



THE FAR-REACHING EFFECTS OF

DROUGHT

2023 ANNUAL SALINITY SUMMIT

February 22-24, 2023 Tuscany Suites & Casino Las Vegas, Nevada

2023 Co-Sponsor



— BUREAU OF —
RECLAMATION

Established in 1902, the Bureau of Reclamation is best known for the dams, powerplants and canals it constructed in the 17 western states. These water projects led to homesteading and promoted the economic development of the West. Reclamation has constructed more than 600 dams and reservoirs including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River.

Today, we are the largest wholesaler of water in the country. We bring water to more than 31 million people, and provide one out of five Western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60% of the nation's vegetables and 25% of its fruits and nuts.

Reclamation is also the second largest producer of hydroelectric power in the western United States. Our 58 powerplants annually provide more than 40 billion kilowatt hours generating nearly a billion dollars in power revenues and produce enough electricity to serve six million homes.

Today, Reclamation is a contemporary water management agency with a Strategic Plan outlining numerous programs, initiatives and activities that will help the western states, native American tribes and others meet new water needs and balance the multitude of competing uses of water in the West. Our mission is to assist in meeting the increasing water demands of the West while protecting the environment and the public's investment in these structures. We place great emphasis on fulfilling our water delivery obligations, water conservation, water recycling and reuse, and developing partnerships with our customers, states and native American tribes, and in finding ways to bring together the variety of interests to address the competing needs for our limited water resources.

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Greetings, MSSC Summit Attendees



Greetings, and welcome to the National Salinity Summit! The 2023 National Salinity Summit Planning Committee did an excellent job of bringing together a strong program. This year's Summit will include sessions that focus on salinity management, desalination project implementation strategies and approaches, water/power co-location, addressing regulatory and environmental hurdles, and future strategies to manage desalination and concentrate management.

I would like to extend my thanks to all of the 2023 Annual Summit's generous sponsors. The success of the Summit would not be possible without their support and dedication to the MSSC. All of the sponsors are listed in this brochure. We also have them listed on the MSSC website and will provide a link to their sites as advertisement to them. Please take a moment to thank them during the event. In addition to the success of the event, their support allows the MSSC to hold the event at a reasonable cost to Summit attendees.

It has been a pleasure to serve as the Multi-State Salinity Coalition President. I have enjoyed working with such an intelligent and talented planning committee. Please take the time to fill out the evaluation forms that are provided for you in the registration packets. Your comments will help us provide the best quality events in the future. I look forward to seeing you here at the Summit!

Best Regards,

A handwritten signature in blue ink that reads "Scott Reinert". The signature is fluid and cursive.

Scott Reinert
President, Multi-State Salinity Coalition

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Wednesday, February 22, 2023

12:00 p.m. – 4:00 p.m.	Hoover Dam Tour
1:00 p.m. – 6:00 p.m.	Exhibitor and Poster Presentation Set Up
4:00 p.m. – 6:00 p.m.	Summit Conference Registration
5:00 p.m. – 6:30 p.m.	MSSC Board Meeting
6:30 p.m. – 8:00 p.m.	MSSC Board, Co-Sponsor & Platinum Sponsor VIP Party

Thursday, February 23, 2023

7:00 a.m. – 4:00 p.m.	Summit Conference Registration
7:00 a.m. – 8:30 a.m.	Breakfast with the MSSC Board Members Round Table Moderator: Ernie Avila , <i>Vice President, Division 3, Contra Costa Water District</i> <u>Speakers:</u> MSSC Board Members
8:30 a.m. – 8:40 a.m.	Opening Remarks Scott Reinert , <i>President, Multi State Salinity Coalition and Hydrogeologist /Water Resources Manager, El Paso Water</i>
8:45 a.m. – 9:15 a.m.	Keynote Speaker Brad Berles , <i>General Manager, Palo Verde Water Resources, Arizona Public Service (APS), "Palo Verde and the Water-Energy Nexus"</i>
9:15 a.m. - 10:15 a.m.	Highlights of Bureau of Reclamation Session Reclamation is the largest wholesaler of water and second largest producer of hydropower in the United States. Established in 1902, Reclamation has over a century of experience helping communities prepare for and respond to drought. Because there is no single action or solution that will adequately address the problem, Reclamation is taking actions on multiple fronts to address the current drought. This session will provide an overview and update on drought in the Colorado River Basin, covering Reclamation's role, current hydrology, and drought response activities. Following, an overview of Reclamation's R&D Office will highlight innovation programs and activities, with emphasis on advanced water treatment, which aim to enhance delivery of Reclamation's mission and mitigate the impacts of drought and climate change. The final presentation will provide an overview of Reclamation's WaterSMART program, featuring programs that provide funding for water reuse, desalination, and water recycling projects.

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Moderator: **Andrew Tiffenbach**, *Civil Engineer, Bureau of Reclamation – Research & Development Office*

Speakers:

Mike Bernardo, *Deputy Chief, Bureau of Reclamation - Boulder Canyon Operations Office, "Colorado River Drought, Hydrology, and Operations"*

Ken Novak, *Program Manager, Bureau of Reclamation – Research & Development Office, "Reclamation R&D Advanced Water Treatment Programs"*

Maribeth Menendez, *Program Analyst, Bureau of Reclamation – Water Resources and Planning Office, "Water Recycling and Desalination Construction Programs"*

10:15 a.m. – 10:45 a.m.

The Great MSSC Water Taste Test Challenge — Which City has the Best Tasting Water? Albuquerque, NM?, El Paso, TX?, Castle Rock, CO?, Mesa, AZ?, Carlsbad, CA?

Each city will provide lab report, source of water, brief description of treatment.

Malynda Cappelle, *Facility Manager, Brackish Groundwater National Desalination Research Facility, Bureau of Reclamation* and **Troy Svede**, *Project Engineer, Moreno Cardenas Inc.*

10:45 a.m. – 11:45 p.m.

International Session

Moderator: **Orestes Morfin**, *Vice President, Multi-State Salinity Coalition and Planning Analyst, Central Arizona Project*

Speakers:

Elia Tapia, *Faculty Professor, Universidad de Sonora in Hermosillo, Mexico, Authors: E. Tapia, J.B Callegary, J. I. Minjarez Sosa, F. Gray, R. Monreal Saavedra, F.J. Grijalva Noriega, "Hydrogeochemical Characterization of the Transboundary San Pedro and Santa Cruz Aquifers"*

Chuck Cullom, *Executive Director, Upper Colorado River Commission*

Jenny Lawler, *Senior Research Director, Qatar Environment and Energy Research Institute (video)*

11:45 a.m. – 12:15 p.m.

Luncheon Keynote Speaker

Michelle Peters, *Technical & Compliance Manager, Poseidon Water, "The Carlsbad Desalination Plant's Path to Being the First Desalination Facility Compliant with the California Ocean Plan Amendment"*

The Claude "Bud" Lewis Carlsbad Desalination Plant is the largest, most technologically advanced and energy efficient desalination plant in North America, producing an average of more than 50 million gallons of high-quality, locally controlled drinking water every day. Since the start of commercial operations in December 2015, the plant has provided more than 100 billion gallons drinking water to the San Diego region, helping to protect the region's economy and quality of life during one of the worst droughts on record. In recent years, the plant has implemented a phased program

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to replace the existing seawater intake and discharge facilities with state-of-the-art technology to protect marine life that was not available when the plant first began operating. When these upgrades are complete, the Carlsbad Desalination Plant will be the first desalination facility in California to comply with the 2015 California Ocean Plan Amendment, which is among the most advanced sea-life protection measures in the world.

12:15 p.m. – 1:15 p.m.

Special Recognition & Luncheon

Moderator: **Scott Reinert**, *President, Multi State Salinity Coalition and Hydrogeologist / Water Resources Manager, El Paso Water*

Co-Sponsor:

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— Metropolitan Water District of Southern California

— North America Weather Consultants Inc.

— The Water Research Foundation

“Salt of the Earth Award”

“Student Scholarship Award”

1:15 p.m. – 2:30 p.m.

What Does Drought Mean to You? Session: Statewide Responses

This year’s “Drought Sessions” will shed light on what agencies are doing to address the unprecedented drought both locally to and regionally. It will cover a wide range of drought related topics from conservation, alternative supply, reuse, treatment technologies, economic impact, water quantity and quality impacts on operations, and other problems the general public may not be aware of. After attending this session, attendees will appreciate the foresight some of our water providers have already begun in anticipation of less available water to sustain existing potable water demands and account for future growth.

Moderator: **Eric Dole**, *Water & Energy Practice Lead/Water Technology Leader, Garver*

Speakers:

Arizona — **Leslie Meyers**, *Associate General Manager of Water, Salt River Project, “What Does Drought Mean to the Salt River Project”*

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Texas — **Sam Marie Hermitte**, *Assistant Deputy Executive Administrator of Water Science & Conservation, Texas Water Development Board, "Drought in Texas: Coming at it From All Angles"*

Arizona — **Tom Buschatzke**, *Director, Arizona Department of Water Resources*

New Mexico — **Jerri Pohl**, *Statewide Projects Supervisor*, **Julie Valdez**, *Water Use & Conservation Bureau Chief* and **Andrew Erdmann**, *Water Planning Program Manager, New Mexico Office of the State, "New Mexico's Drought Toolbox"*

California — **Nancy Ervin**, *Partner, Harrison Co., LLC. "What Drought Means to the 100 Mile Circle"*

2:30 p.m. – 3:30 p.m.

Drought Session Part 2: What is Happening in Your City?

El Paso, Texas — **Roger Peery**, *CEO/Principal Hydrogeologist, John Shomaker & Associates* and **Scott Reinert**, *Hydrogeologist /Water Resources Manager, El Paso Water, "The Next Drought is Right Around the Corner; Update on El Paso Water's Drought Response"*

Castle Rock, Colorado — **Mark Marlowe**, *Director of Castle Rock Water, Town of Castle Rock, "Utilizing IPR with the Potential to Move to DPR"*

Tucson, Arizona — **Wally Wilson**, *Water Resources Manager, Metro Water District, "Southern Arizona Salinity Issues"*

Las Vegas, Nevada — **J.C. Davis**, *Director Customer Care & Field Services, Las Vegas Valley Water District, "Surviving Shortage: Protecting Southern Nevada's Critical Water Needs"*

3:30 p.m. – 3:45 p.m.

Break

3:45 p.m. – 5:00 p.m.

Necessity is the Mother of Invention Session

Inventions in water management, and the drivers for those inventions, can take many different forms – advancements in technology, new ways to use proven techniques, and even helping mother nature. Panelists will share unique and exciting innovation in each of these areas.

Moderator: **Lanaya Voelz Alexander**, *Assistant General Manager of Planning, Engineering & Construction, Eastern Municipal Water District*

Speakers:

Michael Mickley, *President, Mickley & Associates LLC, "Brine Mining"*

Yuliana Porras Mendoza, *ONEWater Practice Leader*, and **Eric Dole**, *Water & Energy Practice Lead, Water Technology Leader, Garver, "Advancements in Desalination and PFAS Treatment that Embrace the 'Electrification' Concept"*

Marc Serna, *Assistant General Manager / Chief Engineer, South Coast Water District, "Doheny Ocean Desalination Project — Sustainable and Innovative Supply in South Orange County"*

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Garrett Cammans, *President, North American Weather Consultants Inc., "Cloud Seeding"*

Greg Woodside, *Executive Director of Planning & Natural Resources, Orange County Water District, "Salinity Management Benefits of Recycled Water Recharge"*

5:00 p.m. - 6:30 p.m.

Reception

Friday, February 24, 2023

NO SLIDE FRIDAY!

7:30 a.m. - 12:00 p.m.

MSSC Summit Conference Registration

8:00 a.m. – 8:40 a.m.

Breakfast

8:45 a.m. – 9:00 a.m.

Results of The Great MSSC City Water Taste Test

Moderator: **Scott Reinert**, *President, Multi State Salinity Coalition and Hydrogeologist / Water Resources Manager, El Paso Water*

9:00 a.m. – 10:00 a.m.

Climate Impacts Session

Economic, Social & Environmental Impacts

Moderator: **Jeff Biggs**, *Principal Management Consultant | Associate Vice President, Carollo*

Speakers:

Sally Gutiérrez, *Acting Director, GCRD, United States Environmental Protection Agency, "Urgent Issue of Proper Groundwater Management as a Result of Climate Change, EPA Groundwater Quality Issues, and a Summary of a Research Project in Ada, Oklahoma on Aquifer Recharge"*

10:00 a.m. – 11:15 a.m.

Legislative Updates & Wide-Ranging Discussions from Water Experts Session

Legislative Updates & An Open Discussion from Our Panel of Affiliates Discussing Anything Related to Water

Moderator: **Scott Reinert**, *President, Multi State Salinity Coalition and Hydrogeologist / Water Resources Manager, El Paso Water*

Speakers:

Glenn Farrel, *Executive Director, CalDesal*

Julie Minton, *Director of Strategic Initiatives, The Water Research Foundation*

Warren Teitz, *Manager, Resource Development Team, Metropolitan Water District of Southern California*

Orestes Morfin, *Vice President, Multi-State Salinity Coalition and Planning Analyst, Central Arizona Project*

11:30 a.m.

Closing Remarks, Summary & Adjourn

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Arizona Public Service generates clean, reliable and affordable energy for 2.7 million Arizonans. Our service territory stretches across the state, from the border town of Douglas to the vistas of the Grand Canyon, from the solar fields of Gila Bend to the ponderosa pines of Payson. As the state's largest and longest-serving energy provider, our 6,300 dedicated employees power our vision of creating a sustainable energy future for Arizona. Customers can depend on us all year long, particularly during our hot Arizona summers. We're proud to be among the top energy companies in the nation for reliable service. Advanced technologies are enhancing our ability to detect and respond to outages while maintaining a safe, more flexible grid. By continually investing in the energy grid, we ensure our customers have access to clean, reliable and affordable power whenever they need it.

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Carollo is an environmental engineering firm specializing in the planning, design, and construction of water and wastewater facilities and infrastructure. Our firm has over 1,100 employees and currently maintains 46 offices in 19 states. We are a full-service company with the experience and qualified professionals to successfully manage projects of any size.

During our 87-year history, Carollo has successfully completed more than 25,000 projects for public sector clients. Carollo is currently ranked within Engineering News Record's top 500 design firms. More importantly, ENR's annual Source Book ranks Carollo among the top 10 firms for water and wastewater treatment plant design. Unlike many of our competitors, Carollo provides only water and wastewater engineering services.

With our focus on water and wastewater, we recruit nationwide and hire technical staff who have the extensive background and training specific to this field. For that reason, the quality and professional standing of our core group of water and wastewater professionals equals or exceeds that provided by some of the largest engineering firms in the United States.

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El Paso Water is the regional planner and provider to water, wastewater, reclaimed water and stormwater services to nearly 700,000 people in the greater metropolitan area. It is a component part of the City of El Paso and its governed by a seven-member Public Service Board. Its mission is to furnish, at a fair and reasonable cost to customers, high-quality potable water in sufficient quantities to satisfy domestic, industrial and fire protection requirements, along with collection of liquid waste for treatment and disposal without risk to public health and the environment.

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Eastern Municipal Water District (EMWD) is the water, wastewater service and recycled water provider to more than 825,000 people living and working within a 555-square mile service area in western Riverside County. It is California's sixth-largest retail water agency and its mission is "To deliver value to our customers and the communities we serve by providing safe, reliable, economical and environmentally sustainable water, wastewater and recycled water services." With more than 50 years of experience, the board members and staff of EMWD are proud, confident and ready for the future.

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Founded in 1919, Garver is an employee-owned multi-disciplined engineering, planning, architectural, and environmental services firm with nearly 900 employees across the United States. Offering a wide range of services focused on aviation, construction, facilities design, federal, survey, transportation, water, and wastewater, Garver sits in the top 125 of the Engineering News-Record's prestigious Top 500 Design Firms list and is consistently recognized as a best firm to work for.

Every community deserves safe, affordable drinking water and clean rivers and streams. That's the mission Garver and our partnered utilities work toward every day. And every day, these utilities are faced with challenges of aging infrastructure, increasing water quality requirements, and concerns over funding. Garver's Water Team is uniquely built with client-focused, local teams that provide constant support, four design centers providing sophisticated design of all engineering disciplines, and a Water Technology Team comprised of national experts that can innovatively solve the most challenging water and wastewater quality concerns.

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John Shomaker & Associates, Inc. (JSAI) is an employee-owned corporation, which has been providing professional services in the areas of fresh and brackish water-resource development, groundwater flow modeling, drilling specifications for large capacity wells, geochemistry, environmental assessment and reclamation, and expert witness testimony for over 41 years. Our technical staff consists of hydrogeologists, hydrologists, geochemists, geologists, and GIS/AutoCAD specialists. JSAI has ongoing projects in New Mexico, Texas, Nevada, California, South Dakota, Argentina, Chile, Guatemala, and British Columbia.

JSAI has developed drilling specifications for brackish water wells completed in unconfined and confined aquifers, hydrogeologic assessments for concentrate disposal wells, and performed field oversight and data collection for all aspects of drilling, completing and testing of concentrate disposal wells, and interpreted water quality and hydraulic property test data. The success of JSAI's water-resource and environmental projects comes from careful scientific practice and experience.

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California serves 26 public water agencies — cities, municipal water districts and one county water authority — that then deliver supplies directly or indirectly to 19 million people in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties.

We have imported water from the Colorado River since 1941 and from Northern California since the early 1970s. We are the largest single contractor of the State Water Project and a major supporter of Southern California water conservation and water recycling programs, along with other local water management activities.

Whether it's historic drought or the longer-term threat of climate change, we're here to protect the region and provide high-quality affordable water in an environmentally responsible way.

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North American Weather Consultants (NAWC) provides a host of meteorological services to private and public sector clients. These services include Cloud Seeding, Specialized Forecasting, Intensive Storm Monitoring, Air Quality Monitoring and Long Term Impact Studies, Weather Station Installation and Maintenance, Forensic Storm Evaluations and various meteorological consultative services.

-Cloud Seeding-

North American Weather Consultants (NAWC) has been involved in cloud seeding research and operational programs since the early 1950's. NAWC's cloud seeding programs currently cover over 20,000 square miles (13 million acres) across the western United States, with operational sites in California, Utah, Colorado, Idaho and Wyoming.

With over 250 ground seeding installations NAWC has the largest collective ground-based seeding program in the world. NAWC also provides aerial cloud seeding, with aerial programs located in California and Utah.

Long term target vs control climatological studies indicate an increase in seasonal runoff of 300,000 acre-feet, in targeted areas, resulting from NAWC's cloud seeding programs.

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The Water Research Foundation is the premier not-for-profit research cooperative advancing the science of water to protect public health and the environment. Governed principally by utilities, the foundation delivers scientifically sound research solutions and knowledge to serve subscribers and stakeholders in all areas of drinking water, wastewater, stormwater, and reuse. The new foundation will have approximately 1,200 subscribers, 2,300 research studies, and a \$700M portfolio.

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WATER AUTHORITY**

Exhibitor

Texas Water Development Board

Poster Presentation

Emulating Nature To Save The Salton Sea Part 2

Terry R. Gong
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Over the years, I have written and presented numerous posters drawing attention to the concept of volcanism, and the enormous emissions of sulfur dioxide (SO₂) as being a part of an overall on-going natural acidification process that maintains the pH and mass balance chemistry of our entire planet, and the acidity produced by it is actually Sulfurous (H₂SO₃) and not Sulfuric (H₂SO₄).

In 2020, I presented a poster titled Sulfuric vs. Sulfurous: What's the difference? to explain and illustrate in detail: how each acid is made; the differences in their chemical reactions; how both acidifiers are currently being used and their limitations; etc.

In 2022, to elucidate further as to why volcanism, the natural acidification process, and the differences between sulfurous and sulfuric, is relevant, I wrote and presented Emulating Nature to Save the Salton Sea to correlate how applying and integrating the same chemistry nature uses, directly into our wastewater-treatment plants, cooling tower facilities, drinking water processing plants, agricultural irrigation water, reverse osmosis filtration plants, and into the sea itself, we could effectively: acidify/neutralize the alkalinity, lower the pH, and enable those operations to function more efficiently; reduce the overall amount of salts from being imported and added into the system; provide the additional source of new water needed to keep this closed body of water diluted to prevent it from reaching supersaturation and precipitating out of solution. I continue to emphasize (ad nauseam) the importance of this method and the need to replicate it because, instead of thinking that we can devise another technique and out-smart nature, I believe we should simply replicate the efficiency and genius of how nature actually works.

I was heartened and encouraged when several MSSC members, after reviewing it, commented that the general concept in my posters is finally starting to make sense, has merit, and that I should: keep working on it; provide process flow diagrams to illustrate exactly how and what part of the system to emulate/integrate/introduce this natural acidification process; calculate the total reduction of salts and the total amount of new water that would be added into the system, if this process was adopted and implemented.

To follow up on those suggestions, and to stimulate more collaboration on all of this, here is Emulating Nature to Save the Salton Sea Part 2.

2023 Multi-State Salinity Coalition

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The exchange of information is paramount in developing and implementing policies for successful desalination programs. The Multi-State Salinity Coalition's Summit proves to be an excellent venue for this exchange, and will prove to be a benchmark in enhancing the continued efforts in managing these resources. It would not be possible for MSSC to host the Summit without the support of our sponsors, dedication from our speakers and moderators, and participation of our guests.

On behalf of the Multi-State Salinity Coalition Board of Directors and Planning Committee, thank you for your continuous dedication. We look forward to a great Summit.



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