



Resolute Marine Energy
Clean Power From Ocean Waves

3 Post Office Square, 3rd floor
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Phone: (1) 617 600-3050
www.resolutemarine.com

Boston, May 14th 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

Re: H.R. 745, Reauthorization of water desalination act of 1996 – Support

Dear Congresswoman Napolitano,

By the present letter, we would like to inform you that Resolute Marine Energy (RME) Board of Directors has unanimously voted to support your bill, H.R. 745, Reauthorization of Water Desalination Act of 1996, which authorizes the renewal of the Water Desalination Act of 1996 and fund federal research and development projects on desalination through 2018.

H.R. 745 recognizes the need to utilize all available tools to address our nation's water supply situation and the growing problem of water scarcity in the US will not be solved without dramatic technological breakthroughs.

Since 2007, RME has been developing the world's first wave-driven desalination system (Wave2O™) that can cost-effectively provide fresh water to island or coastal communities in the US and abroad.

In recognition of its work in this field, RME was named one of the top 100 innovators in the marine technology sector by Marine Technology Reporter magazine in both 2009 and 2010 and has received numerous awards including Global Entrepreneurship Week (2010), MassChallenge (2011), Global Idea Competition (2011), and prize "Engineer of the year in sustainable development" by Usine Nouvelle (2012).

We expect our first pilot to take place within a year, paving the way for commercialization and job creation in the US. This would not have been possible without the sponsor from organizations such as the Department of Interior – Bureau of Reclamation supported by the Water Desalination Act of 1996.

We are grateful for your leadership on water issues,

Olivier Ceberito, COO

Isabel C. Escobar, Ph.D.
Professor of Chemical & Environmental Engineering
The University of Toledo
(419) 530-8267 (office)
Isabel.Escobar@utoledo.edu

RE: Letter in support of funding for Desalination research

To Whom It May Concern:

I am a full professor in the Department of Chemical and Environmental Engineering at the University of Toledo, Ohio. In 1997, I was awarded an Environmental Protection Agency (EPA) Science To Achieve Results (STAR) Fellow. In 2000, I received a Ph.D. degree in Environmental Engineering from the University of Central Florida. That same year, I joined the Chemical and Environmental Engineering Department at The University of Toledo. In 2009, I became the Associate Editor of *Environmental Progress and Sustainable Energy Journal*, a quarterly publication of the American Institute of Chemical Engineers. I have edited two books in the field of desalination, water reuse and membrane separations. The first one, I edited with Professor Andrea Schaefer (University of Edinburgh, Scotland) a book entitled *Sustainable Water for the Future—Water Recycling versus Desalination* (Elsevier Science, The Netherlands: 2009. ISBN: 9780444531155). The second book was edited with Professor Bart Van der Bruggen (K.U. Leuven, Belgium) entitled *Modern Applications in Membrane Science and Technology* (ACS Symposium Series; American Chemical Society: Washington, DC, 2011. ISBN: 9780841226180). I have received over \$1 million in research funding from US sources, I have one patent, and have published/submitted over 50 articles in peer-reviewed journals. With my background, I would like to express my support of continuing funding of the Desalination Water Purification Program of the US Bureau of Reclamation.

Existing water supplies may be limited in quantity or quality for meeting the increasing demands from population growth and industry expansion. In water scarce regions, two sources of water are normally available: sewage and seawater. In the last decade, the reclamation of effluents has developed rapidly as an alternative to seawater desalination for irrigation and indirect potable water reuse. The key in water reuse is to first treat the sewage biologically followed by membrane filtration to remove organic matter and suspended solids. For seawater desalination, pre-treatment must be provided if the source is open seawater. Desalination has now been practiced on a large scale for more than 50 years, and in recent decades, membrane desalination has enjoyed tremendous success. Through continual improvements, the major technologies are now efficient and reliable. However, they are still too expensive to address the needs for additional supplies of fresh water in of many parts of the world. Despite its success, desalination, especially when using membranes, still faces numerous challenges, and among the major ones are the following: membrane fouling and cleaning, pretreatment, brine disposal, water quality, contaminant removal and power consumption.

Water reclamation, recycling, and reuse address depleted water supply challenges by creating new sources of high-quality water supplies. One of the most significant benefits of water reuse is the value created by the inclusion of water reuse in integrated water resources planning and other

aspects of water policy and the implementation of water projects resulting in the long-term sustainability of water supplies. Membrane bioreactors (MBR) have been truly a revolutionary membrane technology that has increased the efficiency of water reuse facilities. Although water reclamation and reuse is practiced in many countries around the world, current levels of reuse constitute a small fraction of the total volume of municipal and industrial effluent generated. Among the reasons for this are the following: monitoring, pretreatment, and contaminant removal.

The most significant operating costs of desalination are associated with energy costs. Within energy costs, 71% originate from pumps and turbines. Therefore, maintaining a high flux to the membrane unit while avoiding fouling can decrease energy costs. In response to water shortage problems in the long run, desalination of sea and brackish water along with wastewater reuse will be the only solutions in many regions of the world, otherwise, overpopulation in unaffected areas may arise. Ultimately, dwindling freshwater resources, more stringent water treatment standards, and the need to augment existing water supplies requires continuing funding to desalination and water reuse research, as provided by the Desalination Water Purification Program of the US Bureau of Reclamation.

If you have any questions, please feel free to contact me by phone at (419) 530-8267 (office) or (419) 351-1097 (home), or via e-mail at isabel.escobar@utoledo.edu.

Sincerely,



Isabel C. Escobar, Ph.D.
Professor of Chemical & Environmental Engineering
The University of Toledo
Toledo, OH 43606-3390



KII, Inc/Suns River
122 Hardwood Ct.
Many, LA, USA 71449
www.suns-river.com

May 14, 2013

The Honorable Grace Napolitano
US House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

Re: REAUTHORIZATION OF WATER DESALINATION ACT OF 1996 - SUPPORT

Dear Congresswoman Napolitano:

KII, Inc/Suns River fully supports H.R. 745, the reauthorization of the Desalination Act of 1996 and the vital national interests it serves. This key legislation authorizes the renewal of the Water Desalination Act of 1996 and funds federal and joint research and development projects on desalination through 2018.

H.R. 745 clearly recognizes the need to improve and utilize all available tools to address the nation's ever more scarce and over drawn sources of safe, local water for all uses. The several supplies of brackish groundwater offer needed supplies and efficient desalination with low carbon footprint is the key to making that water available.

Our work under the The Desalination and Water Purification Research & Development (DWPR) Program in 2012 has already advanced the use of 99% solar energy to produce pure water in commercial quantities. Further work is needed to make this technology available to the many in the United States who now pay dearly to haul water for their use. This kind of government/industry cooperation is ideal to make federal funds go further while assuring critical needs are being met.

Your leadership on keeping water issues at the forefront is very much appreciated. We fully support measures like H.R. 745 as a further step to assure local water self-sufficiency and sustainability.

Best Regards,

A handwritten signature in black ink, appearing to read "Hill Kemp".

Hill Kemp, Inventor and CEO



NC STATE UNIVERSITY

May 15, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, DC 20515

Office of the Dean
Campus Box 8001
Raleigh, NC 27695-8001

919 515 2883 (phone)
919 515 7231 (fax)

RE: H.R. 745, REAUTHORIZATION OF WATER DESALINATION ACT OF 1996 – SUPPORT

Dear Congresswoman Napolitano:

I am writing to you in support of H.R. 745, Reauthorization of Water Desalination Act of 1996. As the Interim Associate Dean for Research in the College of Natural Resources at NC State, the importance of water as a natural resource is clearly evident. In order to meet society's growing demand for water, it is critical that we find ways to use seawater, brackish water and other salt containing water to compliment the fresh water resources that we have. We must rely increasingly on these water resources to provide the additional water demanded by urban and rural communities, water for industrial applications, and water for agriculture throughout the country. While our forests and natural areas provide many ecological services, including clean air, and fresh water, these services are limited. The demand for water has out stripped the capacity of these natural areas to effectively provide water in a sustainable manner. Furthermore, many industrial wastewaters need to be remediated by having salts and heavy metals removed before being returning to the water cycle.

The Water Desalination Act of 1996 has had a clear and direct impact on the water sustainability, the economy, energy security, and the environmental health of the nation in many ways, including the company, Tethis, formed as a result of research conducted at NC State by me and Dr. Richard Venditti. Our research has focused on creating materials that will desalinate water and remove heavy metals using no energy at the point of remediation/desalination. Together, we received a grant, Production and Characterization of Inexpensive Renewable Based Material for Water Desalination and Heavy Metal Removal, funded through a previous reauthorization of the Water Desalination Act of 1996. The research conducted with this grant has led directly to the creation of an independent start-up company (Tethis) that is commercializing this desalination technology for treatment of salinated water from the natural gas industry as well as other industries.

NC State appreciates your leadership on this issue. NC State supports funding of water research which will lead to water sustainability and self-sufficiency for the nation. H.R. 745 is one piece of legislation that addresses these issues.

Sincerely,



Joel J. Pawlak, Ph.D.



*College of Engineering
Chemical & Environmental Engineering*

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glenn.lipscomb@utoledo.edu*

May 16, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

Dear Congresswoman Napolitano:

I am writing to express my strong support for your bill, H.R. 745, Reauthorization of the Water Desalination Act of 1996, which extends authorization through September 30, 2018 with \$3 million in funding.

Since the establishment of the Office of Saline Water (OSW) in the early 1950's, governmental support for water desalination has revolutionized the field. Funding from the OSW helped create the reverse osmosis membrane industry – nearly a \$1 billion market that did not exist 50 years ago. Membrane technology now is the preferred choice for new desalination plants.

I recently received a grant from the US Bureau of Reclamation to improve membrane processes for water treatment. Our work has the potential to improve the performance of desalination processes as well as other related membrane processes including carbon dioxide capture from flue gas.

Continued federal support for water desalination is critical to further innovation in the field. Academic and industrial research teams are developing the next generation membrane processes. Loss of federal support will adversely affect these efforts to address the growing global need for a clean water supply.

Sincerely,

A handwritten signature in black ink that reads 'G. Glenn Lipscomb'.

G. Glenn Lipscomb
Professor and Chair
Chemical and Environmental Engineering



New Jersey Institute of Technology
University Heights
Newark, NJ 07102-1982
973.596.3568
973.596.8436 fax
che@njit.edu

May 15, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

Otto H. York
Department of Chemical,
Biological and Pharmaceutical Engineering

**Re: H.R. 745, REAUTHORIZATION OF WATER DESALINATION ACT OF 1996-
SUPPORT**

Dear Congresswoman Napolitano:

As an active member of the Desalination Research Community, I wholeheartedly support your bill, H.R. 745, Reauthorization of Water Desalination Act of 1996, which authorizes the renewal of the Water Desalination Act of 1996 and funds federal research and development projects on desalination through 2018.

H.R. 745 recognizes the need to develop all available tools to address our nation's water supply situation. Desalination of brackish water and other saline waters will enhance the water supply and facilitate the development of sustainable water resources. Research and development of desalination technologies based on membrane technologies and thermal technologies is an integral part of this effort. Past support of research and development in desalination techniques under this program has led to significant developments with considerable potential impact on emerging methods to enhance water supply. Specifically, research and development of a new membrane-based thermal distillation technique by our research group was funded from past reauthorization of H.R. 745. That successful desalination technique has now generated considerable interest; further scale up and potential commercialization activities are being undertaken to take care of saline waters naturally present as groundwater or produced by oil and gas exploration activities.

As a member of the research and development community actively engaged in research and development of desalination technologies, I appreciate your leadership on issues related to water, water supply and sustainability. H.R. 745 is a very necessary step in that direction.

Sincerely,

Distinguished Professor, Chemical Engineering
Editor-in-Chief, Current Opinion in Chemical Engineering
Executive Director, MAST NSF I/UCRC
973-596-8447(t); 973-642-4854(f); sirkar@njit.edu
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<http://www.elsevier.com/locate/coche>



Sustainable Solutions for a Thirsty Planet®

May 17, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth House Office Building
Washington, D.C. 20515

Re: Support for H.R. 745 – Reauthorization of the Water Desalination Act of 1996

Dear Congresswoman Napolitano:

The WaterReuse Association (WaterReuse) strongly supports enactment of your bill, H.R. 745, the *Reauthorization of the Water Desalination Act of 1996*, which reauthorizes Bureau of Reclamation desalination research partnerships through 2018.

WaterReuse is a nonprofit organization whose mission is to advance the beneficial and efficient uses of high-quality, locally produced sustainable water sources for the betterment of society and the environment through advocacy, education and outreach, research, and membership. Our mission includes the reclamation and beneficial reuse of all impaired waters, including municipal wastewater effluent and desalination of seawater and brackish groundwater. WaterReuse has approximately 400 organizational members in the U.S., Australia, Canada, Europe, and the Middle East, of which about 180 are water and wastewater agencies.

Water is necessary for all life to exist, and is currently managed as a public resource by the States. Just as the federal government plays a regulatory role in the protection of this public resource, it must also be a partner in publically-available research to develop the next generation of desalination technologies that will open new sources of fresh water for the future. If enacted, H.R. 745 would continue to authorize the Secretary of the Department of the Interior, through the Bureau of Reclamation, to fill this important research partnership role.

WaterReuse requests that our written testimony in support of H.R. 745 (See Attachment) be submitted to the House Committee on Natural Resources Water and Power Subcommittee for the May 23, 2013 hearing record. Thank you for your continued leadership on critical water issues important to our membership, and we look forward to the enactment of this important reauthorizing legislation.

Sincerely,

G. Wade Miller
Executive Director

Enclosure

cc: Brian Good, Denver Water
John Rossi, Western Municipal Water District



Association of California Water Agencies

Since 1910

Leadership • Advocacy • Information • Service

May 16, 2013

**Representative Tom McClintock
Chairman
Subcommittee on Water and Power
House Natural Resources Committee
1522 Longworth House Office Building
Washington, DC 20515**

**Representative Grace Napolitano
Ranking Member
Subcommittee on Water and Power
House Natural Resources Committee
186 Ford House Office Building
Washington, DC 20515**

Dear Chairman McClintock and Ranking Member Napolitano:

The Association of California Water Agencies (ACWA) supports HR 745, Reauthorization of the Water Desalination Act of 1996. ACWA's 450 public water agency members supply over 90 percent of the water delivered in California for residential, agricultural, and industrial uses.

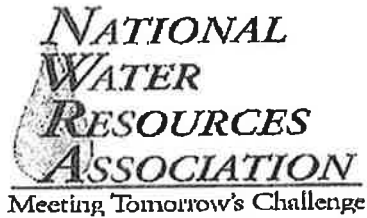
The desalination research and development grants awarded as part of this program at the Department of Interior have helped spur technological advances. Today desalting both groundwater and ocean water is less energy intensive and more cost effective than ever before.

Desalination is one of many options available to help guarantee a more reliable water supply for California. Given the recent improvements in desalination technology, both groundwater and ocean desalination likely will play a larger role in California's future. Currently there are at least 19 seawater desalination projects under consideration in California.

ACWA appreciates your work on this legislation and hopes HR 745 moves quickly through the House. If you have any additional questions, please feel free to contact our Washington office at 202-434-4760.

Sincerely,

**David L. Reynolds
Director of Federal Relations
Association of California Water Agencies**



President
1st Vice President
2nd Vice President
Treasurer
Executive Vice President

Tom Myrum
Dave Koland
Ron Thompson
Wayne Cunningham
Thomas Donnelly

May 20, 2013

The Honorable Grace Napolitano
U. S. House of Representatives
1610 Longworth House Office Building
Washington, DC 20515

Dear Representative Napolitano:

On behalf of the Board of Directors of the National Water Resources Association (NWRA), I am writing to express our strong support for HR. 745, the Reauthorization of the Water Desalination Act of 1996, authorizing the Bureau of Reclamation's desalination research partnerships through 2018.

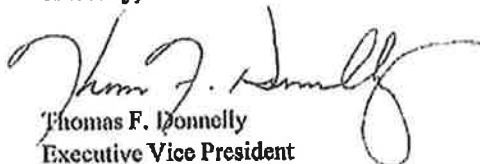
NWRA is a nonprofit federation of state associations and individuals dedicated to the conservation, enhancement, and efficient management of our Nation's water and power resources.

The impact of climate change and the nation's highest regional population growth in the southwestern United States has prompted many of our member agencies to explore alternative or supplemental sources of water supply. Additional research is necessary to increase desalination efficiencies and reduce energy demand and the overall cost of desalinated water.

Desalination will play an increasingly important role in providing additional water supply to the arid and semi-arid regions of our nation in this century. HR. 745 will help provide water managers with another important option in providing water for the constituents that they serve.

Thank you for your leadership on this major step towards meeting the nation's water supply goals and we stand prepared to work with you and the Natural Resources Committee to pass this important legislation.

Sincerely,



Thomas F. Donnelly
Executive Vice President

cc: Representative Tom McClintock, Chairman, Water and Power Subcommittee



DIRECTORS

ALBERT ROBLES, PRESIDENT
ROBERT KATHERMAN, VICE PRESIDENT
WILLARD H. MURRAY, JR., SECRETARY
SERGIO CALDERON, TREASURER
LILLIAN KAWASAKI, DIRECTOR
ROSS WHITAKER, P.E., GENERAL MANAGER

May 1, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

**Re: H.R. 745, REAUTHORIZATION OF WATER DESALINATION ACT OF 1996 –
SUPPORT**

Dear Congresswoman Napolitano:

Water Replenishment District of Southern California's (WRD) board of directors has unanimously voted to support your bill, H.R. 745, Reauthorization of Water Desalination Act of 1996, which authorizes the renewal of the Water Desalination Act of 1996 and funds federal research and development projects on desalination through 2018.

H.R. 745 recognizes the need to utilize all available tools to address our nation's and this State's water supply situation. As such, brackish groundwater desalination can help increase water supply and promote sustainable water resources.

As the regional groundwater management agency for over 10% of the state of California's population, WRD is doing all it can to ensure a reliable supply of water for the region. The District's Water Independence Now Program, or WIN, Program is a suite of water supply and reliability projects which when fully implemented can make replenishment of the most urbanized groundwater basins in the State independent of imported water supply from Northern California and the Colorado River. When fully implemented, WRD's WIN Program can completely replace imported water demand with local sources of water for replenishment purposes, making these groundwater basins fully self-sufficient.

WRD appreciates your leadership on water issues. The District supports measures to promote the development of local water supply. H.R. 745 represents another step towards ensuring local water self-sufficiency and sustainability.

Sincerely,

A handwritten signature in black ink, appearing to read "Albert Robles", is written over a horizontal line.

Albert Robles
Board President



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(562) 921-5521

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3-000000-11



May 20, 2013

The Honorable Grace Napolitano
U.S. House of Representatives
1610 Longworth HOB
Washington, D.C. 20515

Subject: H.R. 745, Reauthorization of Water Desalination Act of 1996
Letter of Support

Dear Congresswoman Napolitano:

Carollo Engineers Inc. would like to express support for your bill, H.R. 745, Reauthorization of Water Desalination Act of 1996, which authorizes the renewal of the Water Desalination Act of 1996 and funds federal research and development projects on desalination through 2018.

H.R. 745 recognizes the need to utilize all available tools to address our Nation's and this State's water supply situation. As such, brackish groundwater desalination can help increase water supply and promote sustainable water resources.

As a provider of water and wastewater design services to municipal cities and agencies, as well as industries across the US for 80-years, Carollo Engineers is doing all it can to assist our clients with finding and establishing reliable supplies of water. We have been fortunate enough in the past to receive funding for some research projects through prior funding cycles of the Water Desalination Act of 1996. These projects were aimed at finding solutions to brackish groundwater desalination issues that can be applied locally as well as regionally to the many agencies in the south western state faced with similar problems. Without the availability of such funding, developing technologies remain untested and thus potential solutions for providing additional water resources in arid areas remain unavailable.

Carollo Engineers appreciates your leadership on water issues. H.R. 745 represents a step towards ensuring both local and regional water self-sufficiency and sustainability.

Sincerely,

CAROLLO ENGINEERS, INC.

Graham J.G. Juby, Ph.D., P.E.
Vice President

GJJ:sjc



Robert E. Mace, Ph.D., P.G., Chairman for 2013
(Deputy Executive Administrator,
Water Science & Conservation,
Texas Water Development Board)

Date: May 21, 2013

Subcommittee on Water and Power
for the House Committee on Natural Resources
Washington, D.C.

To the Honorable Tom McClintock, Chairman, and the members of the Subcommittee on Water and Power:

I am writing on behalf of the Executive Committee of the Multi-State Salinity Coalition to express support for the reauthorization of the Water Desalination Act of 1996 as expressed in HR 745.

With increasing population and ongoing drought, desalination is critical in providing reliable water for people, power, and industry with minimal environmental impact. Desalination has come a long way over the last 17 years with respect to efficiency and affordability. And the Water Desalination Act of 1996 has helped immensely through standardizing desalination components, researching the disposal of saline byproducts, optimizing pretreatment, and developing environmentally sensitive systems.

But the job is not done. For example, disposal of saline byproducts is still a technical and regulatory issue. More research in zero-liquid discharge and alternative permitting paths is needed. Seawater desalination will become a more important source of water in the near future; we need to continue studies to increase efficiency and address environmental concerns. And funding is needed to support the operation and maintenance of the Brackish Groundwater Desalination Research Facility in Alamogordo, New Mexico, a facility that merges the efforts of federal and university scientists, local and state agencies, and the private sector to improve technologies for brackish groundwater desalination.

In short, the Coalition would like to see funding continued for this program.
Please contact me at (512)470-7753 if you have any questions or comments.

Your friend in (desalted) water,

Robert E. Mace, Ph.D., P.G.
Chair, Multi-State Salinity Coalition

The Multi-State Salinity Coalition consists of 15 member organizations from Arizona, California, Nevada, and Texas focused on advancing desalination and salinity control to secure water supplies. We are water providers, water planners, and salinity controllers.

P.O. Box 63146
Colorado Springs, CO 80962

Albuquerque Bernalillo County Water Utility Authority, Avila & Associates Consulting Engineers, Brownsville Public Utilities Board, City of Phoenix, City of Scottsdale, East Cherry Creek Valley Water District, El Paso Water Utilities, Metropolitan Domestic Water Improvement District, Salt River Project, San Antonio Water System, Southern California Salinity Coalition, Southern Nevada Water Authority, Texas Water Development Board, Tucson Water, West Basin Municipal Water District



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

May 21, 2013

The Honorable Grace Napolitano
Ranking Democratic Member
Subcommittee on Water and Power, Committee on Natural Resources
U.S. House of Representatives
1522 Longworth House Office Building
Washington, D.C. 20515

Dear Representative Napolitano:

On behalf of The Metropolitan Water District of Southern California I am writing to express our support for H.R. 745, legislation re authorizing and extending the Water Desalination Act of 1996. By extending the Water Desalination Act through Fiscal Year 2018, H.R. 745 will provide vital funding for research on important water desalination and related activities.

Metropolitan's Integrated Resources Plan identifies groundwater reclamation, recycling and desalination projects as essential elements of Southern California's diverse water portfolio. Each of these resources could benefit from research on desalination technology.

The Bureau of Reclamation has provided grant funding for local desalination research and development since the enactment of the original legislation, helping to advance important projects throughout Southern California.

Metropolitan would also like to work with you on establishing a federal desalination permitting coordination program with the goal of improving the permitting process for desalination projects.

We appreciate your continued leadership and ongoing support for advancing new water supply technology. Please let us know if we can be of assistance as you work to secure passage of H.R. 745.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Kightlinger".

Jeffrey Kightlinger
General Manager

cc: The Honorable Tom McClintock, Chairman
The Honorable Doug LaMalfa
The Honorable Jim Costa
The Honorable Jared William Huffman
The Honorable Tony Cárdenas
The Honorable Raul Ruiz