and SCWD (on technical and administrative matters). This set-up will maximize the IRP's time and effort to support the WSAC.
- **IRP Composition.** For this SOQ, NWRI has proposed five experts with various backgrounds to serve as IRP members. However, NWRI can modify the list of IRP members based on input from SCWD regarding other candidates.
- **Manage IRP Review.** NWRI would coordinate the support and review provided by the IRP. Tasks may involve reviews by individual IRP members. However, it is anticipated that most tasks will involve two or more IRP members or (possibly) all the IRP members. In such a case, NWRI will ensure that a consensus response is achieved as part of the IRP's review. NWRI will manage this effort by email and conference calls with the IRP members. Overall, this process will allow for a robust IRP review involving a consensus approach. NWRI staff will also provide writing and editing support for IRP responses.
- **Flexibility.** NWRI will use the IRP members in the most efficient manner. IRP members will be provided honorariums of \$500 per day in support of their tasks. As a result, IRP members will be used based on need.
- **Accountability.** NWRI has a proven and tested approach for expert panel administration. Our proposed IRP process will ensure that the WSCA and SCWD are provided expert review in a timely fashion.
- **Logistics.** When IRP members are needed to attend WSCA meetings, NWRI will manage travel and other logistics for IRP members.
- **Accessibility.** Although it is not feasible for all IRP members to attend all WSAC meetings, individual IRP members can attend specific WSAC meetings, as needed, to provide input and/or give presentations. IRP members local to the area would have

greater flexibility in attending meetings in person. All IRP members can be made available through email and conference calls.

Over the course the WSAC effort, we expect that documents, reports, and/or other materials may be compiled and forwarded to the IRP for review. The requests may involve specific questions from the WSAC. NWRI will coordinate the IRP's review (through email and conference calls), manage a consensus response, document findings in written responses, and forward the results to SCWD and the WSAC.

In addition, SCWD staff and the WSAC will be able to interact with the IRP outside of meetings, as needed. IRP members and NWRI staff will also be available for project-related meetings with the WSAC, as needed.

2.3 *NWRI Tasks*

The following tasks, as undertaken by NWRI, will be included in the IRP process:

- Work with SCWD and the WSAC on specific requests to the IRP.
- Assemble background material required for the IRP review.
- Determine which IRP members will be involved in the review.
- Schedule and coordinate the IRP review.
- Work with IRP members when travel is needed to attend and/or present at WSAC meetings.
- Hold conference calls of the IRP, as needed.
- Conduct administrative tasks to work with IRP members on the review process.
- Develop a consensus response from IRP members.
- Assist the IRP in documenting written responses for submittal to SCWD and the WSAC.

2.4 *IRP Deliverables*

The IRP process will be designed to provide a consistent, thorough, and transparent review of the work products produced by the team of technical consultants supporting the WSAC, as well as assist with providing suggestions to the WSAC's lines of inquiry that would be helpful in completing their work. After each task or review request, NWRI and the IRP members will prepare a response summarizing the IRP's comments and recommendations based on the outcomes their review. The response will be submitted to SCWD and the WSAC.

3. PROPOSED IRP MEMBERS

The IRP members proposed for this effort will consist of five individuals who are experts in water supply (note that the actual IRP members would be finalized based on input from SCWD). The proposed experts include members of academia and independent consultants within California. Their names, affiliations, and areas of expertise/disciplines (as related to this IRP effort) are listed in Table 1.

Table 1: Proposed IRP Members

Name	Affiliation	Disciplines
Katherine Cushing, Ph.D.	Director of Sustainability and Associate Professor, Environmental Studies Department, San Jose State University (San Jose, California)	<ul style="list-style-type: none"> • Environmental engineering • Sustainability • Urban planning • Resource management
Martin Feeney, PG, CHG	Consulting Hydrogeologist (Santa Barbara, CA)	<ul style="list-style-type: none"> • Hydrogeology • Desalination and potable reuse • Ocean intake wells
Brent Haddad, Ph.D.	Associate Dean of Engineering and Founding Chair of the Department of Technology Management, UC Santa Cruz (Santa Cruz, CA)	<ul style="list-style-type: none"> • Sustainability • Technology management (water reuse, desalination) • Economics • Communications • Governance
Kurt Schwabe, Ph.D.	Water Resources Economist, UC Riverside (Riverside, CA)	<ul style="list-style-type: none"> • Economics • Demand management, water usage, water rates, and conservation • Valuing ecosystems • Fisheries management
George Tchobanoglous, Ph.D.	Professor Emeritus, Department of Civil and Environmental Engineering, University of California, Davis, (Davis, CA)	<ul style="list-style-type: none"> • Wastewater treatment • Recycled water • Indirect and direct potable reuse • Treatment technologies

Included below are brief biosketches of each IRP member (please see Section 9 of this proposal for 2-page resumes of each proposed IRP member).

Katherine Cushing, Ph.D. Katherine Cushing is an Associate Professor in the Department of Environmental Studies at San Jose State University, where she is engaged in research on environmental policy and program implementation. Her primary areas of expertise are water resources management and sustainability in higher education. Prior to joining the university in 2003, she worked in a variety of academic and professional positions, such as serving as the Associate Director for the Program on Urban Studies at Stanford, where she taught and conducted research in environmentally sustainable cities, business and the environment, and qualitative research methods. She was also a Senior Research Associate at the Pacific Institute for Studies in Development, Environment, and Security in Oakland, where she conducted research on environmental certification systems and global water issues. As a private consultant, Cushing has conducted research for the U.S. Army Corps of Engineers, Santa Clara Valley Water District, World

Commission on Dams, and City of Palo Alto. She is also Project Lead on the Urban Water Cycle Scenario Evaluation Tool for Sustainable Silicon Valley, a collaborative initiative to produce significant environmental improvement and resource conservation in Silicon Valley. Recently, she was the Principal Investigator for a research project that examined evaluative criteria for municipal and regional recycled water programs in the U.S. sponsored by the WaterReuse Research Foundation. Cushing received a B.S. in Industrial Engineering and Science from Northwestern University and both an M.S. in Civil and Environmental Engineering and a Ph.D. in Civil and Environmental Engineering, with a specialty in Environmental Planning and Management, from Stanford University.

Martin Feeney, PG, CEG, CHg. Martin Feeney has been a consulting hydrogeologist since 1997, providing hydrogeologic consulting services to water agencies, private industry, and engineering firms. Prior to this, he served as hydrogeologist at various consulting firms such as Balanced Hydrologics, Inc. and Fugro West, Inc., where he provided analysis of groundwater basins, developed groundwater flow and transport, and developed saline groundwater source for desalination plants, injection wells/artificial recharge programs, and underground storage tank site assessment and remediation. Currently, he serves as a member of the “Hydrogeologic Working Group” evaluating the feasibility and potential water rights impacts of the installation of a 24 MGD capacity slant well array on the edge of Monterey Bay to support a regional desalination facility. He is also a member of the Expert Panel mediating between Poseidon and the California Coastal Commission regarding the use of subsurface intakes for the proposed Huntington Beach desalination facility. Mr. Feeney serves on the DDW-mandated Independent Advisory Panel for the Monterey Regional Water Quality Control Agency’s Groundwater Replenishment project utilizing highly treated wastewater for groundwater recharge. He has previously served on advisory panels focusing on the overdraft issues in the Salinas and Pajaro Valleys, the sewer system in Los Osos, and groundwater management plan development in the Carpenteria Basin. Feeney received a B.S. in Earth Sciences from the University of California, Santa Cruz and an M.S. in Environmental Planning (Groundwater) from California State University. He is also a California Professional Geologist with specialty certifications in engineering geology (CEG) and hydrogeology (CHg).

Brent Haddad, MBA, Ph.D. Brent Haddad is Professor of Environmental Studies and Associate Dean of Engineering and Founding Chair of the Department of Technology Management at the University of California, Santa Cruz. His research interests focus on sustainable water systems, including technologies, economics, communications, and governance. He is also co-leader of the UCSC-NASA Sustainable Water Technology Collaborative, and founder of WaterLab, the Water Teaching and Research Laboratory located at the Watsonville Water Resources Center. In addition, Haddad is an award-winning teacher whose course “Introduction to Fresh Water: Processes and Policies” is offered at all 10 UC campuses via the internet. He has published on water conservation, water reclamation and reuse, climate change, sustainable water supply, and desalination. He also received a 2014 Prosser Trust Award to prepare a report on the environmental effects of hydraulic fracturing (fracking) on surface waters in California. Haddad has undertaken research on water challenges in Monterey and Santa Cruz Counties. Locally,

as a consultant, he facilitated the creation of the operations agreement of the proposed SCWD2 desalination facility and served on the GHG technical advisory committee. He also prepared (with Prof. Gary Griggs) the City of Santa Cruz Climate Change Vulnerability Assessment and the proposed water rate plan for the Trout Gulch Mutual Water Company.

Kurt Schwabe, Ph.D. Kurt Schwabe has taught courses in environmental and natural resource economics at the University of California, Riverside, where he serves as Associate Professor of Environmental Economics and Policy and Associate Director of the Water Science and Policy Center. He specializes in the following research areas: water economics, alternative policy instruments for pollution control, salinity and drainage management and policy, wildlife and fisheries management, valuing ecosystem and forest services, and revealed and stated preference valuation methods. Recent publications have addressed the issue of drought in semi-arid and arid environments, the impacts of changes in water supply reliability and quality on agricultural sustainability, the effects of budget-based tiered water rates on residential water consumption, and the value of ecosystem services in developing countries. He has also worked on water and environmental resource issues in the US, Australia, and Southeast Asia. Among his honors, he was awarded a Flagship Fellowship by Australia's Commonwealth Scientific and Industrial Research Organization to help address the salinity and drainage issues related to Australia's irrigated agricultural production. Schwabe received a B.A. in Mathematics/Economics from Macalester College, and M.S. in Economics from Duke University, and a Ph.D. in Environmental Economics from North Carolina State University.

George Tchobanoglous, PH.D., P.E. For over 35 years, wastewater expert George Tchobanoglous has taught courses on water and wastewater treatment and solid waste management at the University of California, Davis, where he is Professor Emeritus in the Department of Civil and Environmental Engineering. He has authored or coauthored over 500 publications, including 22 textbooks and eight engineering reference books. Tchobanoglous has been past President of the Association of Environmental Engineering and Science Professors and currently serves as a national and international consultant to both government agencies and private concerns. Among his honors, he received the Athalie Richardson Irvine Clarke Prize from NWRI in 2003, was inducted to the National Academy of Engineers in 2004, and received an Honorary Doctor of Engineering degree from the Colorado School of Mines in 2005. In 2012, he received the first Excellence in Engineering Education Award from AAEE and AEESP. In 2013, he was selected as the AAEE and AEESP Kappe Lecturer. Tchobanoglous received a B.S. in Civil Engineering from the University of the Pacific, an M.S. in Sanitary Engineering from the University of California, Berkeley, and a Ph.D. in Environmental Engineering from Stanford University.

4. CHARACTERISTICS OF THE IRP

The RFQ noted desired characteristics of the IPR. The following section lists those characteristics, as well as our response as to how the proposed NWRI-administered IRP fulfills these characteristics.

The IRP characteristics would include:

- Three to five members.
NWRI Response: The proposed IRP would be made up of five (5) experts of areas relevant to WSAC's needs and who would be used on an as-needed basis.
- Scientific, technical, and policy training and experience, as well as practical experience evaluating similar projects.
Response: As professors and consultants within the water industry, the proposed IRP members have the required scientific and technical training, as well as substantial long-term practical experience, in the scientific and technical disciplines relevant to the work of the WSAC.
- Diversified backgrounds and experience that compliment and supplement each other.
Response: The experience and expertise of the proposed IRP members are diverse and complimentary, representing the areas of civil and environmental engineering, hydrogeology, water resources economics, environmental studies, environmental planning and management, public policy, and more.
- Experience applying their backgrounds and expertise in providing peer review, particularly of topics of interest for the WSAC.
Response: The proposed IRP members have served as members of scientific- and/or policy-focused expert panels and committees for NWRI and other national/international organizations, and have the correct understanding and experience in applying their broad knowledge to the review process and applying their expertise to topics relevant to the WSAC (such as water resources management, technology management, and so on).
- Availability to schedule their review of products (such as reports) and attend WSAC meetings on an as-needed basis.
Response: The proposed IRP has expressed a willingness and availability to (a) work with WSAC during the coming year (including attend meetings), (b) commit to review the needed documents, and (c) prepare and present summaries of their review efforts. This effort would also include developing consensus responses to the WSAC and presenting findings and recommendations to the WSAC.
- Demonstrated ability to (a) explain complicated technical topics clearly and concisely to a general audience, and (b) present facts without concealing values and with clear articulation of assumptions.
Response: The proposed IRP has a broad teaching background, as well as experience serving on committees and panels for city, state, and national or international organizations; therefore, they have strong communication skills, which include the ability to explain complicated technical topics clearly, concisely, and factually to the general public.
- Experience in supporting citizen-led groups.

Response: The proposed IRP members have previous experience supporting, advising, and engaging with citizens groups on topics with public policy implications.

- Agree to provide their review based on an honorarium-based approach.
Response: The proposed IRP members understand that the honorarium is limited to \$5,000 per member and direct travel expenses will be reimbursed.

Altogether, these characteristics satisfy the requirements listed in the RFQ, as well as indicate the willingness of the IRP to work with and support the WSAC over the coming year (using an honorarium-based approach).

5. IRP SCHEDULE

NWRI will commit to contacting IRP members about a review request within 24 hours of being contacted by SCWD. Depending upon the scope of the request and the schedules of the IRP members, the written responses may take days or weeks to prepare. However, the IRP would be cognizant of the need to respond within the requested timeframe.

6. BUDGET

The proposed budget (see **Appendix A**) for this effort is \$34,421 (\$25,000 for panel honorariums, \$9,421 for NWRI and expenses). The budget estimate represents the following:

IRP member and NWRI staff time to prepare for and attend meetings (as needed), develop IRP responses, and participate in additional project activities, if needed. These costs are based on the following assumptions:

- Five IRP members with honorariums of \$500 per day per (and \$5,000 maximum per panel member).
- NWRI staff members, as needed.

Travel, hotel, and logistical expenses for attending meetings in Santa Cruz as needed.

Other expenses include:

- Web-enabled conference call services.
- Conference calls.

Other notes:

- Mileage reimbursement rate will be at current City of Santa Cruz mileage rate (mileage log required).
- Travel expenses for the lowest cost-effective air fare or train fare will be reimbursed at actual costs (receipts required).

- Lodging and Per Diem will be reimbursed at actual costs (receipts required) up to the maximum allowance for the Santa Cruz area as published/posted on the U.S. General Services Administration website (<http://www.gsa.gov/portal/category/100120>).
- All subconsultant costs are reimbursed as “direct expense” at actual costs (invoice/receipts required).
- NWRI will not charge an administrative fee.

7. BACKGROUND OF NWRI

7.1 *Description of NWRI*

NWRI, a 501c3 nonprofit, was established in 1991 by a group of water, wastewater, and recycled water agencies in Southern California for the purpose of collaborating on research projects and activities that produce beneficial change and improved policy decisions. NWRI is a scientific and technical organization, having invested over \$17 million in research studies with over 120 partners in the U.S. and abroad. Areas of research interest include treatment technologies, monitoring, water quality assessment, knowledge management, and exploratory research. Our program has produced over 350 publications and conference presentations. In addition to research, NWRI provides extensive outreach through publications and educational activities. NWRI also provides services such as awarding graduate fellowships, facilitating conferences and workshops, and organizing Independent Advisory Panels or Peer Review Panels, which involve the peer review of scientific and technical projects and studies.

NWRI receives funding from the Joan Irvine Smith and Athalie R. Clarke Foundation and NWRI Member Agencies, which include the Inland Empire Utilities Agency, Irvine Ranch Water District, Los Angeles Department of Water and Power, Orange County Sanitation District, Orange County Water District, and West Basin Municipal Water District. These Member Agencies serve on NWRI’s Board of Directors.

NWRI has conducted over 30 Panels in the past 10 years. These Panels offer credible, objective review of studies and projects. The Panel outcomes help project sponsors verify and validate studies and projects and support public policy decisions.

NWRI offers the following range of services for the water/wastewater community: 1) a research program, including sponsoring, administering, and managing scientific and technical research projects; 2) an education program, including preparing outreach materials and sponsoring student fellowships; 3) meeting support, including planning workshops and conferences; and 4) an Independent Advisory Panel Program, which involves conducting peer review of agency projects or studies.

In support of these services, NWRI staff have the following capabilities: 1) knowledge of the water and wastewater industry, including understanding leading-edge issues such as reclaimed water, compounds of potential concern, and innovative technologies; 2) peer review services, including access to scientific experts and researchers in the industry and at universities; 3) project administration and management, including budgeting, scheduling, and reporting; 4) event planning and meeting facilitation; and 5) report preparation, including writing and technical editing. Under the NWRI Independent Advisory Panel Program, NWRI Panels provide expert

peer review of projects, studies, or policies related to water, wastewater, and water resources. The NWRI Panel process and results are credible, objective, and transparent.

7.2 Description of NWRI's Panel Program

NWRI specializes in facilitating Independent Advisory Panels on behalf of water and wastewater utilities, as well as local, county, and state government agencies, to provide credible, objective review of scientific studies and projects in the water industry. NWRI Panels consist of academics, industry professionals, government representatives, and independent consultants who are experts in their fields.

The Panel process provides numerous benefits, including:

- Third-party review and evaluation.
- Scientific and technical advice by leading experts.
- Assistance with challenging scientific questions and regulatory requirements.
- Validation of proposed project objectives.
- Increased credibility with stakeholders and the public.
- Support of sound public-policy decisions.

NWRI has extensive experience in developing, coordinating, facilitating, and managing Expert Panels. Efforts include:

- Selecting individuals with the appropriate expertise, background, credibility, and level of commitment to serve as Panel members.
- Facilitating hands-on Panel meetings held at the project's site or location.
- Providing written report(s) prepared by the Panel that focus on findings and recommendations of various technical, scientific, and public health aspects of the project or study.

Over the past 5 years, NWRI has coordinated the efforts of over 20 Expert Panels for water and wastewater utilities, city and state agencies, and consulting firms. The majority of these Panels have dealt with projects or policies involving potable reuse. Specifically, these Panels have provided peer review of a wide range of scientific and technical areas related to potable reuse, such as water quality and monitoring, constituents of emerging concern, treatment technologies and operations, public health, water reuse criteria and regulatory requirements, and outreach, among others.

Examples of recent NWRI Panels include:

- **Development of Water Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation and the Feasibility of Developing Criteria for Direct Potable Reuse** for the State Water Resources control Board Division of Drinking Water (CA)
- **Advanced Purified Water Treatment Plant (WTP) – Phase 1** for the El Paso Water Utilities (TX)

- **Evaluating Water Quality Testing at the Silicon Valley Advanced Water Purification Center for Future Potable Reuse Applications** for the Santa Clara Valley Water District (CA)
- **Developing Proposed Direct Potable Reuse Operational Procedures and Guidelines for New Mexico** for the New Mexico Environment Department (NM)
- **Monterey Peninsula Groundwater Replenishment Project** for the Monterey Regional Water Pollution Control Agency (CA)
- **Groundwater Recharge Scientific Study** for the LOTT Clean Water Alliance (WA)
- **Groundwater Replenishment System Program Review** for the Orange County Water District (CA)
- **Examining the Criteria for Direct Potable Reuse** for Trussell Technologies (CA) and WateReuse Research Foundation (VA)
- **Indirect Potable Reuse/Reservoir Augmentation Project Review** for the City of San Diego (CA)
- **BDOC as a Surrogate for Organics Removal in Groundwater Recharge** for the California Department of Public Health (CA)
- **Recycled Water Master Plan** for Tucson Water (AZ)
- **Groundwater Replenishment Project Review** for the Los Angeles Department of Water and Power (CA)

More information about the NWRI Independent Advisory Panel Program can be found on the NWRI website at <http://nwri-usa.org/Panels.htm>. An updated list of NWRI Panel efforts dating from 2003 to present is included in Table 2.

Table 2. List of NWRI Independent Advisory Panels

Agency	Project/Program	Years	Panel Chair
California Department of Health Services (CA)	Development of Water Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation and the Feasibility of Developing Criteria for Direct Potable Reuse	2014-Present	Adam Olivieri and James Crook
California Department of Health Services (CA)	BDOC as a Surrogate for Organics Removal in Groundwater Recharge	2011-2012	Jörg Drewes
California Department of Health Services (CA)	Review of Water Recycling Criteria for Agricultural Irrigation	2011-2012	Robert Cooper
County of Orange (CA)	Nitrogen and Selenium Management Program	2005-2006	Brock Bernstein
County of Orange (CA)	Assessment of TMDL Targets for Organochlorine Compounds for Newport Bay	2008-2011	Brock Bernstein
County of San Luis Obispo (CA)	Los Osos Wastewater Management Plan	2007-2008	George Tchobanoglous
City of Davis (CA)	Davis-Woodland Water Supply Project Review	2007-2008	Harvey Collins
Helix Water District (CA)	El Monte Valley Groundwater Recharge, Mining, and Reclamation Project	2010-2011	James Crook
Los Angeles Department of Water & Power (CA)	Salt Balance Analysis of the San Fernando Groundwater Basin	2009	Timothy Moore
Los Angeles Department of Water & Power (CA)	Groundwater Replenishment Project Review	2010-Present	Michael Stenstrom

LOTT Clean Water Alliance (WA)	Groundwater Recharge Scientific Study	2013-Present	To Be Decided
Monterey Regional Water Pollution Control Agency (CA)	Monterey Peninsula Groundwater Replenishment Project	2013-Present	George Tchobanoglous
New Mexico Environment Department (NM)	Developing Proposed Direct Potable Reuse Operational Procedures and Guidelines for New Mexico	2014-Present	James Crook
Orange County Sanitation District (CA)	Achieve Full Secondary Treatment	2003-2009	George Tchobanoglous
Orange County Water District (CA)	Groundwater Replenishment System Program Review	2004-Present	James Crook
Orange County Water District (CA)	Santa Ana River Water Quality Monitoring Study	2004-Present	Harvey Collins
Padre Dam Municipal Water District (CA)	Full Advanced Treatment Demonstration Project	2013-Present	James Crook
Rancho California Water District (CA)	Indirect Potable Reuse Conceptual Design Study	2012-2013	James Crook
City of San Diego (CA)	Indirect Potable Reuse/Reservoir Augmentation Project Review	2004-Present	George Tchobanoglous
San Francisco Public Utilities Commission (CA)	Water Reuse Master Plan	2006	James Crook
Santa Clara Valley Water District (CA)	Evaluating Potable Reuse	2012-Present	James Crook
Trussell Technologies, Inc. (CA)	Examining the Criteria for Direct Potable Reuse (WateReuse Research Foundation)	2012-2013	James Crook
Tucson Water (AZ)	Recycled Water Master Plan	2011-2013	Shane Snyder.

8. NWRI STAFF

NWRI is experienced in planning and facilitating Panel efforts and meetings. On average, NWRI facilitates between six to 10 Panel meetings a year. The names, titles, and responsibilities of NWRI staff who will be involved in the IRP effort are included in Table 3.

Table 3. NWRI Staff Members and Duties, as Pertaining to the IRP Program

Name	Title	Duties
Jeff Mosher	Executive Director	Provides overall project management for all IRP efforts. Responsible for organizing and planning IRP activities.
Brandi Caskey	Events Manager	Responsible for IRP meeting planning and logistics, as well as tracks finances.
Gina Melin Vartanian	Communications and Outreach Manager	In coordination with IRP, prepares IRP responses.

Brief biographies and IRP responsibilities for NWRI staff are provided below:

Jeff Mosher, Executive Director, NWRI. Jeff Mosher has a broad background in the operational management of non-profit organizations and private sector firms. He has served as Executive Director for the National Water Research Institute (NWRI), a nonprofit research organization, since 2005, managing all of NWRI's activities, including research projects, publications, and conference and meeting facilitation. He also specializes in organizing peer review Expert Panel efforts. In 2013 alone, he organized 11 in-person Panel meetings, all of which he attended and facilitated. These in-person meetings resulted in consensus-based Panel reports summarizing the findings and recommendations of the Panel Members. Mosher guided and facilitated the report development process with the Panel Chairs. Altogether, he has personally overseen 22 different Panel efforts (representing 20 different project sponsors) since joining NWRI. Prior to NWRI, he served as the Director of Technical Services for the WateReuse Association and Director of Research Programs for the WateReuse Foundation. He also was Director of Technical Services for the Association of Metropolitan Water Agencies. At present, Mosher is the Administrative Director for the Southern California Salinity Coalition. He also serves on the Board of Directors for the American Membrane Technology Association and Multi-State Salinity Coalition. Mosher received a B.S. in Chemistry from the College of William and Mary and an M.S. in Environmental Engineering from George Washington University.

Brandi Caskey, Events Manager, NWRI. Ms. Caskey is responsible for coordinating and planning events (such as conferences and workshops), as well as accounting and office administration, for NWRI. She has over 10 years of experience in conference coordination and general management. Among her responsibilities for the Panel process: serve as the administrative contact for Panel members; assist with financial management of the Panel, including invoicing and tracking the Panel budget; plan and arrange travel and lodging for Panel members.

Gina Melin Vartanian, Communications and Outreach Manager, NWRI. Ms. Vartanian received a B.A. in English Literature and an M.P.W. (Masters of Professional Writing) from the University of Southern California. She has served as editor, writer, and project manager for NWRI since 1998, focusing on publications, website development, grants, and national awards such as the NWRI Athalie Richardson Irvine Clarke Prize and NWRI Fellowship. With the Panel process, Ms. Vartanian specializes in the development of Panel reports. She has been actively involved with the NWRI Expert Panel program for over 10 years, providing transcripts of Panel meetings and serving as the editorial manager of Panel reports. She provides direct support to Panel Chairs in regards to developing and editing Panel written responses, as well as coordinates the review of draft responses among Panel members.

9. PROPOSED IRP MEMBERS – CURRICULUM VITAE

Attached in **Appendix B** are brief (2-page) curricula vitae of each proposed IRP member.

Appendix A

Proposed Budget

**National Water Research Institute
Statement of Qualifications
for an Independent Review Panel (IRP)
for the Scity of Santa Cruz Water Department's
Water Supply Advisory Committee
Proposed Budget
August 14, 2014**

Program Expenses

1. Assumptions

Number of Panel Members	5
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2. NWRI Labor

NWRI Salary & Benefits	Hourly Rate	No. of Hours		
Executive Director	\$ 90.86	25.00	\$	2,271.50
Program and Events Manager	\$ 42.00	25.00	\$	1,050.00
Communications and Outreach Manager	\$ 40.00	10.00	\$	400.00
Administrative Assistant	\$ 25.00	10.00	\$	250.00

2. Other Direct Costs (ODCs)

Meeting, Logistics (Room, Meals, Audio Visual, etc.)	No. of Meetings	Cost per meeting		
Meeting Room			\$	-
Food & Beverage			\$	-
Audio Visual			\$	-
Honorariums (Panel Members) \$750/day	No. of Panel Members	No. of Days		
Panel members	5	5,000.00		25,000.00
Travel (Airline, Meals, Mileage, etc.)	No. of Trips	Cost		
Airline	4	\$ 350.00	\$	1,400.00
	No. of Individuals	Days		
Meals during travel (\$20 per day)	5	4	\$	400.00
Lodging (\$120 per night)	5	2	\$	1,200.00
Mileage/Car Rental			\$	1,400.00
Misc Expenses			\$	-
Panel Expenses				
Conference calls (Web-enabled)			\$	350.00
Copying/Printing			\$	500.00
Mailings			\$	200.00

Contingency	\$ -
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Subtotal Expenses	\$ 34,421.50
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Total Expenses	\$ 34,421.50
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Appendix B

Proposed Panel Member Resumes

KATHERINE KAO CUSHING
Department of Environmental Studies
San Jose State University
San Jose, CA 95192-0115
kcushing@email.sjsu.edu

EDUCATION

- 1993 – 1998 Stanford University, Stanford, CA
Ph.D., Civil and Environmental Engineering Department with
Specialization in Environmental Planning and Management.
- 1992 – 1993 Stanford University, Stanford, CA
M.S., Civil and Environmental Engineering Department,
Environmental Engineering and Science Program
- 1986 – 1990 Northwestern University, Evanston, IL
B.S., Industrial Engineering and Management Science

APPOINTMENTS

- 07/09 – 08/11 Director of Sustainability, San Jose State University San Jose, CA
Responsible for coordinating and directing University sustainability
activities across curriculum, research, facilities, and community
relations. High-level administrative position reporting directly to the
University President and Cabinet.
- 08/08 – present Associate Professor, San Jose State University San Jose, CA
Conduct and supervise research on environmental issues. Current
projects include: Water reuse (See Synergistic Activities) and
analyzing the Impacts of an Ecological Footprint Challenge on the
University Community. Design and teach courses on Water
Resources Management (EnvS 128), Western Water Policy
(EnvS129), Research Methods (EnvS 290 and 297), Field Studies in
Water Resources Management (EnvS 270) and general
environmental issues (EnvS 01) at the undergraduate and graduate
level.
- 08/05 – 07/08 Assistant Professor, San Jose State University San Jose, CA
- 09/00 – 07/03 Associate Program Director, Stanford University Stanford, CA
Conducted research in implementation of ISO 14001 in China,
environmental and social performance of Silicon Valley computer
companies, and environmentally sustainable cities. Taught classes in
urban planning and thesis research.
- 05/99 – 08/01 Senior Research Associate, Pacific Institute Oakland, CA
Developed and managed research projects on California urban water
conservation, environmental certification systems, and global water
supply, sanitation, and hygiene.
- 01/99 – 12/99 Visiting Professor, University of California Berkeley, CA
Taught graduate course CP251 “Environmental Planning and
Regulation (CP251) in Department of City and Regional Planning,

Spring Semester 1999 and Fall Semester 1999.

SELECT PUBLICATIONS AND REPORTS

Cushing, K., Arias, M., Larabee, J. and Rosenblum, E. (2014). Urban Recycled Water Programs: Identifying Evaluation Metrics and Understanding Key Organizational Relationships (10-17-1). Peer-reviewed Technical Report WateReuse Association. Alexandria, VA. (ISBN: 978-1941242049)

Cushing, K., Arias, M., Larabee, J. and Rosenblum, E. (2012). How should we measure program performance? A Delphi survey of urban recycled water stakeholders. Proceedings of the International Water Association's Wastewater Purification and Reuse Conference. March 28, 2012. Heraklion, Crete, Greece.

Delaveau, B., Cushing, K., and Klee G. (2011) Environmental Impact of the Photoprocessing Industry: Santa Clara, CA-Case Study. LAP Lambert Academic Publishing Saarbrücken, Germany (ISBN-13: 978-3845478692).

Cushing, K.K., McGray, H., and Liu, H. (2005). "ISO 14001 Adoption and Implementation in China" *International Journal of Environment and Sustainable Development*. Vol.4, No. 33. pp. 246-268.

Gleick, P., Haasz, D., Henges-Jeck, C., Srinivasan, V., Wolff, G., Cushing, K.K., and Mann, A. (2003). *Waste Not, Want Not: The Potential for Urban Water Conservation in California*. Pacific Institute: Oakland, CA.

Ortolano, L., and K. Cushing. (2002). "Grand Coulee Dam 70 Years Later: What Can We Learn?" *Water Resources Development*. Vol. 18, No. 3. pp. 373-390.

SELECT PROFESSIONAL ACTIVITIES

WateReuse Foundation Research (October 2010 to December 2013)—Principal Investigator for research project that identifies criteria at the regional and municipal level for evaluating the performance of recycled water programs in the U.S.

National Water Research Institute, Independent Advisory Panel Member to the Santa Clara Valley Water District on Potable Reuse (April 2013 to present)—Provide advice on the strategic and operational aspects of the District's water reuse program.

Green Wave (June 2010 to June 2011). Developed new service-learning project providing energy-efficiency audits and tools to local homes and offices. Audits conducted by SJSU students. Program received commendation by the City of San Jose and San Jose Mayor.

Sustainable Silicon Valley (September 2010 to June 2011) Principal team member of EcoCloud Project a consortium of industry, academia, government and business applying principles of industrial ecology to the San Francisco Bay area.

MARTIN B. FEENEY, P.G., C.E.G., C.Hg. *Resume*
Consulting Hydrogeologist

CONTACT: P.O. Box 30020, Santa Barbara, CA 93130
805-643-7710, 831-915-1115
mfeeney@ix.netcom.com

EDUCATION: M.A., Environmental Planning (Groundwater), California State University, 1987
Graduate Program, Water Science, University of California, Davis, 1981-1982
Secondary Teaching Credential, University of California, Santa Barbara, 1979
B.S., Earth Science (Geology), University of California, Santa Cruz, 1976

QUALIFICATIONS: Professional Geologist, California, No. 4634
Certified Engineering Geologist, California, No. 1454
Certified Hydrogeologist, California, No. 145
Certified Groundwater Professional, NGWA, 1994

EXPERIENCE: Mr. Feeney has more than 30 years experience in groundwater consulting. After employment as a well-site geologist in the oil industry and again as an engineering geologist, Mr. Feeney was a founding Principal of Staal, Gardner and Dunne, Inc. (later became Fugro West, Inc.) and managed this firm's Monterey County office for 9 years. Mr. Feeney later was a member of the firm, Balance Hydrologics, Inc. Mr. Feeney is currently a private consultant. Mr. Feeney's experience in groundwater supply issues includes well siting and design, preparation of project specifications and contractor supervision, well maintenance and repair, water treatment, groundwater modeling (both flow and solute-transport), perennial yield analysis, artificial recharge (surface and injection), water quality assessments, regulatory compliance and groundwater modeling.

Mr. Feeney has significant experience in drilling and well construction technology. During his career Mr. Feeney has designed and managed the construction of over 80 municipal wells with diameters up to 24-inches and discharge rates of up to 6,000 gpm at locations around the world.

Selected representative project experience includes:

**WATER SUPPLY
PROJECTS:**

Point of Diversion Study, Monterey County, California-American Water Co.

The feasibility of diverting subsurface flow from the Carmel River rather than direct diversion from the reservoirs was evaluated. The change would allow existing treatment facilities and pipelines to be utilized while providing important fisheries and riparian habitat benefits as well as reduced treatment costs. The scope included re-evaluating the geometry of the uppermost Carmel River alluvial aquifer, adapting the existing groundwater model to incorporate the proposed changes in point diversion, and assisting the local water district in modifying its operational models and in-stream flow simulations.

Desalination Project, Marina Coast Water District. Marina Coast Water District built the first operating desalination facility in mainline California. Work included design and supervision of construction of the project's seawater intake and brine disposal wells. Additional work included performance of aquifer and injection testing and analysis, detailed groundwater flow and transport modeling as part of feasibility analysis, and assessment of injection well plugging phenomena.

Sand City Desalination Plant Saline Intake and Brine Disposal Monterey Peninsula Water Management District —, Monterey County

In order to satisfy increased water demands, the MPWMD has proposed the construction of a 3.0 MGD seawater desalination facility that will extract water from coastal dune sands through the use of Ranney collectors. The feasibility of this approach was investigated and the conclusion reached that three Ranney collectors at the site would be capable of producing the required design flow. Also investigated was the use of Ranney collectors to inject brine into the shallow subsurface offshore. The project included drilling, well construction, aquifer testing and solute/flow modeling. It successfully demonstrated that Ranney collectors would be suitable for use and that brine injection was feasible.

Pilarcitos Creek Study -San Mateo County

Anticipating the listing of certain species of fish that migrate up coastal streams, the Coastside Water District, in conjunction with San Francisco Water Department, contracted for a study of the feasibility of modifying the method of diversion from Pilarcitos Creek. The study included the review of reservoir operations, analysis of distribution system, evaluation and modeling of the District's wellfield, and the assessment of fisheries conditions in specific reaches of the creek. The report concluded that it was feasible to shift diversions to the wellfield from the reservoir and that this would result in the re-establishment of up to 2 miles of additional fisheries habitat. However, the overall benefit of the proposed modification was not clear as the modification would have no effect on the more-critical impacted fisheries habitat downstream of the District's property.

**EXPERT/3rd
PARTY REVIEW
PROJECTS**

Salinas Valley Hydrogeologic Conference "White Paper".

Mr. Feeney was a one of eight participants in a "blue-ribbon" committee convened by the MCWRA to address the hydrogeologic issues facing the Salinas Valley. As part of two day conference, the committee evaluated available data regarding seawater intrusion, the overall water balance and water quality issues. The committee reached general consensus and prepared a report recommending a solution to the water supply shortfall.

Soquel Creek Water District IGSM Development -- Technical Advisory Committee (TAC) Member.

Mr. Feeney was retained by Soquel Creek Water District to participate in a TAC reviewing the development of the IGSM model by a consultant for the District. This recently completed model, shares its southern boundary with the Pajaro IGSM model. Water level and water quality conditions within the northern portion of PVWMA area are linked between the two models.

Pajaro Valley Water Management Agency – Groundwater Model Development Project – TAC Chairperson

The USGS was contracted to convert the Pajaro Valley Water Management Agency's (PVWMA) existing groundwater model from the IGSM code to MODFLOW2000 code. Mr. Feeney was retained by PVWMA to chair and as a participant in the advisory TAC that supervised the conversion of the model. This task entailed review and acceptance of a revised hydrostratigraphic model of the Pajaro Basin, review and acceptance of the water balance and recharge assumptions. The conversion project is on-going and a working, calibrated model has been completed.

Seaside Groundwater Basin Watermaster – Groundwater Model Development Project – TAC Chairperson

As part of the court decree, the Seaside Groundwater Basin Watermaster (Watermaster) was tasked with developing a groundwater model of the basin for management purposes. Mr. Feeney was retained to chair a panel of modeling experts to evaluate the existing groundwater models of the basin and the need for a new model. This review focused on the need and desired uses for a model, identification of data gaps that may limit model utility and validity, the suitability of flow verses solute transport models, and generalized approaches to the modeling effort. The results of the review resulted in the selection and modification of an existing model to meet the Courts requirement.

National Water Resources Institute – TAC Panel Member–

Monterey Regional Water Pollution Control Agency –Reclaimed Water Recharge Project in the Seaside Basin.

Mr. Feeney was again asked to serve as the groundwater expert on a NWRI panel reviewing the Monterey Regional Water Pollution Control Agency's proposed Reclaimed Water Recharge Project in the Seaside Basin. This project proposes to take highly-treated wastewater and use it for recharge in the Seaside Basin – either through percolation or direct injection. The review focused on the feasibility of the plan and the potential impacts and benefits of implementation. The panel is on-going.

**PROFESSIONAL
AFFILIATIONS:**

Groundwater Resources Association
Association of Groundwater Scientists and Engineers
American Institute of Hydrology
Monterey Bay Geologic Society

Brent Haddad, MBA, PhD

Professor of Environmental Studies
Professor and Chair, Department of Technology Management
Associate Dean of Engineering, Technology Management
Director, Center for Integrated Water Research, and Center for Entrepreneurship
University of California, Santa Cruz
1156 High Street/SOE3, Santa Cruz, CA 95064
831-331-0654; (f) 831-459-4015 bhaddad@ucsc.edu

EMPLOYMENT HISTORY

2012- Associate Dean of Engineering, Technology Management
2007- Founder and Director, Center for Integrated Water Research,
University of California, Santa Cruz
1997- Professor of Environmental Studies
1991- Consultant on energy, water, environmental regulation and
policy, and market development.

EDUCATION

1996 University of California, Berkeley, Ph.D. in Energy and
Resources
1991 University of California, Berkeley, Haas School of Business,
MBA in Business and Public Policy
1985 Georgetown University, MA
1982 Stanford University, B.A

SELECTED AWARDS

2013 UCSC-NASA Sustainable Water Technology Collaborative,
Phase 2, to prepare space-oriented water treatment technologies
for use on earth, 4 years, ~\$1,500,000.
2007 California Public Utilities Commission, Division of Ratepayer
Advocates, research and administrative coordination of a
process to identify a regional solution to Monterey County
water supply needs, \$326,000.
2007 Monterey Regional Water Pollution Control Agency, exploring
the federal role in regional water treatment and supply projects.
\$42,000.
2006 WateReuse Foundation. "The New Urban Water Customer,"
developing a 3-5 year research program on the social
psychology of water reclamation and reuse. \$175,000.
2006 California Public Utilities Commission, Division of Ratepayer
Advocates, research support for analysis of the Central
California Water Project, \$100,000.

- 2005 California Department of Water Resources Proposition 50 grant competition. "Developing a Tool to Guide State and Local Desalination Planning," \$2,597,149.

SELECTED PUBLICATIONS

- 2012 Member, Committee on the Assessment of Water Reuse as an Approach for Meeting Future Water Supply Needs. Published: *Water Reuse: Potential for Expanding the Nation's Water Supply Through Reuse of Municipal Wastewater*. Washington, D.C.: National Academies Press.
- 2010 Haddad, B., Rozin, P., Nemeroff, C., and Slovic, P. "The Psychology of Water Reclamation and Reuse: Survey Findings and Research Road Map," Alexandria, VA: WateReuse Foundation, 78 pp.
- 2009 Kidson, R., Haddad, B., and Zheng, H. 2009, Improving Water Supply through Portfolio Management: Case Study from Southern California. *Proceedings, 4th WEAS International Conference in Water Resources, Hydrology and Hydraulics*, University of Cambridge, 24-26 February.
- 2006 Haddad, B. "Achieving Numerous Watershed-Management Goals in a Multi-Watershed System," extended abstract in *Proceedings*, International Conference on Forest and Water in a Changing Environment (Beijing, August 8-10).
- 2006 Buckley, M., and B. Haddad. "Socially Strategic Ecological Restoration: A Game-Theoretic Analysis," *Environmental Management*. 38(1): 48-61.
- 2004 Haddad, B. "Research Needs Assessment Workshop: Human Reactions to Water Reuse," Alexandria, VA: WateReuse Foundation.
- 2004 Haddad, B. "Water," in S. Krech III, J.R. McNeill, and C. Merchant, eds., *Encyclopedia of Environmental History*. Volume 3, 1299-1303.
- 2000 Haddad, B. *Rivers of Gold: Designing Markets to Allocate Water in California*. Washington, D.C.: Island Press.

OTHER

- 2012- Founder, WaterLab, the Water Teaching and Research Laboratory, located at the Watsonville Water Resources Center. <http://ciwr.ucsc.edu>
- 2010-11 Co-author (with Prof. Gary Griggs) of the Santa Cruz City Climate Change Vulnerability Assessment (published Jan. 11, 2011).
- 1990- Consultant on numerous projects. Clients have included SCWD2, for which I facilitated preparation of the operations agreement for the proposed desalination facility.

Kurt Anthony Schwabe

Associate Professor of Environmental Economics and Policy
University of California-Riverside
Email: kurt.schwabe@ucr.edu
Phone: 951-827-2361

EDUCATION

Ph.D., North Carolina State University, Economics, Statistics Minor, 1996
M.A., Duke University, Economics, 1992
B.A., Macalester College, Mathematics/Economics, 1988

RESEARCH AREAS

Water Economics; Market-based Instruments; Wildlife and Fisheries Management; Valuing Ecosystem and Forest Services; Revealed and Stated Preference Valuation Methods.

SELECTED HONORS/AWARDS

Visiting Flagship Fellowship. 2007-2008. CSIRO, Australia.
Outstanding Journal Article Award. 2002. *Journal of Agricultural and Resource Economics*.
Editor's Citation for Excellence in Manuscript Review 2002. *Journal of Environmental Quality*
Best Teaching Practices Award Recipient. Center for Teaching Excellence, Ohio University. 1998.
Kenneth R. Keller Research Award for Excellence in Doctoral Research. NCSU. 1996.

MEMBERSHIPS/ORGANIZATIONS

Giannini Foundation of Agricultural Economics; American Agricultural Economics Association
American Economics Association; Western Economics Association; Association of Environmental and Resource Economics; Australian Agricultural and Resource Economics Society

RECENT APPOINTMENTS

Associate Professor (2006-present). Department of Environmental Sciences, UC-Riverside.
Associate Director (2012-2014). Water Science and Policy Center, UC-Riverside
Editorial Council (2013-present). Water Economics and Policy
Vice-Chair (2008-2011). Department of Environmental Sciences, University of California.
Associate Editor (2007-2010). *Australian Journal of Agricultural and Resource Economics*.
Visiting Fellow (2007-2008). Commonwealth Scientific and Industrial Research Organization (CSIRO),
Cooperating Faculty Member (1999-present). Department of Economics, UC-Riverside.
Assistant Professor (1999 – 2006). Department of Environmental Sciences, UC-Riverside
Assistant Professor (1996 - 1999). Department of Economics, Ohio University.

COURSES TAUGHT (u~undergraduate; m~masters; p~Ph.D.)

Environmental/Natural Resource Economics (u,m,p), Econometrics (u,m), Environmental Valuation (u,m,p), Microeconomics (u), Managerial Economics (m), Southeast Asian Economics (u,m).

SELECTED REVIEWER ACTIVITY

American Journal of Agricultural Economics, Australian Journal of Agricultural and Resource Economics, British Journal of Environment and Climate Change, California Agriculture, Canadian Journal of Agricultural and Resource Economics, Choices, Contemporary Economic Policy, Empirical Economics, Environment and Development Economics, Forest Science, Irrigation Science, Journal of Agricultural and Resource Economics, Journal of Environmental Economics and Management, Journal of Environmental Quality, Journal of Management Mathematics, Journal of Water Resources Planning and Management, Lake and Reservoir Management, Marine Resource Economics, Water Resources Research

RECENT RELEVANT PRESENTATIONS

- (Invited talk) Given by K. Schwabe. “The mean isn’t the only message: the implications of accounting for other water supply characteristics on irrigated agricultural sustainability.” Presented at *Water Use Efficiency Symposium: Water Policy and Politics*. American Society of Enology and Viticulture National Conference, Austin, Texas, June 24, 2014.
- (Invited talk) Given by K. Schwabe. “State Policy for Future Drought.” Presented at the UC-Governor’s Office Drought Summit. Sacramento, CA, April 25, 2014.
- (Invited talk) Given by K. Schwabe. “Demand-side Management for Addressing Water Scarcity and Drought: What Do We Know?” Presented at the *Urban Water Workshop*, Water Science and Policy Center, University of California, Riverside, Riverside, CA June 4, 2014.
- (Invited talk) Given by K. Schwabe. “The role of demand-side measures and flexible incentive-based instruments for addressing drought.” Presented at the Santa Ana Watershed Project Authority’s Board Meeting, Santa Ana Project Authority, Riverside, CA., February 4, 2014.
- (Invited talk) Given by K. Schwabe. “Meeting Future Urban Water Demand: Some Considerations as to Agriculture’s Role and the Larger Issues of Water Scarcity.” Presented at Urban Water Roundtable: Bringing Together the Best in Current Research and Applications. Arizona State University, April 24, 2013, Tempe, Arizona.
- (Invited talk) “How Effective are Water Conservation Strategies?” Southern California World Water Forum College Grant Program, Kick-off event. October 7, 2012, Los Angeles, CA.
- (Plenary Speaker/Invited) “Managing California’s Water.” Presented at the Sustainable Food Systems Conference, UC. Davis. October, 2011.

RECENT RELEVANT PUBLICATIONS

- Vincent, J., R. Carson, J.R. DeShazo, K. Schwabe, I. Ahmad, C. Kook, C. Tan, and M. Potts). 2014. “Middle-Income Developing Countries May be Willing to Pay to Protect their Own Tropical Rainforests,” *Proceedings of the National Academy of Sciences*. June 30. doi:10.1073/pnas.1312246111
- Baerenklau, K., K. Schwabe, and A. Dinar. 2014. “Residential Water Demand Effect of Increasing Block-rate Budgets,” *Land Economics* (Accepted, February, 2014). 34 ms pages.
- Schwabe, K. 2014. Drought. In (editors) Whitehead, J. and T. Haab. Environmental and Natural Resource Economics: An Encyclopedia. Greenwood Press, Santa Barbara, California.
- Schwabe, K. and K. Knapp. *In press*. Salinity and Groundwater Management: A Hydro-Economic Analysis. In (editors) A. Dinar and K. Schwabe, Handbook of Water Economics, Edward Elgar Publishing Ltd. 40 ms pages.
- Mukherjee, M., and K. Schwabe. 2014. “Where’s the Salt? A Spatial Hedonic Analysis of the Value of Groundwater to Irrigated Agriculture,” *Agricultural Water Management*. Accepted 1/23/14 for a special edition titled, Sustainable Agriculture.
- Schwabe, K., J. Albiac, J. Connor, R. Hassan, L. Meza-Gonzalez. 2013. Drought in Arid and Semi-arid Regions: A Multi-disciplinary and Cross-Country Perspective. Springer Publishing. Dordrecht.
- Schwabe, K. and J. Connor. 2012. “Drought in Semi-arid and Arid Environments,” *Choices* 27(3):1-5.
- Connor, J., K. Schwabe, D. King, and K. Knapp. 2012. “Irrigated Agriculture and Climate Change: The Influence of Water Supply Variability and Salinity on Adaptation,” *Ecological Economics* 77:147-153.
- Qureshi, E., K. Schwabe, J. Connor, and M. Kirby. 2010. “Environmental Water Incentive Policy and Return Flows,” *Water Resources Research* 46: 1-12.
- Connor, J., K. Schwabe, M. Kirby, D. Kaczan and D. King. 2009. “Impacts of Climate Change on Lower Murray Irrigation,” *Australian Journal of Agricultural and Resource Economics* 53(3): 437-456. 2009
- Knapp, K. and K. Schwabe. 2008. “Spatial Dynamics of Water and Nitrogen Management in Irrigated Agriculture,” *American Journal of Agricultural Economics* 90(2): 524-539.
- Schwabe, K., I. Kan and K. Knapp. 2006. “Drainwater Management to Reduce Salinity Problems in Irrigated Agriculture,” *American Journal of Agricultural Economics* 88(1), 133-149.
- Kan, I., K. Schwabe and K. Knapp. 2002. “Microeconomics of Irrigation with Saline Water,” *Journal of Agricultural and Resource Economics* 27(1), 16-39.

GEORGE TCHOBANOGLOUS

662 Diego Place
Davis, California 95616
(530) 756-5747, FAX (530) 753-6365
e-mail: gtchobanoglous@ucdavis.edu

Education

Ph.D., Civil Engineering, Stanford University, 1969
M.S., Sanitary Engineering, University of California, Berkeley, 1960
B.S., Civil Engineering, University of the Pacific, 1958

Present Position

Professor Emeritus of Civil and Environmental Engineering, Department of Civil and Environmental Engineering, University of California at Davis, Davis, CA. Research areas include solid waste management, innovative water and wastewater treatment systems, wastewater filtration, UV disinfection, small wastewater treatment systems, onsite systems, and aquatic treatment systems.

Honors, Awards

2013 Kappe Lecturer, AEESP and AAEEES.
2012 Elected as a WEF Fellow
2012 Excellence in Engineering Education Award, AAEEES and AEESP
2011 Inducted into the Greek Technical Chamber (Association of Engineers) as an Honorary member. First such honoree.
2010, Distinguished Speaker, Distinguished Speaker Series 2009-2010, University of Miami, Miami, FL
2007, The Frederick George Pohland Medal, AAEE and AEESP.
2006, Distinguished Lecturer, Department of Civil, Architectural, and Environmental Engineering, University of Texas, Austin, TX.
2005, Honorary Doctor of Engineering Degree, Colorado School of Mines.
2004, Waste-To-Energy Research and Technology Council Distinguished Service Award for Research and Education in Integrated Waste Management.
2004, National Academy of Engineering.
2003, Athalie Richardson Irvine Clarke Prize, National Water Research Institute.
2002, AEESP/WEF Keynote Research Lecture
1999, Jack Edward McKee Medal, Water Environment Federation.
1993, Special Recognition Award For Service To The Profession, The Engineering Council of Sacramento Valley, California.
1991, Thomas R. Camp Lecturer, Boston Society of Civil Engineers.
1990-2007, Who's Who in America
1989, President, Association of Environmental Engineering Professors.
1985, Gordon Maskew Fair Medal, Water Pollution Control Federation.
1985, Distinguished Alumnus of the Year for Public Service, University of the Pacific.
1980, Outstanding Teacher Award, School of Engineering, University of California at Davis
1957, Blue Key

Society Memberships

American Academy of Environmental Engineers (AAEE)
American Society of Civil Engineers (ASCE)
American Water Works Association (AWWA)
Association of Environmental Engineering and Science Professors (AEESP)
California Water Pollution Control Association (CWPCA)
International Water Quality Association (IWQA)
Sigma XI
Water Environment Federation (WEF)

Registration

Registered Civil Engineer in California (C-14,430)

Employment Record

1994 - Present: Professor Emeritus, University of California at Davis, Davis, CA
1976 - 1994: Professor, University of California at Davis, Davis, CA
1971 - 1976: Associate Professor, University of California at Davis, Davis, CA
1970 - 1971: Assistant Professor, University of California, Davis at Davis, CA
1967 - 1969: Acting Assistant Professor, Stanford University, Stanford, CA
1970 - Present: Consultant, Over 150 municipal, industrial, and consulting engineering clients
Both domestic and foreign)
1981 - Present: Special Consultant, Nolte & Associates, Sacramento, CA
1990 - Present: Member, Technical Advisory Board, Nishihara, Ltd, Japan
1973 - 1980: Consultant, State Water Resources Control Board, Sacramento, CA
1963 - 1969: Sanitary Engineer (Part time while studying for Ph.D. degree), Metcalf & Eddy,
Inc., Palo Alto, CA
1962 - 1963: Sanitary Engineer, Water Resources Engineers, Inc., Berkeley, CA
1960 - 1962: Research Sanitary Engineer, Sanitary Engineering Research Laboratory,
University of California, Richmond, CA

Professional Activities

Consulting Editor, McGraw-Hill Series in Water Resources and Environmental Engineering
Member, Editorial Board, Aquatic Systems Manual of Practice, Water Environment Federation
Member, Editorial Board, Asian Institute Of Technology, Bangkok, Thailand
Member, Selection Subcommittee, Outstanding Achievement in Water
Member, Health Advisory Committee, A Dynamic Model to Assess Microbial Health Risks
Associated With Beneficial Uses of Biosloids WERF Project #98-REM-1
Member, Awards Subcommittee, G. M. Fair Award, Water Environment Federation
Member, WERF Review Subcommittee - Impact of Surface Storage on Reclaimed Water:
Seasonal and Long Term
Member, WERF Review Subcommittee - Emerging Treatment Technologies for Water
Reclamation
Member, Technical Advisory Committee, San Diego Aquaculture Project (1979-1998)
Member, Health Advisory Committee, San Diego Aquaculture Project (1990-1998)
Member, Blue Ribbon Panel, City of San Jose, CA (1990)
Past President, Association of Environmental Engineering Professors (1989)
Member, California Senate Task Force On Solid Waste Management (1988-1990)
Member, California Waste Management Board (1988-1990)
Member, Advisory Board On Solid Waste Management, California Prisons Industry
(1985-1992)
Member Editorial Board, Hydrogen Sulfide Manual of Practice, American Society of
Civil Engineers (1985)
Member, Yolo County Solid Waste Advisory Committee (1982-1990)

Publications

Author or co-author of over 500 articles, books, and reports. Included in the list of publications are 22 text and 8 reference books dealing with the subject areas of environmental engineering, water quality, the collection and pumping of wastewater, wastewater treatment, and solid waste management. The textbooks are used in more than 225 Colleges and Universities throughout the United States. The textbooks and reference books are also used extensively by practicing engineers both here and abroad. A list of publications is available on request.

Lectures and Presentations

Presented more than 500 lectures on various environmental engineering subjects, with more than 250 being invited as a keynote speaker.

August 13,
2014

From: Jerome
E. Paul
120 S.
Morrissey
Ave.
Santa Cruz,
CA 95062

To: Rosemary
Menard
Water
Director
City of Santa Cruz Water Department
212 Locust Street, Suite C, Santa Cruz
CA 95060 Email:
RMenard@cityofsantacruz.com

Re: Statement of Qualifications (SOQ) for Independent Review Panel (IRP)

I would like to offer my services as a member of the Independent Review Panel for the Water Supply Advisory Committee (WSAC.) In this cover letter, I will show how my qualifications provide a perfect complement and supplement to the experience of other technical panel members. I am available to work with WSAC over the coming year, glad to attend meetings, review materials and provide reports. I am willing to accept the offered compensation.

Scientific and Technical Training

In addition to my MS in Electronic Engineering, I have many years of experience in using objective criteria to evaluate and develop projects. In my professional life as an electronic and electrical engineer, I've worked in teams of a variety of technical specialists, translating the needs of the client into technical specifications to produce over 200 inventions. I've assisted many inventors in the process of moving from an idea to implementation. Unlike many specialists, I instinctively go all of the way from the big picture to the smallest level of detail in evaluating a design.

Broad knowledge and experience

I apply my scientific orientation to objective evaluation, and also bring experience with strategic planning and sales to ask the question "what does it take" to solve a problem, rather than surrendering to the first perceived flaw. I've been responsible for strategic recommendations in governmental and corporate environments. A marketing perspective helps me see ways to work with regulators

that haven't been used to date. This broad managerial experience allows me to evaluate (as you say in your RFQ) "the accuracy and appropriateness of analytical, scientific, and technical methods; the clarity and accuracy of statements of assumptions; and the appropriate characterization of the strengths and weaknesses of the analyses, especially with respect to uncertainty, data quality, or other factors that, if different, could affect the results in a significant manner." I'm a geek for all science, e.g., reading *Scientific American* cover-to-cover for 45 years. I look forward to working with the technical team to offer advice or suggestions to the WSAC regarding *all* lines of inquiry.

Substantial Practical Experience Relevant to Water Supply in Santa Cruz.

I've been studying the local water problem for over two years and have devoted over 1100 hours of engineering work to the challenge. I've read in their entirety scores of the most pertinent technical and summary reports of Santa Cruz, Soquel Creek, the County, California State Water Resources Control Board and other agencies, some 20,000 pages, including the entire desalination dEIR, Kennedy/Jenks Conjunctive Use...Phase 1, UWMPs, GWMPs, IRPs, Water Source Alternatives, Tait Street Sanding Study, and many others, and I've created a bibliography of key facts. (Piles of technical documents don't intimidate me.) I've attended over 50 meetings of Boards, Commissions and Councils regarding local water issues. I've made two presentations to the Soquel Creek Water District Board of Directors, at their invitation. I've had private interviews on the subject with numerous local authorities and experts, ranging from 1½ to 20 hours each, and voluminous e-mails. I've spoken with and translated the technical language of hydrologists, geologists, fish biologists, regulators and others.

My strategies and concepts already shared in overview form with the WSAC demonstrate my grasp of the key issues. I am prepared to collaboratively participate on this panel; I'm also confident that anyone who examines my work to date will conclude that I'm especially "open to new information and outcomes", and that I've consistently sought to create, identify and evaluate new possibilities.

Translation of technical language

I also bring an ability to translate complex issues into understandable language, which will help with community engagement. In my 500-word editorial for the *Sentinel* and numerous publications on water sources, I "demonstrated (an) ability to explain complicated topics in terms non-technical people can understand." (We don't have a water shortage problem, we've got a storage problem.) I've written user manuals and data sheets for technical equipment, procedures, criteria and policies, and I've translated the technical jargon of scores of specialties.

Skills as a technical reviewer

I wrote papers and presented at conferences on microprocessors, solving the puzzles of features optimized for the applications in which they are used. I'm dedicated to using objective criteria and processes for decision-making, without predisposition regarding

any alternative. Evaluation needs to take into account perhaps a hundred factors including demand, supply, construction costs, finance costs, operating costs, operating lifetimes, energy consumption, water rights, environmental impacts, regulatory matters, startup dates, climate change and a host of other issues, notably risks.

Supporting, advising, engaging citizen groups

One of the founders of Engineers for Water Alternatives, I joined other volunteers to discuss and publicize issues of public policy. I've collaboratively assisted in the development of community outreach and educational materials. In addition to my Sentinel article which had a large and lasting effect, I provided information for a documentary film on water alternatives, and I appeared on a radio talk show.

Regarding new outcomes, I'd like to identify and implement a set of measures where *everybody* wins, including ratepayers, owners of threatened wells, the local economy, businesses, the University, the environment--and anadromous fish populations.

Working as part of a team

My training in Nonviolent Communication (NVC), Landmark Forum, etc., helps me to be a better listener, and to be "soft on the people, hard on the problem." I enjoy maintaining cordial productive relationships.

By the way, it was a real pleasure to meet with you today. Thank you.
My Resume is attached.

Sincerely,

Jerome E. Paul, M.S.E.E.

Jerome E. Paul, M.S.E.E
831-824-4370 • jpaul@ix.netcom.com • 120 S. Morrissey, Santa Cruz CA 95062

Consultant: **Corporate Strategy**
 Technology-transfer Management
 Marketing Management
 Electrical Design Engineering Management

Unusual combination of technical and people skills. Provides translation of complex technical concepts into direct language. Develops heuristics & implements systems that support clients to identify and meet goals. Respected as brilliant, persistent, jovial, sociable professional that builds successful business relationships. Proven problem solver with experience in creating new ideas and bringing them to implementation. Assists clients to achieve remarkable results.

AREAS OF EXPERTISE

Strategic

Management

Profit & Loss

SWOT Analysis

Financial ratios & tests

Best Practices

Intellectual Property

Patents & Searches

Trademarks/Copyrights

Trade Secrets

Technology Transfer

Product Development

Make vs. Buy

Contracts

Business Law

Tracking/Supervising

PERT, GANTT, etc.

Technical Writing

Energy Saving

Applications Engineering

Training

Design Engineering

Management

Project Design

System Partitioning

Analog Design

Circuit Design

Logic Design

Simulation

Physical Layout

Design Verification

Quality Testing

Reliability Testing

Statistical Process Control

Field Applications

Speech Recognition

Sound/Recording

Gate Arrays/PLAs/PLDs

Embedded Computers

LED Applications

Power Supplies

Marketing Management

Requirements Definition

Ramification

Competitive Analysis

Market Positioning

Pricing Strategies

Distribution Channels

Product Literature

Promotions

Advertising Strategy

Sales Presentations

WATER SOURCE RESEARCH, Santa Cruz, California

2012-present

Interviewed experts at the facility, district, city, county, and state level to discover facts and describe patterns that could influence solutions. Published summaries outlining designs, strategies and principles. Published in Santa Cruz Sentinel and featured in documentary. Reviewed some 20,000 pages of technical documents; commented on EIR.

PAUL ENTERPRISES, Santa Cruz and San Jose California

1985-present

CONSULTANT

Projects have included presenting new products to potential funding sources, licensing and joint marketing, patent search, speech recognition staffing in Russia, engineering a laser level for construction grading, backlit dimmable fluorescent display, sound baffle wall, acoustic baffle vent, multi-blinds.

PROPERTY OWNER AND MANAGER

Advertising, screen tenant applicants, repairs, adapt and negotiate leases. Used CAD program to design remodel, manage contract teams, and permit process.

ELECTRONIC ENGINEERING, MARKETING AND CORPORATE STRATEGY

1970-1985

DESIGN ENGINEERING MANAGER

Working for American Microsystems, Inc. (AMI), designed over 200 products for clients in the computer, telecommunications, automotive, appliance and many other market sectors, often by coordinating the work of various technical specialists from multiple organizations. Translated highly technical and business language to be understood in a variety of contexts. Managed projects and staff, travelled extensively. Authored and managed training of customer engineers in how to design semiconductor chips. Managed quality control and distribution of some 100 software programs and databases.

TECHNOLOGY TRANSFER MANAGER

Managed technology licensing pre-agreement negotiations between officers of AMI and other companies, and managed the implementation of many programs agreed upon with competitors and large customers, including the government of India, the Brazilian national telephone company, Bosch, Iskra, Mostek and others.

CORPORATE STRATEGY DEVELOPER

Reported to the Executive VP at AMI. The company grew to \$160M annual sales.

MARKETING MANAGER

Responsible for National Semiconductor's relations with their largest customer, IBM. Sales doubled in six months.

PUBLICATIONS AND PUBLIC SPEAKING

Putting desalination into perspective

a 500-word article published in the Santa Cruz Sentinel on 2012-05-06

Conversion Factors Relevant to Santa Cruz Water Supplies

a set of spreadsheets specifying technical relations among 19 disparate units of water volume, flow rate, time, energy and elevation, followed by examples of estimated values for 28 locations in the Santa Cruz area 2012-03-04

Head Loss in Pipeline, 2012-05-09

a chart showing, among other things, the results of applying the Hazen-Williams equation to a likely Santa Cruz situation, yielding head loss estimates for various pipe diameters

"Crossfire" interview show on KSCO radio 1080,

90-minute discussion of desalination with host Michael Zwerling and fellow-guests Dr. Jason Holt and Douglas Deitch 2012-05-19

Some Thoughts and Facts,

written in collaboration with physicist Steve Newman, a 6-page report regarding the Lochquifer Alternative 2013-07-30

The Lochquifer Alternative version 5.3,

a 17-page report submitted to SCWD2 for the Seawater Desalination dEIR 2013-08-12 (version 8 is current as of 2014-08-13)

dEIR Questions from the Public -JP v2 2013-08-12,

10 pages of analysis and ideas submitted to SCWD2 for the Seawater Desalination dEIR

Proposal Phase 1,

a 20-minute televised invited speech given to the Soquel Creek Water District Board of Directors 2013-11-05

70 Ideas for Water Supply,

a confidential presentation under nondisclosure agreement to the president and one other member of the Soquel Creek Water District Board of Directors, their General Manager and the Acting Director of the Santa Cruz Water Department 2013-12-10

WSAC-invited Strategy and Idea Overviews by J Paul 2014-07-28 v1-1,

22 pages containing overviews of 41 of J. Paul's ideas regarding the Santa Cruz area water supply; 2-page limit per idea

various informal speaking engagements, e.g., to a realtors' association, neighborhood groups and other meetings, as well as brief public comments to councils and boards

How to Sell,

S2000 User Manual, for an embedded microprocessor

Integrated Circuit Design, a computer chip design course for engineers

Numerous electronic product data sheets & speeches about them at technical conferences

Many proprietary documents

Some 200 music arrangements performed publicly; many have been published

EDUCATION, TRAINING, LICENSES

Windows programs: Microsoft Office (Word, Excel, PowerPoint), relational databases

Finale, Sonar, CAD, CADENCE, CAE, SPICE, many other design tools

Design seminars regarding various types of integrated circuits

Corporate sales training courses

Landmark Forum, Life Training, Listening Skills, Nonviolent Communication

MSEE, University of Illinois, 1974, emphasis in computer speech recognition

Brian L. Ramaley, PE
Independent Civil/Environmental Engineer
408 Green Tree Cove
Newport News, Virginia 23606
(757) 339-0798
bramaley@gmail.com

City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, CA 95060
Attention: Rosemary Menard
(delivered via email)

August 13, 2014

To whom it may concern:

In response to your request for proposals for members of an Independent Review Panel I would like to offer this Statement of Qualifications consisting of this letter of transmittal and my attached resume as an expression of interest. I have worked previously in many similar settings and am acquainted with Bob Raucher and Rosemary Menard from work on Federal Advisory Committees and other related projects over the last 20 years. Having worked for many years both as a utility director and as a consulting engineer I believe I am well-qualified to assist the Water Supply Advisory Committee in dealing with its team of consultants and others. Past roles or assignments that prepare me for this work in particular include:

- serving as the project engineer in the analysis of alternatives for wastewater reuse in the Orange and Los Angeles Counties Reuse Study (OLAC) study 25 years ago, and spending seven years in California working as a consultant with a number of utilities throughout the State;
- serving on and chairing the National Drinking Water Advisory Council from 2001 to 2007;
- chairing a Regional Raw Water Supply Group for more than ten years while Director of Newport News Waterworks in Virginia;
- testifying to Congress on three occasions related to water quality regulations and system security;
- presenting to elected officials, citizen groups, state boards and national/international associations on matters related to water supply, water quality regulations, infrastructure security, development of new standards and the inherent risk/cost tradeoffs of new technologies and regulatory standards on dozens of occasions;
- serving as technical editor for the Journal of the American Water Works Peer Review Editorial Board for the past five years;
- providing advice to utilities, both public and private, for development and design of all aspects of water supply, treatment, conservation, and delivery for nearly 40 years; and,
- extensive experience as a civil/environmental engineer dealing with impacts of climate change on coastal water supplies, watersheds, groundwater, river, lake and stream systems, and essentially all aspects of drinking water treatment, operations and management of water utilities.

I believe a review of my resume will confirm my qualifications for the IRP. I am available to provide the needed services over the coming year and am willing to travel to Santa Cruz for an occasional meeting. Please contact me if you have any questions regarding this proposal. I look to hearing from you.

Sincerely,

Brian L. Ramaley

BRIAN L. RAMALEY, P.E.
Independent Civil/Environmental Engineer
408 Green Tree Cove
Newport News, VA 23606
(757) 339-0798
bramaley@gmail.com

EDUCATION

M.S., Environmental Engineering, University of North Carolina, School of Public Health, 1979
B.S., Civil Engineering, Virginia Polytechnic Institute and State University, 1974
American Water Works Association, Water Utility Executive Management Institute, 1991
Senior Executive Institute, Weldon Cooper Center for Public Service, University of Virginia, 1997

REGISTRATION

Professional Engineer in Virginia (previously registered in CA, HI, AR and UT)

HONORS AND APPOINTMENTS

Member, EPA's National Drinking Water Advisory Council (NDWAC) (2001-2007), Chair (2004-2007)
Engineer of the Year, Tidewater Chapter, Virginia Society of Professional Engineers 2006
Distinguished Alumnus, UNC School of Public Health, Environmental Sciences and Engineering, 2004
President's Award, 2000 and 1997, Association of Metropolitan Water Agencies (AMWA)
Meritorious Service Award, 1993, AMWA
Fuller Award, 2003, Virginia Section AWWA
Chair, National Water Sector Critical Infrastructure Protection Advisory Committee (2001-2003)
Delegate, U.S./Australia Bilateral on Critical Infrastructure Protection (April 2004)
Federal Advisory Committee Member on Microbial and Disinfection Byproducts for AMWA (1996 to 2002)
Member, AMWA Board of Directors (1996-present), Treas. (2003-2005), VP (2005-2007), President (2007- 2009)
Director, Virginia Section of American Water Works Association (AWWA) (2009-2012)
Member, Water Research Foundation (formerly AwwaRF) Board of Trustees (2000-2006)
Member, Water Information Sharing and Analysis Center (ISAC) Board of Managers (2002-2007)
Member, Virginia State Water Policy Technical Advisory Committee (2002-2003)
Member, NDWAC Contaminant Candidate List Workgroup (2002-2004)
Past-chair, AMWA Regulatory Oversight Committee
Past-chair, Virginia Section AWWA Water Quality Committee and Water Utility Committee
Past-chair, Virginia Section AWWA (2006-07); Director (2009-12)
Technical Support Committee and Technologies Workgroup, MDBP Regulatory Negotiation Process, 1992-1993
Member, Dean's Advisory Board, Old Dominion University, College of Engineering & Technology, 1997-1998
Member, Alumni Board, Department of Civil and Environmental Engineering, Virginia Tech, 2007-Present
Journal American Water Works Association, Peer Review Editorial Board – Technical Editor for Utility Management and Operations, 2010-2014

SUMMARY

Mr. Ramaley has 40 years' experience in drinking water supply, treatment and distribution systems. From April 1994 to June 2013, he was director of one of the largest drinking water utilities in Virginia, supplying water to more than 400,000 Virginians. A civil/environmental engineer by training, particular emphases of his work have been in water treatment facilities, alternative water supply/treatment systems, water treatment and distribution technologies and modeling, and water utility operations and management. He has worked in staff, management and leadership positions as a consultant and with large municipal water and wastewater organizations. He has directed raw water source selection studies, water distribution system analyses, water quality studies, rate studies, corrosion control investigations, treatment plant rehabilitation projects, preliminary design, detailed design and construction supervision of water treatment plants, pipelines, and other water supply projects. He has served as a manager with the cities of Newport News, Virginia, and Durham, North Carolina, and in consulting while with the international firm James M. Montgomery, Consulting Engineers, Inc. (now known as MWH). From 1992 until 2000, he worked with EPA, environmental organizations, state regulators and many others to develop new drinking water regulations, both in a regulatory negotiation process and as a member of EPA's Federal Advisory Committee for microbial contaminants and disinfection byproducts. Since January 2001, he has served in a variety of leadership roles related to critical infrastructure for the Nation's water sector, including serving as a member of the WaterISAC Board of Managers, Chairing the CIP Advisory Group, and representing the U.S. water industry at the U.S./Australia Bilateral

in 2004. In this role, Mr. Ramaley has helped organize, coordinate and review various programs and projects aimed at making the water supply community more secure from attack. Mr. Ramaley was named Chairperson of EPA's National Drinking Water Advisory Council (NDWAC) in 2004. He has testified to Congress on three occasions on water quality and chemical security issues, and has presented on issues related to climate change and its impacts on water supplies in coastal communities, at international forums. Another area of interest is enhancing organizational performance through organizational development strategies and various benchmarking techniques. He is a credentialed Envision Sustainability Professional (ENV SP) through the Institute for Sustainable Infrastructure.

EXPERIENCE

CDM SMITH, 2013-2014

From June 2013 until August 2014 Mr. Ramaley worked as a Senior Technical Consultant for CDM Smith, a large international consulting firm providing services to water and wastewater clients (among others) throughout the US and abroad. He worked on a variety of projects including water system master planning for Detroit and a design/build water treatment plant for Annapolis, MD.

CITY OF NEWPORT NEWS DEPARTMENT OF PUBLIC UTILITIES (WATERWORKS), 1989 - 2013

Mr. Ramaley was Director of Newport News Waterworks from 1994 until his retirement from that position on May 31, 2013. He was responsible for leadership and direction of a 360-person organization, which delivers drinking water to more than 400,000 people in five jurisdictions in southeastern Virginia. Waterworks comprises six divisions, operates two major treatment complexes, five raw water reservoirs with one major river source and a groundwater desalination plant, 12,000 acres of watershed property, more than 1700 miles of pipeline and 128,000 metered connections.

Mr. Ramaley was Acting Assistant Director of the Waterworks from 1993 to 1994. In this position he had oversight and management responsibility for a wide range of activities within the department, including personnel actions.

Mr. Ramaley was the Water Production Manager for the Waterworks from 1989 to 1994. He was responsible for the management and operation of the raw water system, the Harwood's Mill and Lee Hall water treatment plants, the Water Quality Control Laboratory and the Water Production Division. He was responsible for all aspects of Waterworks' operations relative to production of drinking water, as well as ensuring that water met the highest quality standards. This included project oversight, personnel management, budgeting, facility planning and engineering, regulatory reporting, and public information.

While with Newport News Waterworks, Mr. Ramaley has overseen implementation or planning and design for major projects with over \$300 million in total project costs, including:

- Reorganization of the department from a more hierarchical structure keyed to professional disciplines to a flatter, integrated structure based on major functional areas of responsibilities.
- Proposed development of a new raw water source (river intake and reservoir) – through permitting/design.
- Residuals handling and land application facilities for dewatered alum residuals – complete and operating.
- A new 60 million gallon per day (mgd) surface water treatment plant – complete and operating.
- A six-mgd, brackish groundwater, reverse osmosis desalination plant – complete and operating since 1998.
- Conversion of primary disinfection with free chlorine to ozone/chloramination – complete and operating.

- A new consolidated operations and maintenance center – complete in May 2002.
- Utility customer information/billing system conversion from mainframe based to SAP.

JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC., 1979 -1989

Principal Engineer and Southeast Regional Water Product Line Director - Mr. Ramaley was employed by James M. Montgomery, Consulting Engineers, Inc. (JMM, now known as MWH) for more than ten years. From 1986 to 1989 he was located in JMM's Reston, Virginia office. He was responsible for overseeing all waterrelated projects in JMM's Southeast Region. This included various aspects of project management and technical direction for a wide range of projects, including water source selection and water system master planning, facility planning, water supply and water quality studies, treatment plant design, construction services and operational consulting.

Principal Engineer and Division Manager, Water Treatment Division, Pasadena, California - Mr. Ramaley was manager of the Water Treatment Division in JMM's headquarters in Pasadena for three years. Mr. Ramaley was involved with dozens of projects; new water treatment plants with a total installed capacity of over 100 million gallons per day (mgd) were completed under his supervision.

Specific Project Assignments- Example projects for which Mr. Ramaley was responsible as project manager or project oversight include: a Master Planning Study and plant predesign for one of the largest water agencies in Arkansas; planning, design and construction of structures and life support for the Marine Mammal Pavilion at the National Aquarium in Baltimore; two reverse osmosis, membrane softening and ozone plants in Florida; upgrade of telemetry and instrumentation for a large Virginia utility; rehabilitative/expansion studies for a 58 mgd water treatment plant in suburban Atlanta; a 15 mgd direct filtration water treatment plant in California; planning and design of a 68 mgd water treatment plant in Southern California; an 8 mgd direct filtration plant on the island of Maui, Hawaii; analysis of alternatives for reuse of reclaimed wastewater in the Los Angeles basin; and various water treatment and supply projects in Arizona, Utah, California, Washington (joint research project with City for USEPA Office of Drinking Water, Cincinnati), New Jersey and California

CITY OF DURHAM, NORTH CAROLINA, 1974 - 1977

Civil Engineer, Water and Sewer Engineering Department - Mr. Ramaley served for three years as a civil engineer in the Water and Sewer Engineering Department, with responsibilities for water and sewer master planning.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, 1977 - 1979

While a graduate student in the Water Resources Engineering program of the School of Public Health, Mr. Ramaley participated in a number of research projects involving modeling and measuring particle interactions in water treatment under the direction of Dr. Charles O'Melia.

ORGANIZATIONS

American Society of Civil Engineers, Member
 American Water Works Association, Life Member

PUBLICATIONS AND PRESENTATIONS (partial)

Water Treatment: Principles and Design, James M. Montgomery, Consulting Engineers, Inc., Coauthor, Wiley, 1985

Ramaley, B.L., Wright, W.C., Lawler, D.F., and O'Melia, C.R., "Integral Water Treatment Plant Design: Sensitivity of Plant Performance to Variations in Design." Paper presented at the 1979 AWWA National Conference, San Francisco, CA, June 1979.

Wright, W.C., Ramaley, B.L., and Lawler, D.F., "Measurement and Effects of Particle Size Distributions in Water Treatment Plants." Paper presented at the 1979 AWWA National Conference, San Francisco, CA, June 1979.

Russell, L.L., and Ramaley, B.L., "Treatment and Disposal of Hazardous Wastes from Tank Truck Washing." Paper presented at the 35th annual Purdue Industrial Waste Conference, West Lafayette, Indiana, May 1980.

Ramaley, B.L., Treweek, G.P., Grant, F., and Horne, E.W., "Reuse Alternatives in the Los Angeles Basin." Paper presented at the 1980 American Society of Civil Engineers Environmental Engineering Division Annual Conference, New York, New York, July 1980.

Ramaley, B.L., Lawler, D.F., Wright, W.C., and O'Melia, C.R., "Integral Analysis of Water Plant Performance." Journal of the Environmental Engineering Division of the American Society of Civil Engineers, June 1981.

Ramaley, B.L., Davis, W.E., Jr., and Tate, C.H., "Assessing Deterioration of AsbestosCement Pipe." Paper presented at the Water Quality Technology Conference of the AWWA, Seattle, Washington, December 1981.

Ramaley, B.L., and Kawamura, S., "State Project Water in Southern California: Treatment Considerations and Cost Implications." Paper presented at the 1983 Fall CaliforniaNevada AWWA Section Conference, Anaheim, California, October 1983.

Ramaley, B.L., and Kreft, P.H., "Package Water Treatment Plants for SmallScale Applications: Options and Economics." Paper presented at the 1985 Fall CaliforniaNevada AWWA Section Conference, San Diego, California, October 1985.

Ramaley, B.L., "Meeting the New Turbidity Standard." Paper presented at the 53rd annual meeting of the Virginia Section of the AWWA, Richmond, Virginia, October 1986.

Jacangelo, J., and Ramaley, B.L., "Disinfection ByProducts, What are They?" Paper presented at Water Quality Seminar sponsored by Virginia Section AWWA, Hampton, Virginia, April 1989.

Williams, S.L., Ramaley, B.L., Leininger, E.M., Manning, D.K., and Tilchin, M.J., "Analytical Studies of Land Application of Alum Residuals"; Proceedings of the AWWA Annual Water Quality Technology Conference, San Diego, CA, November 1990.

Ramaley, B.L., Leininger, E.M., and Williams, S.L., "The Decision to Land Apply Alum Treatment Residuals - A Case Study"; Proceedings of AWWA/WEF Joint Specialty Conference on Residuals, Raleigh, NC, August 1991.

M'Coy, W.S. and Ramaley, B.L., "Water Treatment Residuals: Unique Solution for Newport News," Virginia Review, Sept./Oct. 1992, Vol. 70, No.8

Ramaley, B.L., "Monitoring and Control Experience Under the Lead and Copper Rule," Journal AWWA, February 1993.

Ramaley, B.L., "Capital Outlay – Large Utilities – How the Process Works," Presentation at the Virginia Section AWWA Annual Conference, Richmond, VA, October, 1997

Ramaley, B.L., "EPA Rules – D/DBP and IESWTR: What Does This Mean For ME?" Presentation at the Annual Conference of the Virginia Section AWWA, Norfolk, VA, October 1999.

Ramaley, B.L., "Regulation of Disinfection Byproducts in Drinking Water", Continuing Education Teleconference Sponsored by Virginia Tech, December 20, 2000.

Ramaley, B.L., "Recent Developments in Water Sector Infrastructure Protection", Paper presented at the 2001 AWWA Annual Conference and Exhibition, Washington, D.C., June 2001.

Ramaley, B. L., "Water Sector Security – Lessons Learned from Vulnerability Assessments and WaterISAC Status", Presentation at the 3rd US/Australia Bilateral on Critical Infrastructure Protection, Canberra, Australia, April 2004.

Ramaley, B. L., "Impact of Climate Change on Water Supplies of Coastal Communities," Presentation at World Water Week, Stockholm International Water Institute, Stockholm, Sweden, August 2008.

Ramaley, B. L., "AMWA Water Security Efforts," Presentation at W-SMART workshop, Lisbon, Portugal, March 2009.

Ramaley, B. L., "Using the Higher Performance Organization Model and Various Benchmarking Techniques to Enhance Performance," Presentation at AMWA-W-SMART workshop, Washington, DC, March 2010.

Brandt, Peiffer, and Ramaley, B. L., "Balancing Fixed Costs and Revenues," Presentation at AWWA Annual Conference and Exhibition (ACE), Dallas, TX, June 2012.

Ramaley, B.L., "Climate Change Planning and Impacts on Water Supply," Presentation at Water Research joint sponsored workshop at College of William and Mary, September 2012.

William, "Bill", H. Smallman, P.E.
11765 Edgewood Drive
Felton, CA 95018
(831) 335-2911



August 14th, 2014

Rosemary Menard
Water Director
City of Santa Cruz Water Department
212 Locust Street, Suite C,
Santa Cruz CA 95060

Dear Ms. Menard and Water Supply Advisory Committee Members,

RE: Statement of Qualifications

I am extremely excited and pleased for the opportunity to submit my Statement of Qualifications, SOQ, for your review. I submit the following descriptions for the three topics required:

How I Fit Panel Characteristics: On the three examples of members of an effective panel in the Request for Qualifications letter, (part 2- B "Panel Characteristics"), I do fit in the Civil Engineer category extremely well, but also have much experience in the other two. My qualifications in each area are:

- **Environmentalism:** I am a passionate Environmentalist. Before choosing Civil Engineering as a major, I completed numerous college level science and environmental courses. I also am a supporter of the Sempervirens Group, Santa Cruz County Land Trust, Lompico Watershed Conservancy, and the Valley Women's Club of San Lorenzo Valley Environmental Committee.
- **Civil Engineer:** I am a licensed Civil Engineer and have 25 years' experience entirely in Water Resources as detailed on the attached curriculum vitae.
- **Public Policy:** I have served as Director for the Lompico County Water District, LCWD, for six years. I was elected in 2008, and re-elected in 2012, as the top vote getter in both elections. I'm proud to say of the accomplishments during this time, amid much controversy, of successfully moving forward to merging with the San Lorenzo Valley Water District. This experience has taught me how to work and communicate effectively in public meetings.

My Willingness to Accept Offered Compensation: The offered compensation is generous and highly appreciated, and I would be extremely thankful to accept it to help compensate for time spent away from my family and career.

My Availability: I work in San Jose. I am very involved with attending evening public meetings in Santa Cruz County, so I am always available for evening meetings after 6pm except for the third Tuesday, which is Lompico County Water District's regular meeting time. I would be available to attend every regular meeting and any special meetings as necessary.

More detail in regard to work experience and education is provided on the attached curriculum vitae.

Sincerely,



Bill Smallman, P.E.

CURRICULUM VITAE **BILL SMALLMAN, P.E.**

Education: Bachelor of Science in Civil Engineering, California State University at Chico, CA, May 1989.

Licensure: Registered Civil P.E. with the State of California, License #77329. For a number of years, the Board of Professional Engineers and Land Surveyors, BOPELS, would not allow me to take the P.E. exams stating that my work experience was not qualifying. Most of my work experience would fall under the heading of "Supervision of the Construction of Engineering Structures", clearly stated as qualifying in BOPELS documents. I was successful in arguing this against the Attorney General's office and had the issue dismissed and I passed the exam, after 20 years out of college, on the first time, with the exception I did have to take the Surveying portion twice.

Work Experience: The following types of water resources projects I have directly been involved with either as Estimator, Project Manager, Project Engineer, or Design-Build Engineer for over 25 years:

1. **Penn Valley Sewage Collection and Treatment Plant:** This was the first "S.T.E.P", (Septic Tank Effluent Pump), project in California. It was a two year project that installed new septic tanks which would pump water to a treatment plant rather than going into leech fields.
2. **San Lucas Sewer Collection + Treatment Plant:** This was a conventional system installed just south of King City. Like Penn Valley the treated sewage water is used for irrigation.
3. **Sewer Pipelines:** I worked on several large sewer pipeline projects in Eureka, San Francisco, Cameron Park, and others after item #2.
4. **Turlock WWTP Digester #5 Addition:** This added another digester and a lot of related piping connections and pumping equipment.
5. **Santa Cruz Wastewater Treatment Plant:** I worked the first year of the major 1994 upgrade of the Santa Cruz Plant for Humphrey Construction, and was let go in favor of another employee. This company went out of business after this project.
6. **Water:** It is impossible to make this list in perfect chronological order, but most of my experience for the past 15 years has been in potable water. I work presently for Lewis and Tibbitts Inc.. I am one of the most qualified senior construction estimators in the greater Bay Area. Our main client that I have been in charge with is the San Jose Water Company. I have been directly involved with just about every type of their infrastructure that they have. I believe they are the largest, (in one self-contained area), water agency in California. We also work all over the Bay Area. And have been responsible for several projects in Santa Cruz County from initial estimate to completion.

CURRICULUM VITAE BILL SMALLMAN, P.E.

Recent Accomplishments: I developed the most comprehensive and best plan to improve water infrastructure and incentives for conservation improvements for the entire County of Santa Cruz. I created a website describing this plan which can be viewed on www.SCWaterSolutions.com. The five main categories are:

1. **Recycle:** This is by far the best plan to recycle and distribute 100% of the wastewater from both the Santa Cruz and Watsonville wastewater treatment plants. There is no better plan, nor will there be from anyone else, that will ever compare. It is the most cost effective plan providing numerous and highly beneficial assets to both the economy and the environment. It builds a highly desired bike path and ends huge amounts of pollution into the Bay. It creates a highly beneficial green energy source in the name of solar panel paving blocks. It also provides a means to build an emergency water connection to "Deep Water Desal".
2. **Storm Aquarries:** This is the best plan to solve all water issues in San Lorenzo Valley and Scotts Valley. It restores the Santa Margarita Ground Water Basin. It restores the fish habitat. It creates extremely valuable recreational areas out of abandoned sand quarries. Additional water can be supplied to Santa Cruz and Soquel, as needed via interconnect pipelines. In addition, it could also make the levees through Santa Cruz obsolete, and allow for more aesthetic improvements along the river.
3. **Water Conservation Savings Accounts:** This is means to create high incentives for property owners to add water conservation improvements on their homes. Water agencies are to create special accounts for its customers, which can only be used for conservation improvement(s). This places more money into the public's hands leading to a widespread effective use of water.
4. **Reservoirs:** Environmentalists will eventually come to the realization that not building additional reservoirs did not help save the fish habitat, and what we have been doing the past 30 years is far worse by depleting the ground water basin and polluting the streams with septic and silt. They will also become aware that, with the current population, this water is needed during droughts, as with the case of Loch Lomond. I chose 4 possible sites spread out in the County. Like Loch Lomond, they would be an emergency water supply, beautiful outdoor recreational areas, and percolate additional water into the groundwater basin.
5. **Water Skate Parks:** This idea is storm water collection and treatment like the "Storm Aquarry" plan in areas not close to large abandoned quarries. The settling basin dual as a skateboard park outside of the rainy season. It also treats storm water, but all the way to a potable degree and stores the water in conventional water storage tanks. These are located on Soquel Creek and the Pajaro River.

Rosemary Menard,

I would like to be considered as a member of the Independent Review Panel to assist the City of Santa Cruz's Water Supply Advisory Committee in their assessment of water supply alternatives. Described below is a summary of my background and how it addresses the request identified in the SOQ.

I have broad experience in the water industry having held a number of key positions at the Metropolitan Water District of Southern California, where I was employed for nearly 29 years before retiring earlier this year. I have managed the departments of Engineering, Water Quality, Real Property, Information Technology, Administrative Services, Human Resources, and the Small Business Outreach Program. Additionally, I oversaw the Capital Improvement Program, Energy Management Program, and restructuring of the conservation credits program. During my career, I managed a capital and O&M budget of more than \$600 M per year and over 700 staff. This career has provided me with a broad experience related to a number of water supply, treatment, quality, and business operation issues. In my capacity, I also served as liaison to several board committees where my role was to communicate complex issues in a manner that could be understood by the broad public. For years, I was co-host of Metropolitan's cable video news show, "Straight from the Tap", designed to convey water issues to the community.

In addition to my career at Metropolitan, I am the immediate past Chair of the Water Research Foundation's (WRF) Board of Trustees. The WRF is the world's premier research organization for water and represents the collective research interests of approximately 1,000 water utilities across the United States and North America. This unique experience has afforded me the opportunity to address many of the pressing needs related to the water community at large, including financial, supply, treatment and emerging technologies, regulatory, public communication, and project delivery issues. The objective of the WRF is to provide unbiased, objective information to assist its members in making decisions relating to critical and emerging issues.

I was also on the Board of Directors of the American Water Works Association, which represents the broad interests of the water industry through its 50,000 plus members.

I was appointed as the water industry representative to the National Academy of Sciences National Research Council to provide an independent review of priorities for the United States Environmental Protection Agency.

Academically, I possess a BA and Ph.D. Degree in the sciences from California universities (San Diego State University and UC Irvine) where my emphasis was on water related issues. This enables me to review, comprehend, and question complex and technical material.

I understand that the compensation is limited to an Honorarium and that this assignment will occur over the next 6 to 9 months. Both of these terms are acceptable.

In summary, I believe my broad background experience in California and national water issues, coupled with strong academic credentials, will provide the City of Santa Cruz an unbiased and

objective support in their search for sustainable water supplies. Please let me know if you require any additional information.

Very truly yours,

Roy L. Wolfe, Ph.D.
2830 Cedarglen Ct
Fullerton, CA 92835
Roylwolfe@aol.com
(714) 872-1744

Roy L. Wolfe, Ph.D.

2830 Cedarglen Ct.

Fullerton, Ca 92835

Education

1980 BA San Diego State University (Zoology)

1985 PhD University of California Irvine (emphasis in Environmental Analysis)

Professional Experience and Employment

Dr. Wolfe has held a number of executive management positions at the Metropolitan Water District of Southern California (MWD) and in the water community. In his nearly 29 years at MWD, he has overseen the Engineering, Water Quality, Information Technology, Real Property, Human Resources, and Administrative Services departments. In addition, he has managed the \$500 M/year Capital Improvement Program, the Energy Management Program, Small Business Outreach, a restructuring of the conservation credits program, as well as real property and labor negotiations. He has managed a staff of over 700 employees with an annual O&M budget of \$60M. Prior to his retirement from Metropolitan in April 2014, Dr. Wolfe also served on a number of boards in the water industry at the state and national level, including the Water Research Foundation, National Academy of Sciences National Research Council, American Water Works Association, Water Utility Council, and the California Urban Water Agencies. Dr. Wolfe is the immediate past Chair of the Water Research Foundation, the worlds foremost organization in providing onjective research on a myriad of water related issues to its more than 1,000 subscribing water utilities in North America. Dr. Wolfe has more than 70 scientific publications and given numerous presentations regarding water related topics to a broad range of audiences.

2011-April 2014 Metropolitan Water District of Southern California

Group Manager of Business and Technology

- Oversaw departments of Administrative Services, Information Technology, Annexations, Business Outreach, and Grants
- Developed Innovative Public/Private Partnership on New Techology for the Water Industry
- Chairman, Board of Trustees, Water Research Foundation (2010-2013)
- Board Member, American Water Works Association (2010-2013)

- 1999-2010** **Metropolitan Water District of Southern California**
- Group Manager of Corporate Resources**
- Managed Engineering, Business Services, Information Technology, Human Resources, Real Property, and Human Resources
 - Developed and Oversaw the Capital Improvement Program
 - Vice Chair, WRF Board of Trustees (2007-2010)
 - Chair, California Urban Water Agencies' Water Quality Committee
 - Appointed to National Academy Sciences Panel on EPA Research
 - Appointed to Governor of California's Panel on MTBE in water
- 1998-1999** **Executive Assistant to the General Manager**
- Oversaw development of Metropolitan's Board of Directors Strategic Visioning Process.
- 1993-1998** **Associate Director of Water Quality**
- Managed day to day activities of over 100 staff in Water Quality and the central laboratory and research for over 300,000 analyses per year.
- 1985-1993** **Senior and Principal Microbiologist**
- Managed compliance and research activities of the microbiology, reservoir management and source water protection programs.

Selected Publications and Presentations

Wolfe, R.L. MWD Challenges and Strategies for a Sustainable Future. WEFTEC, Los Angeles 2011 and *Water Services Association of Australia Conference, 2012.*

Wolfe, R.L. Impacts of Global Climate Change on the Southern California Water Supplies, Presented at Congressional Committee on Climate Change and the Water Industry, 2008, Washington, DC.

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