

OTAY WATER DISTRICT
DESALINATION PROJECT COMMITTEE MEETING
and
SPECIAL MEETING OF THE BOARD OF DIRECTORS

2554 SWEETWATER SPRINGS BOULEVARD
SPRING VALLEY, CALIFORNIA
Boardroom

WEDNESDAY
April 27, 2016
12:00 P.M.

This is a District Committee meeting. This meeting is being posted as a special meeting in order to comply with the Brown Act (Government Code Section §54954.2) in the event that a quorum of the Board is present. Items will be deliberated, however, no formal board actions will be taken at this meeting. The committee makes recommendations to the full board for its consideration and formal action.

AGENDA

1. ROLL CALL
2. PUBLIC PARTICIPATION – OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO SPEAK TO THE BOARD ON ANY SUBJECT MATTER WITHIN THE BOARD'S JURISDICTION BUT NOT AN ITEM ON TODAY'S AGENDA

DISCUSSION ITEMS

3. INFORMATIONAL UPDATE FOR THE ROSARITO DESALINATION PLANT AND CONVEYANCE AND THE OTAY MESA CONVEYANCE AND DISINFECTION SYSTEM PROJECTS (KENNEDY)
4. ADJOURNMENT

BOARD MEMBERS ATTENDING:

Jose Lopez, Chair
Mitch Thompson

Agenda Item 3



STAFF REPORT

TYPE MEETING:	Desalination Committee	MEETING DATE:	April 27, 2016		
SUBMITTED BY:	Bob Kennedy Engineering Manager	CIP./G.F. NO:	P2451- 001101	DIV. NO.	ALL
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager				
SUBJECT:	Informational Update for the Rosarito Desalination Plant and the Otay Mesa Conveyance and Disinfection System Projects				

GENERAL MANAGER'S RECOMMENDATION:

No recommendation. This is an informational item only.

COMMITTEE ACTION:

Please see Attachment A.

PURPOSE:

To update the Otay Water District (District) Board of Directors (Board) on the progress of the Rosarito Desalination Plant and the Otay Mesa Conveyance and Disinfection System Projects (Project)(see Exhibit A for Project location).

ANALYSIS:

This item was last presented to the Desalination Committee (Committee) at a meeting held on October 19, 2015. The updates or significant milestones that have been reached since the last update to the Committee include:

Project Direction

In 2014, the State of Baja California (State) passed legislation to approve public-private partnership (APP in Spanish), under

article 80 of Asociaciones Público Privadas (APP) laws for the State. The APPs allow for the direct negotiations of the State with private companies such as NSC Agua (NSCA). The Secretaria de Infraestructura y Desarrollo Urbano del Estado (SIDUE), a State agency that coordinates infrastructure projects for the State and the Comisión Estatal del Agua de Baja California (CEA), an agency that is responsible for regulating the State's water and sewerage industry, issued a public invitation to tender for the production and conveyance of desalinated water produced in Rosarito Beach and operated for a period of 37 years. The State is also considering selling to the District desalinated water.

The reason the State wants to pursue this kind of project is because Tijuana is currently exceeding their water allocation from the Colorado River. Today, Tijuana is about 1.2 cubic meters per second short (approximately 30,000 acre-feet per year) and must negotiate with the farmers in the Mexicali Valley on a yearly basis to acquire the additional water to meet its demands.

On October 20, 2015, the District sent a letter to the Director General for CEA expressing interest in acquiring a minimum of 13 MGD of desalinated water to augment supply (see Exhibit B). The letter notes that the District will require the involvement and consent of the federal governments of our respective nations, likely through the International Boundary and Water Commission (IBWC) and Comisión Internacional de Límites y Agua (CILIA).

Concerning the progress of the desalination project, NSC Agua S.A. de C.V. (NSC Agua) has stated that they have received very preliminary cost information from the potential EPC (Engineering, Procurement, Construction) contractor that indicates the cost of the product water for Otay Water District would be close to the cost of imported water from the San Diego County Water Authority.

On November 24, 2015, CEA/CESPT and the APP Committee hosted a "site visit." Almost a dozen companies attended. The tenders were due on March 23, 2016, but this deadline was extended to April 21, 2016. CEA/CESPT will evaluate all tenders and will make a selection which is expected to be completed by the summer of 2016.

The plan is to build the project in two (2) or more phases. The first phase would provide product water to satisfy the demands for Mexico (Tijuana and Rosarito). Future phase(s) would

produce excess water for sale to the District. A designated pipeline will carry desalinated water to the District and the water would meet California water quality standards.

The Board President, Vice-President, General Manager, and staff conducted a public outreach effort on February 17, 2016, where Lisa Coburn-Boyd, Environmental Compliance Specialist, presented information on the project to the Tijuana Verde Working Committee of Tijuana Innovadora. The meeting was held at the Imperial Beach Tijuana River Estuary Park facility. The project was well received and a short segment on this committee meeting was also included in a KPBS news item.

Rosarito Desalination Project in the News

The drought continues to be a constant topic in the national, state, and local news as well as in Mexico at the State of Baja California. Projects that provide a new supply of water have been mentioned, on both sides of the border, including the Rosarito Beach Desalination Project.

On November 9, 2015, the Water Desalination Report (WDR) covered the state of Baja California's invitation to bid (See Exhibit C).

On December 21, 2015, the WDR covered a new U.S. federal government initiative to look at public-private partnerships to help meet the constrained water demand in regions that will be affected by increasingly severe and lengthy droughts. Invited to the White House was John Tonner from NSC Agua (see Exhibit D).

On February 15, 2016, the WDR noted Consolidated Water Company acquired 51 percent of Aerex Industries, a Florida based designer and manufacturer of water treatment equipment (see Exhibit E).

On March 7, 2016, The San Diego Union Tribune published an article entitled, "Second Desalination Plant for Baja California, First Public Private Venture in the State" about a groundbreaking ceremony for a desalination plant set to open in 2017 to supply residents in the San Quintin agricultural region (see Exhibit F). The Rosarito Desalination Report was noted as the third desalination plant in the State of Baja California.

On March 13, 2016, The San Diego Union Tribune published an article about the Rosarito Desalination Project entitled,

"Lawsuits Cloud Bid to Build Rosarito Desalination Plant" (see Exhibit G).

On March 14, 2016, the WDR, in an article, noted that the Carlsbad desalination plant allowed member agencies to lower their conservation goal for each member agency by about eight percent. The same report noted that Mexican billionaire, Carlos Slim, launched a takeover of Spain's largest construction group, Fomento de Construcciones y Contratas SA (FCC), and the parent company of Aqualia, a water management and desalination company (see Exhibit H). FCC Aqualia is one of the companies reported to be interested in the Rosarito desalination project.

On March 21, 2016, the WDR provided an update on the Baja California Rosarito tender process (see Exhibit I).

On April 5, 2016, The San Diego Union Tribune published an article noting that the Rosarito Desalination Project as one of several projects that are key to Baja California's economic health. The article was entitled, "Major Baja Projects Touted at World Investment Forum, Rosarito Desal Plant would be Operational by 2019" (see Exhibit J).

Contract with AECOM

AECOM continues to work only on the environmental tasks. On November 4, 2015, the Board approved Amendment No. 4 of the contract with AECOM to increase the project management budget by \$22,425, resulting in a higher contract amount with AECOM of an amount not-to-exceed \$3,800,863. At the time, the project management component of their contract was expected to carry them through to April/May of this year before an adjustment would be needed. No budget adjustment is needed at this time and staff anticipates the project management budget should be sufficient until the next project update in September or October of this year.

Other Contract

The District continues to reduce costs and on December 31, 2015, the District terminated the contract with Silva-Silva International, six months before the contract expiration date.

Division of Drinking Water (DDW) Permitting (formerly CDPH)

NSCA continues the source water testing at the power plant intake and outlet structures that began on September 18, 2014. The results are posted with DDW.

Staff and representatives from NSCA continue to coordinate on complying with the California Water Resources Control Board Drinking Water Program regulatory requirements related to source water quality testing.

Presidential Permit

The Presidential Permit process was initiated in November, 2013, when the District submitted an application letter to the United States Department of State (DOS) asking that the permit process begin. Since that time, District staff and consultants have been working on the joint California Environmental Quality Act (CEQA)/ National Environmental Policy Act (NEPA) environmental document, an Environmental Impact Report/Environmental Impact Statement (EIR/EIS). Staff and consultants from AECOM have completed the draft EIR/EIS and all of the DOS comments have been addressed. The draft EIR/EIS is tentatively scheduled to be ready for its 45-day public review period sometime in April, 2016. Comments received during the public review period must be responded to and changes made to the EIR/EIS, as necessary. Once the final EIR/EIS is complete, the DOS will use the findings of the environmental document and a range of other factors that include, but are not limited to, cultural and economic impacts, and compliance with applicable law and policy in order to determine whether the Project would serve the national interest. The DOS will then issue the Presidential Permit, if it determines that the Project would serve the national interest. Based on the current schedule, the Presidential Permit determination could occur in late 2016.

FISCAL IMPACT: Joe Beachem, Chief Financial Officer

No fiscal impact as this is an informational item only. (See Attachment B - Budget Detail).

Although \$6,345,698 has been committed as of April 6, 2016, \$3,851,084 has been actually spent. Staff has stopped all activities concerning this project, except the completion of the EIR/EIS and Presidential Permit activities. It is anticipated that an additional \$280,000 will be spent through the late 2016.

STRATEGIC GOAL:

This Project supports the District's Mission statement, "To provide high value water and wastewater services to the customers of the Otay Water District in a professional, effective, and efficient manner" and the General Manager's Vision, "A District that is at the forefront in innovations to provide water services at affordable rates, with a reputation for outstanding customer service."

LEGAL IMPACT:

None.

BK/RP:jf

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Attachments: Attachment A - Committee Action
Attachment B - Budget Detail
Exhibit A - Project Location
Exhibit B - Letter of Interest in Acquiring Desalinated Potable Water, October 20, 2015
Exhibit C - State of Baja California's invitation to bid
Exhibit D - U.S. government initiative to look at public-private partnerships
Exhibit E - Consolidated Water Company acquired 51 percent of Aerex Industries
Exhibit F - Second Desalination Plant for Baja California, First Public Private Venture in the State
Exhibit G - Lawsuits Cloud Bid to Build Rosarito Desalination Plant
Exhibit H - Carlsbad desalination plant allowed member agencies to lower their conservation goal and Mexican billionaire, Carlos Slim launched a takeover of Fomento de Construcciones y Contratas SA (FCC)
Exhibit I - Baja California Rosarito tender process
Exhibit J - Major Baja Projects Touted at World Investment Forum, Rosarito Desal Plant would be Operational by 2019



ATTACHMENT A

SUBJECT/PROJECT: P2451-001101	Informational Update for the Rosarito Desalination Plant and the Otay Mesa Conveyance and Disinfection System Projects
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COMMITTEE ACTION:

This item was presented to the Desalination Committee (Committee) at a meeting held on April 27, 2016.

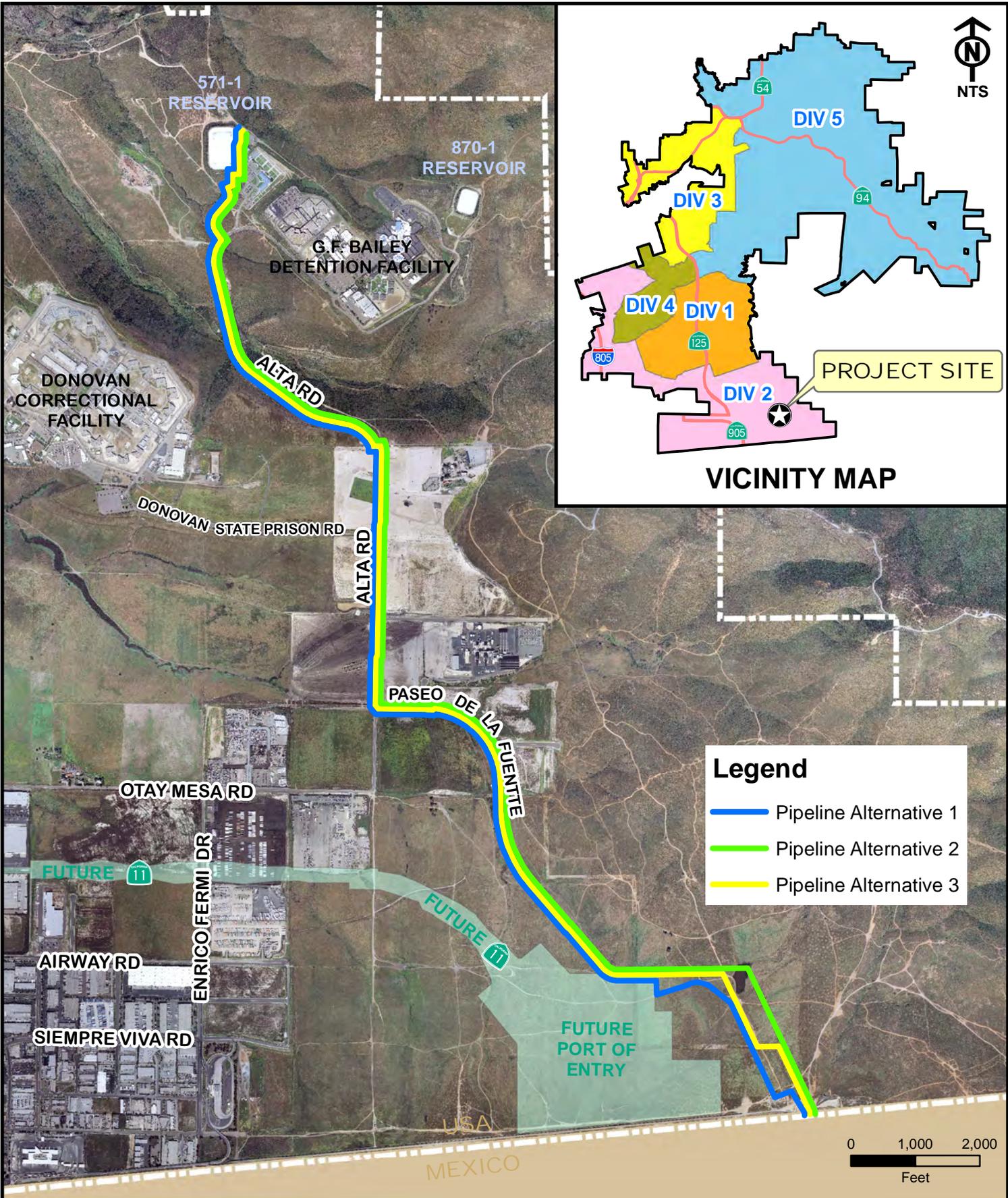


ATTACHMENT B – Budget Detail

SUBJECT/PROJECT:	Informational Update for the Rosarito Desalination Plant and the Otay Mesa Conveyance and Disinfection System Projects
P2451-001101	

Otay Water District					Date Updated: 4/6/2016
p2451-Otay Mesa Desalination Conveyance and Disinfection System					
<i>Budget</i>	<i>Committed</i>	<i>Expenditures</i>	<i>Outstanding Commitment & Forecast</i>	<i>Projected Final Cost</i>	<i>Vendor/Comments</i>
30,000,000					
Phases					
Planning					
Consultant Contracts	98,577	98,577	-	98,577	CAMP DRESSER & MCKEE INC
	13,311	13,311	-	13,311	CPM PARTNERS INC
	380,200	380,200	-	380,200	HECTOR I MARES-COSSIO
	71,531	71,531	-	71,531	MARSTON & MARSTON INC
	26,155	9,641	16,514	26,155	BROWNSTEIN HYATT FARBER
	26,700	26,700	-	26,700	REA & PARKER RESEARCH
	4,173	4,173	0	4,173	SALVADOR LOPEZ-CORDOVA
	224,355	224,355	-	224,355	SILVA-SILVA INTERNATIONAL
Meals, Travel, Incidentals	21,846	21,846	-	21,846	STAFF
Printing	61	61	-	61	MAIL MANAGEMENT GROUP INC
Professional Legal Fees	162,041	162,041	-	162,041	GARCIA CALDERON & RUIZ LLP
	43,175	43,175	-	43,175	SOLORZANO CARVAJAL GONZALEZ Y
	32,612	32,612	-	32,612	STUTZ ARTIANO SHINOFF
Regulatory Agency Fees	2,142	2,142	-	2,142	STATE WATER RESOURCES
Service Contracts	500	500	-	500	REBECA SOTURA NICKERSON
	875	875	-	875	LEONARD VILLAREAL
	32,463	32,463	-	32,463	(W)RIGHT ON COMMUNICATIONS INC
	39,500	39,500	-	39,500	BUSTAMANTE & ASSOCIATES LLC
	290	290	-	290	SAN DIEGO DAILY TRANSCRIPT
	685	685	-	685	SAN DIEGO UNION-TRIBUNE, THE
Standard Salaries	1,117,357	1,117,357	-	1,117,357	
Total Planning	2,298,549	2,282,036	16,514	2,298,549	
Design					
Consultant Contracts	5,109	5,109	-	5,109	MARSTON+MARSTON INC
	30,270	30,270	-	30,270	MICHAEL R WELCH PHD PE
	8,818	8,818	-	8,818	CPM PARTNERS INC
	5,000	5,000	-	5,000	ATKINS
	3,800,863	1,322,763	2,478,100	3,800,863	AECOM TECHNICAL SERVICES INC
	3,952	3,952	-	3,952	AIRX UTILITY SURVEYORS INC
Professional Legal Fees	7,761	7,761	-	7,761	STUTZ ARTIANO SHINOFF
Meals, Travel, Incidentals	3,216	3,216	-	3,216	STAFF
Service Contracts	343	343	-	343	SAN DIEGO UNION-TRIBUNE LLC
	114	114	-	114	REPROHAUS CORP
Standard Salaries	181,374	181,374	-	181,374	
Total Design	4,046,819	1,568,719	2,478,100	4,046,819	
Construction					
Standard Salaries	329	329	0	329	
Total Construction	329	329	0	329	
Grand Total	6,345,698	3,851,084	2,494,613	6,345,698	

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OTAY WATER DISTRICT

OTAY MESA DESALINATION CONVEYANCE AND DISINFECTION SYSTEM PROJECT



EXHIBIT A



...Dedicated to Community Service

2554 SWEETWATER SPRINGS BOULEVARD, SPRING VALLEY, CALIFORNIA 91978-2004
TELEPHONE: 670-2222, AREA CODE 619 www.otaywater.gov

October 20, 2015

Germán Jesús Lizola Márquez
Director General
Comisión Estatal del Agua de Baja California (CEA)
Boulevard Anáhuac No. 1016
Colonia El Vidrio, C.P. 21080
Mexicali, Baja California, Mexico

Subject: Otay Water District's Interest in Acquiring Desalinated Potable Water
Resources to Supplement the Otay Water District's Potable Water Supply

Dear Mr. Lizola Márquez:

Thank you for taking the time to discuss the continued efforts to produce desalinated potable water for distribution in Mexico and possibly the United States. Your Project is potentially very valuable for both Mexico and the United States, and in particular the Southern California region. The Otay Water District ("District") remains very interested in this Project and, more specifically, in acquiring desalinated potable water to augment its current potable water supply. As you may be aware, the District previously entered into a Letter of Intent executed by the District and NSC Agua on February 5, 2009 and renewed its intent in 2012 when Consolidated Water Coöperatief, U. A. acquired a 50% interest in N.S.C. Agua, S.A. de C.V. ("NSC Agua").

When the District executed its most recent letter of intent with NSC Agua, a Mexican corporation formed for the specific purpose of installing and operating a desalination plant on the coast of Baja California, Mexico to produce desalinated water to be sold and delivered on a private basis to customers in both Mexico and the United States (collectively, the "Project"), the parties expected a public-private water purchase agreement. While the District remains interested in acquiring Project water through CEA, we anticipate that any agreement for the sale of Project water will require the involvement and consent of the federal governments of our respective nations, likely through the International Boundary and Water Commission (IBWC)/Comisión Internacional de Límites y Agua (CILA).

Notwithstanding the above, it is our understanding that NSC Agua is continuing its Project development activities and, based on technical, financial, environmental, and engineering studies conducted by NSC Agua and others to date, it has been determined that it is feasible to develop a seawater desalination plant capable of delivering

desalinated potable water meeting specified water quality standards applicable to customers in the United States, at a reasonable price.

Based on the foregoing assumptions and preliminary understandings, the District hereby expresses and renews its interest in acquiring Project water. The District desires to acquire no less than:

Minimum Desalinated Potable Water Demands (Same amount year-round)

Year 2020: 13.0 MGD (49,200 M³/Day)

Year 2035: 14.4 MGD (54,500 M³/Day)

Year 2050: 16.3 MGD (61,700 M³/Day)

Desalinated Potable Water Demands (Seasonal Increase April-November)

Year 2020: 16.0 MGD (60,600 M³/Day) an increase of 3.0 MGD (11,400 M³/Day)

Year 2035: 17.7 MGD (67,000 M³/Day) an increase of 3.3 MGD (12,500 M³/Day)

Year 2050: 19.9 MGD (75,300 M³/Day) an increase of 3.6 MGD (13,600 M³/Day)

Any water acquired by the District would be delivered to the District at a delivery point at the United States border with Mexico, as mutually agreed to by the parties prior to any such acquisition and would be subject to such further terms and conditions set forth in a mutually satisfactory, legally binding water supply purchase agreement (hereinafter, "Agreement" ⁽¹⁾) that would include, but not be limited to:

- a. A purchase commitment by the District for a certain quantity, in acre-feet, of desalinated potable water annually;
- b. A price for the desalinated potable water including any and all fees and charges associated with the delivery of the water at the point of delivery agreed to by the parties; we contemplate that the pricing will be within a range of projected pricing of alternate potable supplies available to the District;
- c. An appropriate guarantee from CEA or other obligated party, in form and substance satisfactory to the District, verifying the source, the supply, and the quality of the desalinated water;
- d. An initial minimum term of thirty (30) years, with no less than two (2) options to renew for equal terms each that are mutually agreed to by the District and CEA;
- e. The delivery of the desalinated potable water to a specified location and pressure at the United States border with Mexico, at which point the District shall arrange for the delivery of the desalinated potable water to its distribution system;

⁽¹⁾The District is not empowered to contract directly with CEA, and is looking for options to go through IBWC/CILA.

Mr. Lizola Marquez
Otay Water District's Interest in Purchasing Desalinated Water
October 20, 2015
Page 3 of 3.

- f. Such other terms and conditions as the parties deem necessary or advisable in light of any information or condition relevant to the Agreement.

Thank you for keeping us apprised about the Project and for continuing to explore the purchase and sale of desalinated potable water for the benefit of both our regions.

Sincerely,
OTAY WATER DISTRICT



Mark Watton
General Manager

WATER DESALINATION REPORT

The international weekly for desalination and advanced water treatment since 1965

Volume 51, Number 43

9 November 2015

Mexico

STATE GOV'T ISSUES SWRO INVITE TO BID

On Friday, the government of the State of Baja California, Mexico, issued an invitation to bid (ITB) on a seawater desalination project in Rosarito Beach, 30km south of Tijuana. The plant will be designed, built, financed and operated for a period of 37 years as a public-private partnership, under article 80 of Asociaciones Público Privadas (APP) laws for the state, which were revised in 2014. It will be constructed in two stages, and will have a total annual production capacity of up to 131.2 million m³/yr (360,000 m³/d; 95 MGD).

The ITB was published in Spanish and *WDR's* translation indicates that the interested companies must follow a prescribed and somewhat onerous prequalification process that includes filing documents proving their technical abilities based on similar projects, a list of projects currently in process and an extensive documentation of financial capabilities.

Only after each prospective bidder's documents have been reviewed and their applications accepted, will they will be allowed to purchase the tender documents for 100,000 pesos (\$6,000).

The preliminary project schedule is:

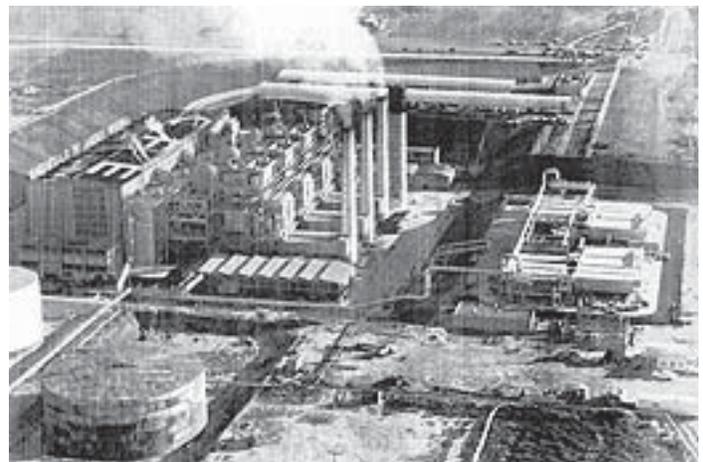
- Documents available through: 22 December 2015
- Site visit: 24 November 2015
- Clarification meeting: 9 December 2015
- Bid opening: 23 March 2016
- Award date: 20 May 2016
- Project start date: 12 July 2016
- Financial close: 1 August 2016
- Construction start date: 6 months after award
- Construction completion: 36 months after award

The state of Baja California has retained Baja Norte Water Resources, a US company, to market any excess water from the project as a direct sale on the US side of the border, or as a trade with Colorado River users. San Diego County's Otay Water District has apparently signed a non-binding

letter of intent to purchase some of the water and is in the process of obtaining the necessary approvals required for a cross-border purchase.

Consolidated Water Company (CWCO), through NSC Agua, its Mexican development company, has been actively developing a project in the area for more than five years, and has acquired a 20ha (49.5-acre) site adjacent to Comisión Federal de Electricidad's (CFE) Rosarito Power Station and has obtained municipal and state-level permits and environmental approvals. Although CWCO submitted an unsolicited proposal for the project this past March, Mexico's APP procurement laws require that the state launch a competitive tender for the project before an award could be made.

CWCO, a NASDAQ-listed company, will host a third quarter investor conference call this Tuesday, at which it is likely that CEO Rick McTaggart will provide additional details.



Rosarito Desalination Plant – 1968

In 1965, the City of Tijuana in Baja California, Mexico, made the decision to build a 28,387 m³/d (7.5 MGD) seawater desal plant at CFE's Rosarito Power Station. Wisconsin-based Aqua-Chem was awarded a \$7 million contract to construct the 44-stage MSF plant, which would use steam extracted from the co-located 225 MW power plant. The project was financed by the US Export-Import Bank and commissioned in November 1968. At the time, it was the world's largest seawater desalting plant.

Company News

MEMBRANE SUPPLIER TO RAISE ITS PROFILE

When Pennsylvania-based QUA Group debuted its product line at the 2011 Aquatech Amsterdam exhibition, the two-year-old company had just received NSF approval for its Q-Sep UF membrane and already had installed 15 of its patented FEDI ('fractional' electrodeionization) systems. *WDR* next caught up with the company at 2013 Aquatech Amsterdam as it launched its new CeraQ ceramic UF membrane product line.

Though the company has since added the EnviQ, a flat sheet, frameless MBR membrane to its product line, it has generally stayed out of the news. However, it looks like that's about to change. QUA recently appointed Fred Wiesler as sales and marketing director, and last week, Wiesler—who has 25 years of water treatment experience, including 20 years at Membrana where he was the global sales director—outlined his plans to increase the company's profile.

He told *WDR* that QUA has spent the last five years focusing on the engineering side of its business and his job is to help strengthen the company's sales and marketing efforts to build on its recent successes. Besides preparing new product data sheets and sales literature, he said that the company plans to develop a direct regional sales organization in North America and a distributor/agent organization in the rest of the world.

"QUA has been very active over the last few years and we now have over 100 installations worldwide in municipal, power, petrochemical, food and beverage and pharmaceutical applications. Our installations range from low flow rates to a Q-Sep UF pretreatment system for a 38,000 m³/d [10 MGD] SWRO system in India.

"We've also recently installed one of the world's largest EDI systems at an LNG plant in North America. The client selected our patented FEDI dual voltage technology to polish over 14,700 m³/day [3.9 MGD] of RO permeate because of its ability to treat higher hardness water and enhanced silica removal performance," said Wiesler.

Besides offering its membrane products and EDI stacks to qualified system OEMs, the company also provides service support and product training.

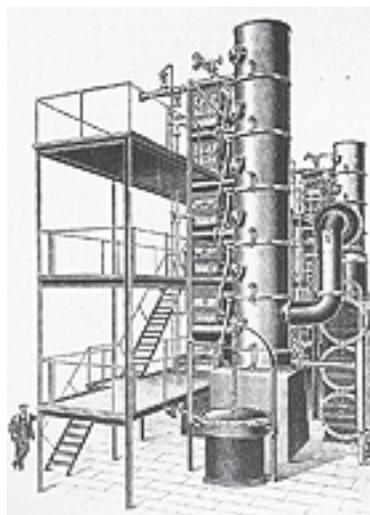
2016 Produced Water Society Seminar

The Produced Water Society will hold its annual seminar on 25-28 January in Houston, Texas. For more information, or to submit an abstract, visit <http://www.producedwatersociety.com>.

Saudi Arabia

SWCC'S 50+ YEAR DESAL HISTORY

For centuries, the people of the Arabian Peninsula depended on digging wells for their water supplies. By the start of the 20th century, it was already becoming clear that these wells were not sustainable, and in 1907 Jeddah acquired its first seawater distiller (left) to supply its residents and an increasing number of visitors with water. And in the late 1920s, two additional distillers were added.



But it was not until the 1960s, and the exponential population growth

associated with Saudi Arabia's booming oil industry that the region began turning to large-scale seawater desalination.

In 1965, the Ministry of Agriculture and Water, under the management of Prince Mohammed Al Faisal, launched the Saline Water Conversion General Administration office to conduct feasibility studies into desal plant construction. Four years later, Aqua-Chem commissioned two, 20-stage, 380 m³/d (100,000 GPD) MSF units on the Red Sea coast: one at Al Wajh and another at Duba. By 1970, the first phase of the Jeddah Desalination plant was launched.

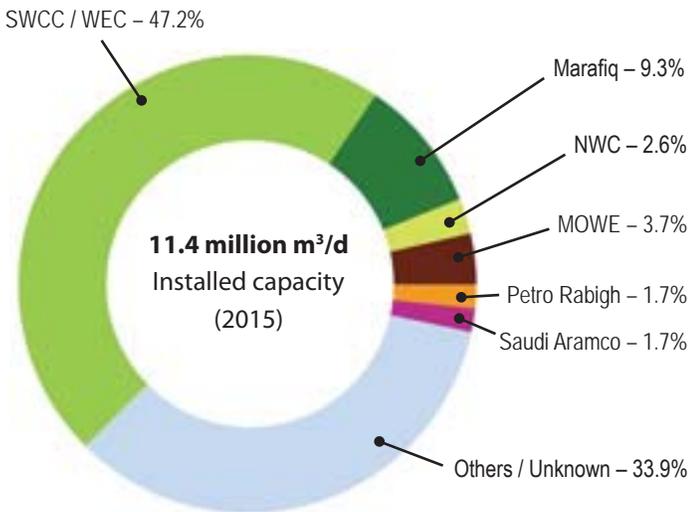
Then, in 1972, the Administration became the Deputy Ministry for Water Desalination Affairs within the Ministry of Agriculture and Water. And in 1975, a Royal decree created the Saline Water Conversion Corporation (SWCC),



SWCC's Ras Al Khair Power & Water Plant – 2,400 MW power production and 1 million m³/d MSF/SWRO desalinated water production

a Saudi government corporation responsible for producing electric power, desalting seawater and the distribution of water to various regions in the Kingdom.

Earlier this year, the SWCC governor said that the Supreme Economic Council would study a request to privatize the organization, listed on the Saudi stock exchange, and allow private sector investors to become stakeholders in the company.



Saudi Arabia's installed desal capacity by offtaker/client

Today, SWCC—including its Water and Electricity Company subsidiary, of which it owns 50 percent—operates 28 plants producing nearly 6 million m³/d (1,585 MGD) of desalted water and generating 14 million MW/h of electricity per year. It has laid a 5,390km (3,370 mile) long pipeline network with 46 pumping stations to distribute desalinated water throughout the Kingdom.

Energy RENEWABLES AND THE DUCK CURVE

Last week, the US Department of Energy (DOE) hosted an *Energy Optimized Desalination Technology Development Workshop* for 100 invited attendees. The one and half day workshop was held in San Francisco with the purpose of providing DOE engineers with a better understanding of the technology advancements needed to reduce the economic and environmental costs for sustainable water desalination.

The workshop was not limited to salinity reduction/removal technology, it also included a review of ancillary and associated technologies needed to ensure that desal can be incorporated into existing environments.

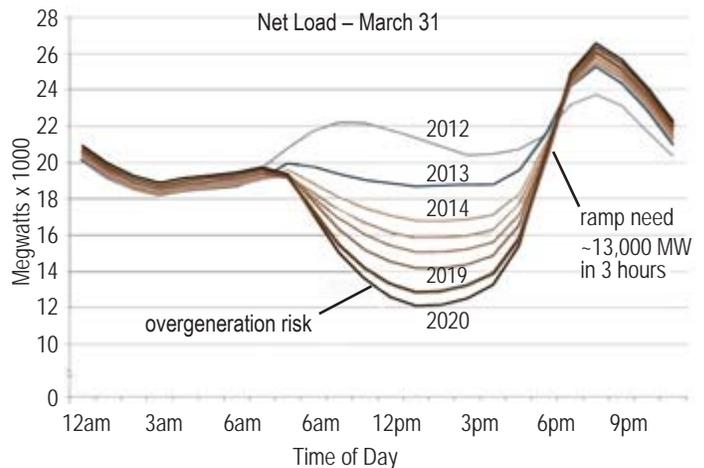
Four plenary presentations addressed the current water supply challenges and state-of-the-art technology. The remainder of the event was conducted in smaller breakout sessions where participants considered pathways to accelerate R&D and the deployment of promising desal approaches at lower energetic, economic and environmental costs relative to existing technologies.

The DOE staffers will take the next six weeks to summarize the ideas and prepare reports containing research recommendations.

During the final session, Rob Oglesby, the executive director of the California Energy Commission (CEC), addressed the attendees and noted the importance of the issue. The CEC is the state's primary energy policy and planning agency with responsibilities that include supporting energy research and promoting energy efficiency and conservation.

Oglesby addressed the possible impact of seawater desal on the state's energy resources if a majority of the planned seawater projects were constructed. He noted that most new electric production capacity is derived from variable renewable energy sources such as solar PV and wind turbines, which fluctuate wildly, and introduce system inflexibility, making it more difficult for grid operators to control.

He used the Duck Curve—named for the curve's duck-like shape—shown below, to illustrate the increasing challenge resulting from the rapid growth of renewables.



Inflexibility occurs because solar production peaks too early in the day to meet peak demand, and wind turbines often generate the most electricity at night when demand is lowest. Highly inflexible generation during periods of low demand translates to cheap or negative wholesale prices.

Oglesby encouraged desalters to consider ways of pairing solar, wind and other renewable energy with desalination as a beneficial next step.

IN BRIEF

A **private investor** is seeking the opportunity to acquire the controlling interest or ownership of an existing brackish groundwater desalination facility, preferably in Texas or the southwestern US. The ideal plant would have a capacity of 0.25 to 3 MGD in industrial or municipal service. Confidential proposals may be sent to tnoel@amaneadvisors.com.

Online applications for the Singapore International Water Week (SIWW) **Scholarship for US Utility Leaders** may be submitted beginning 16 November. The scholarship is available to active Water Environment Federation (WEF), Water Environment Federation Research Foundation (WERF) and National Association of Clean Water Agencies (NACWA) members who are currently employed as a General Manager or CEO in their home utilities board/corporation. Utility leaders who are interested in, or have a working knowledge of smart water issues, water reuse, wastewater management and integrated urban water are also welcome to apply. Successful applicants may receive up to a full scholarship to attend SIWW that will cover travel, lodging and registration fees, which is valued at \$6,000 to \$8,000. In turn, they will write papers and make presentations in the US to share what they have learned in Singapore. For information, visit <http://www.wef.org/SIWWScholars/>.

LANXESS said its Bitterfeld, Germany, membrane production facilities are reaching capacity limits and the company is planning a significant capacity expansion in the next year.

Canada's **H2O Innovation** has recently been awarded three UF projects with FiberFlex open platform skid design valued at \$8.9 million. The projects include a five-train system to filter 11.3 MGD (42,770 m³/d) of Lake Texoma water to produce potable water for the City of Sherman, Texas. A second project will filter water from the South Santiam River to produce 4.5 MGD (17,032 m³/d) of potable water for the City of Lebanon, Oregon, while a third

project including a two-train UF system will produce 0.45 MGD (1,703 m³/d) of potable water for the communities of Raspberry Falls and Selma Estates in Loudon County, Virginia.

California-based **Sylvan Source** has announced that it will collaborate with the Electric Power Research Institute (EPRI) to conduct a pilot study of its proprietary Core multi-stage distiller and degasser. Plans call for the unit to be deployed at a US electric utility in the first half of 2016 for the treatment of cooling tower blowdown. The pilot results will be published by EPRI.

The heat exchanger division of Germany's GEA Group AG has formed a standalone company named '**Kelvion**'. The name recognizes thermodynamics pioneer Lord Kelvin. More information is available at www.kelvion.com.

In a 3Q2015 financial report, Singapore-based **Hyflux** said that construction of the 411MW combined cycle power plant co-located at its Tuaspring Desal Plant in Singapore is on schedule and expected to be fully operational in early 2016. The company also reported that construction of its 200,000 m³/d Qurayyat SWRO project is now underway and scheduled to start commercial operation by May 2017.

Saudi Arabia's Ministry of Water and Electricity has increased the water price for industrial and commercial users to \$2.40/m³ (\$9.08/kgal), up from the current \$1.07/m³ (\$4.05/kgal) as the country's national finances come under increasing stress following the precipitous drop in oil prices. The price for residential customers, which averages just \$0.03/m³ (\$0.11/kgal), will remain at the same rate.

Singapore's PUB has awarded **Black & Veatch** a S\$3.87 million (\$2.75 million) contract to provide consultancy services on the 136,380 m³/d (36 MGD) Marina East SWRO plant. The plant could be operational within the next five years.

PEOPLE

Nanostone Water has announced the appointment of **Chris King** as vice president of sales for Europe, the Middle East and Africa. Formerly the European sales director for Koch Membrane Systems, he will be based in Wiltshire, UK and may be contacted at chris.king@nanostone.com.

WATER DESALINATION REPORT

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California

PACIFIC ON TAP

Last Monday, Poseidon Water and the San Diego County Water Authority formally dedicated the Claude “Bud” Lewis Carlsbad Desalination Plant. The 50 MGD (189,250 m³/d) SWRO plant was constructed by Kiewit-Shea Desalination and IDE Technologies, and has already delivered more than 1.5 billion gallons (5.6 million m³) of water into the local distribution system.

The dedication, whose major sponsors included Arcadis US, IDE and Kiewit-Shea, was attended by approximately 600 guests. The event culminated in a ‘turning of the wheel’ to symbolize the start of water delivery. The plant’s name was kept confidential until the program and was chosen to honor the late Carlsbad Mayor Bud Lewis, who was instrumental in making Carlsbad the host city for the project.



Carlsbad photo courtesy of Karen Lindsey, Avista Technologies

Poseidon CEO Carlos Rivas acknowledged the project partners, noting, “This pioneering project is the result of more than 17 years of planning, permitting and construction. It required teamwork between Poseidon Water, the Water Authority, our contractors, NRG Energy, and the cities of Carlsbad, Vista and San Marcos. Together, we are proud to provide a vital resource for the San Diego region.”

Abbreviated end-of-year issue

This 2-page edition will be the last *WDR* issue for 2015. We will return with a year-in-review issue on Tuesday, 5 January, and wish all readers Happy Holidays.

Washington DC

A MOONSHOT FOR WATER

A new US government initiative was unveiled at last week’s White House *Roundtable of Water Innovation* in Washington, DC. According to Secretary of Interior Sally Jewell, the public-private water innovation strategy will focus on encouraging technological advances and private-sector investment to find new technologies to recycle and conserve water.

Informally known as the ‘moonshot for water’—echoing JFK’s moonshot speech and the Department of Energy’s 2011 SunShot Initiative to achieve solar cost parity without subsidies—the initiative’s goal is to achieve *pipeline parity*, where the economic and energy/carbon cost to deliver new water supplies is equivalent to conventional alternatives.

The roundtable provided an opportunity for members of the desal industry, academia and federal/state/local governments to discuss how an aggressive innovation agenda can help meet the challenge of a constrained water supply in regions that will be affected by increasingly severe and lengthy droughts.



Roundtable participants (from left): John Tonner (CWCO), Tom Wolfe (Toray), Amanda Brock (Water Standard), Tom Pankratz (WDR), Harold Fravel (AMTA)



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Secretary Jewell also announced that the Administration will bring together government and private sector stakeholder representatives on UN World Water Day, 22 March, to discuss ways in which the public-private water innovation strategy is making progress. It also launched a website (<http://tinyurl.com/jqd3tvc>) to solicit input and examples of progress and responses to the call-to-action.

Selected announcements may be incorporated into White House materials in the coming months and the submitting organizations and relevant partners may be invited to participate in upcoming White House events on the topic.

United States RECLAMATION TO FUND NEW PROJECTS

Communities, Indian tribes, irrigation and water districts in seventeen western US states undertaking water reclamation or reuse feasibility studies are invited to participate in the WaterSMART grant opportunities. A total of up to \$21 million in cost-shared funding is available for water conservation and energy efficiency projects. Applications may be submitted under one of two funding groups:

- Up to \$300,000 will be available for smaller projects that may take up to two years to complete.
- Up to \$1 million will be available for larger, phased projects that may take up to three years to complete.

Proposals must seek to conserve and use water more efficiently, increase the use of renewable energy, improve energy efficiency, benefit endangered and threatened species, facilitate water markets, carry out activities to address climate-related impacts on water, or prevent any water-related crisis or conflict.

Proposals must be submitted by 20 January, and information is available at www.grants.gov using funding opportunity number R16-FOA-DO-004.

IN BRIEF

Only four days remain for the WaterReuse Research Foundation's **Online Auction**. You may place your bid now to help raise money for the Foundation. To view the catalog and place a bid, visit <http://tinyurl.com/omh8jbx> by 6:00 PM EDT on Thursday, 24 December.

Plans to build the Haverstraw Desal Plant on the Hudson River, 35 miles (56km) north of New York City, were effectively killed last week, when the state's Public Service Commission directed Suez's **United Water New York** subsidiary to abandon the project. The plant, which would have desalted 7.5 MGD (28,385 m³/d) of water from the tidally influenced river, was first proposed in 2006. A pilot study was conducted in 2011, and the state's Department of Environmental Conservation accepted the project's draft environmental impact statement in January 2012.

Sydney Water's 250,000 m³/d (66 MGD) SWRO plant at Kurnell, which has been mothballed since 2012, was heavily damaged by a storm having winds of up to 213km/h (133 mph) last week. The storms blew off the roof of the control room and main building. The plant is not expected to be reactivated until reservoir levels, which now stand at 94 percent, are drawn down below 70 percent. One short-sighted politician suggested that the plant should now be completely shut down, rather than repaired.

LG Water Solutions has released an update for its Q+ RO projection software. Version 2.3.2 features include the addition of tertiary-treated MF/UF and conventional feedwater sources and automatic adjustment of flow loss and salt passage increase. The software may be downloaded at <http://tinyurl.com/zkph6no>.

Arizona-based **Sweetwater Tech Resources** (STR) has selected **Water Planet** as the technology provider for two regional produced water recycling centers near Bakersfield. The Wasco and Lost Hills facilities will have production capacities of 19,000 and 95,238 bbl/d (3,030 and 15,140 m³/d), respectively. Water Planet said that it will furnish its modular IMS-5000 system, which incorporates up-front mechanical oil-water separation and slop oil dewatering to protect downstream ceramic UF membranes. The system is designed to replace primary (FWKO, treaters, coalescers, CPIs, skim tanks and electrostatic treaters), secondary (flotation and hydrocyclone technologies) and tertiary technologies (walnut shell and multimedia filtration). STR will conduct pilot-scale demonstrations for area oil and gas producers and potential customers in early 2016.

WATER DESALINATION REPORT

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Company News

DEVELOPER ACQUIRES DESAL OEM

Grand Cayman-based Consolidated Water Company (CWCO) announced this morning that it has acquired 51 percent of the ownership of Aerex Industries, a Florida-based designer and manufacturer of water treatment equipment including MF/UF and RO treatment systems.

CWCO CEO Rick McTaggart noted that Aerex has long been one of his firm's suppliers whose equipment has been integral to the performance of some of CWCO's most efficient and profitable desal plants. He added, "This acquisition of a majority interest in Aerex represents an important first step of the expansion of our business model into other water-related industries and markets...[it also] provides us with an operating platform in the United States through which we expect to continue to expand our customer base and product lines within the water industry."

Aerex's unaudited 2015 revenues are estimated at over \$19 million and the all cash deal is valued at \$7.7 million. The acquisition includes Aerex's 30,000 ft² (2,787 m²) ASME and ANSI code-certified manufacturing and assembly facility that operates in accordance with strict quality assurance requirements in Fort Pierce, Florida.

WDR understands that Aerex will continue to operate as a stand-alone subsidiary under the Aerex Global Water Solutions name with its existing management, led by its president Thomas Donnack.

United States

WATER ISSUES ON POLITICAL AGENDA

Last week, the administration submitted its 2017 budget request to Congress, which included \$260 million of new funding to increase the nation's water supply through investment in technology. Some of the highlights include:

- \$98.6 million for Reclamation's WaterSMART program to promote conservation initiatives and technology breakthroughs.
- \$4 million for USGS to assess water use during drought.
- \$28.6 million to support Reclamation's R&D including \$8.5 million for a technology challenge prize on advanced, next-generation technologies and \$5.8 million for desal and water purification.

- \$25 million for DOE to launch a new Energy-Water Desal Hub focused on developing technologies to reduce the cost, energy input and carbon emission levels. DOE would also invest nearly \$20 million in complementary R&D on desal technologies relevant to fossil, CSP and geothermal applications.
- \$15 million for USDA intramural research water supplies to support agricultural production and irrigation practices that conserve water.
- \$88 million for NSF to support basic water research.

The White House is hosting a water summit on UN World Water Day, 22 March, and will consider new activities and actions to raise awareness of water issues and potential solutions. Companies or organizations may be invited to participate in upcoming events on specific topics or have their announcements included into the White House materials.

For more information, visit <http://tinyurl.com/jqd3tvc>.

Company News

OILFIELD WATER TREATER GETS BACKING

Fountain Quail Management has announced that it has secured financial backing that will allow it to expand its North American produced water treatment business. According to CEO Rich Broderick, a private equity commitment of up to \$40 million will enable it to continue treating and recycling produced and flowback water generated in oil and gas plays.

GWI Summit in Abu Dhabi

GW will hold its annual GWI Summit in Abu Dhabi, UAE on 19-20 April. With the theme *Water 2050: The Future is Now*, the event is one of the world's premier water events and attracts the industry's top water executives. In addition to a dynamic conference agenda, which includes the Tech Idol event, the Summit will include a gala dinner in which the Global Water Awards will be presented by Felipe Calderón, the former President of Mexico and Chairman of the Global Commission on the Economy and Climate.

A pre-Summit workshop will be held in association with the Produced Water Society, featuring technical presentations on produced water treatment and management and new technology updates.

The event will be held at the Jumeirah Etihad Towers hotel. For more information go to www.watermeetsmoney.com.



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The company, which was founded in 1996 and is based in Keller, Texas, made a name for itself as the first commercial recycler of shale water in Texas' Barnett Shale using its 'Rover' mobile treatment technology and 'Nomad' MVC evaporators. It also developed produced water treatment/recycling projects in the Marcellus (Pennsylvania), Eagle Ford (South Texas) and Permian Basin (West Texas) shales.

COO Brent Halldorson told *WDR* that the company recently deployed four Rover units with 40,000 bpd of recycling capacity in West Texas' Delaware Basin to meet client frac schedules at multiple locations.

In April 2015, Fountain Quail continued to operate as Aqua-Pure, the company's Calgary-based parent, was de-listed from the Toronto stock exchange and re-organized.

Company News

CERAMIC UF MODULE

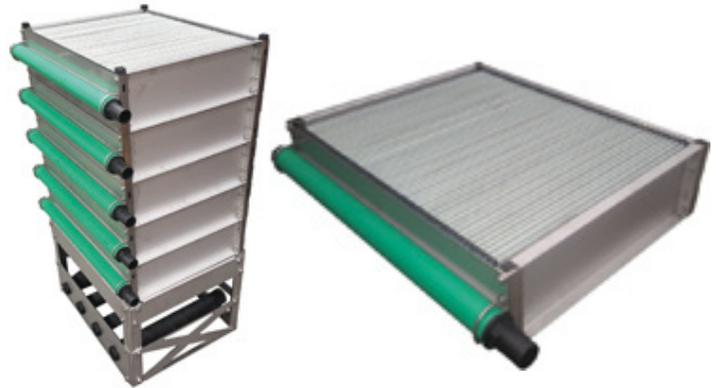
Among the first-time exhibitors at the recent Membrane Technology Conference (MTC) was RODI Systems, a New Mexico-based supplier of pre-engineered membrane systems focused on the commercial and industrial market. Despite its 20-year history and broad membrane product line, the products featured at RODI's stand at the MTC related to the company's relatively recent appointment as the exclusive North American supplier of silicone carbide (SiC) ceramic MF/UF membrane products for Denmark's Cembrane.

According to Stan Lueck, RODI's president, Cembrane's SiC membrane is well-suited for many of RODI's industrial customers with oily wastewater, and the addition of the product line has already resulted in the sale of a significant system in the western US.

"A 3,200 m³/d [0.85 MGD] treatment system will be installed in March to treat oilfield produced water with a total solids concentration of 3.5 percent and a high scaling potential. The client selected the Cembrane system because of its ability to operate at such a high flux and withstand the harsh chemical cleaning that is expected to be required," said Lueck.

The flat-sheet SiC membrane module was developed by Cembrane CEO Lasse Andreassen, a founder of LiqTech International and its predecessor, Cometax. In late 2014, six months after retiring from LiqTech, Andreassen developed the patented flat sheet module that became the focal point of Cembrane's product line.

"The top and bottom of the 7.5m² [81 ft²] submersible MF modules are open so that up to ten modules can be stacked in a tank. Each module includes an integrated permeate header that can be coupled to the adjacent module to simplify installation, and the channels between the vertically-oriented



Module Stack

7.5m² SiC Cembrane Membrane Module

membranes allow for high solids loading and air scouring in MBR applications," explained Andreassen.

"We are able to operate with fluxes that range from 45 to 80 Lmh [26 to 47 GFD] in MBR applications up to 1,200 Lmh [706 GFD] for some low-solids groundwaters, with membrane lifetimes that exceed 10 years, regardless of the application or cleaning regime."

Lueck noted that in addition to offering completed systems with Cembrane membranes' modules, RODI Systems also offers the modules and individual plates to OEMs interested in building their own systems.

Technology

CEOR MODEL MATCHES WATER QUALITY, OILFIELD

Traditional primary and secondary production approaches often yield less than half of the oil present in conventional reservoirs. Tertiary recovery methods such as Chemical Enhanced Oil Recovery (CEOR)—a waterflooding technique using water-based chemistries—may recover large volumes of the remaining oil, however, tertiary recovery becomes increasingly difficult to justify when oil prices drop.

When considering CEOR, one of the most impactful economic tradeoffs to evaluate is the extent to which water should be treated to maximize value for operators.

Two Texas-based companies, Water Standard and Ultimate EOR Services, have teamed up to address this challenge by developing a modeling tool that merges mechanistic simulation of oil reservoirs with best practices in water treatment to identify technically sound, cost effective CEOR strategies during early stages of program planning. Key outputs of the tool define trajectories of reservoir performance and net present value (NPV) economics. Operators evaluating CEOR can then compare designs with different attributes in terms of chemical, water treatment and facility requirements on an NPV basis.

Water Standard's Holly Churman and Lisa Henthorne unveiled the model at the Produced Water Society's recent annual seminar, whose theme was "water treatment in a low dollar environment". The presentation included a comparative case study for a representative Middle East oilfield, using produced water as the water supply.

The planning challenge assumed an oil price of \$45/bbl, a 6,000 bpd maximum injection rate, a sandstone reservoir and considered three scenarios: whether to implement a waterflood program with basic water treatment (filtration and de-oxygenation); a high-salinity and high-hardness produced water in a surfactant-polymer (SP) flood; or, to soften the water and add alkali in an alkali-surfactant-polymer (ASP) flood.

Churman explained that since the ASP flood requires fewer chemicals than the SP flood, the evaluation had to consider whether the cost of softening the water was worth the advantages of adding alkali, and whether surfactant with a high salinity tolerance would recover oil more efficiently, and at a lower cost, than a basic waterflooding program.

For the example exercise considered, the oil production and NPV trajectories for the three scenarios indicated that the ASP scenario would out-perform the competing programs, although SP production was quite close. From an economic perspective, the basic waterflood program would provide a one-year return on investment. However, for patient operators willing to take on more risk, the SP and ASP floods would offer a greater economic return between the second and third years.

"This model clearly shows the value of treating water to a prescribed level that is most compatible with the ideal flood chemistry to optimize oil production. Planning tools like this are becoming more critical when making decisions in low oil price climates," said Churman.

Desal History

TED DARTON: THE GOOD OLD DAYS

Editor's Note: The co-founder of Genesys International has been active in the desal industry for 49 years. He's one of that rare breed of desalters that has been involved in both the thermal and membrane sides of the industry. WDR asked him to share some of his career memories with readers:

In 1967, Switzerland's Geigy Chemical Company won a contract with the UK Atomic Energy Authority to develop a seawater antiscalant for high temperature MSF evaporators. Within six years, polymaleic acid had been synthesised, manufactured and pilot tested in Gibraltar and at Aminoil in Kuwait. Amidst great joy, the first commercial truckload was shipped from Manchester to Ras Abu Aboud, Qatar in

early 1975. Thus began the amazing Belgard EV story and with it, my involvement in the desalination industry.

My early days were spent visiting the world's MSF plants and introducing Belgard EV. The big plants—which are small by today's standards—included Aqua-Chem's units in Jeddah and Al Khobar, Westinghouse's plant at Zuara, Libya and four Weir Westgarth units in Abu Dhabi, which were the responsibility of Superintendent Ian McGregor.

During one of my regular meetings with Weir Westgarth's Bill Querns in Glasgow, I was introduced to Professor Bob Silver, the inventor of the modern MSF system who was lecturing at Glasgow University and consulting for Weir. For many years Glasgow University ran an MSc Engineering degree course under the tutelage of Dr Bill Hanbury, attended by many young engineers from the rapidly expanding Middle East desal markets. On the other side of the Atlantic, Dr Bob Backish ran a desalination course at Fairleigh Dickinson University and I was pleased to be a guest speaker at their summer camp at St Croix in the US Virgin Islands; it was tough duty, but somebody had to do it!

By 1977, Ciba-Geigy appointed Rashid Abdel Ghani to develop the Middle East and North African desal markets. We spent many happy days promoting Belgard EV through the region, working with Jamjoom Corporation in Saudi Arabia, Sultan Bin Rashid in Dubai, Sogex in Oman and in Kuwait, Bahrain and Qatar. During this time, I met two true gentlemen, Tom Temperley, the president of Conam in Jeddah, and Abbas Al Shatti the owner of Al-Salem Chemicals, our Kuwaiti agent. Interestingly, Tom and Abbas had collaborated on the development of Salvep, a low temperature desal antiscalant used in the early 70s.

During this time, I spent a week setting up an antiscalant trail at the USSR Nuclear Reactor plant in Shevchenko on the Caspian Sea. This was an extremely worrisome trip for me. In the midst of the Cold War, this nervy little Brit was working at one of the USSR's front line nuclear plants. Fortunately, my ability to consume large quantities of vodka with no visible ill effect resulted in a warm rapport with the operating crew.

In those early days, competition was limited to commodity polyphosphate, sulphuric acid and Albright and Wilsons' Albivap products. Most of the faces from these times have sadly passed away or retired, although a few such as Ian Watson, Leon Awerbach and Miriam Balaban remain ever present.

While attending the 1989 IDA World Congress as Houseman's general manager, I saw many old MFS friends, but was amazed to see that membranes had overtaken MSF as 'flavour of the month'. This was unexpected, as I had

previously reported to my bosses that “*membranes had very little future unless the water was extensively and expensively pre-treated*”. How wrong can you be?

It was exciting to see membranes making such strong commercial progress and I managed to persuade Houseman’s directors that RO chemicals were the next big thing. Fortunately, Paterson Candy, a DuPont licensee, was a sister company. Our collaborative work investigating cleaners for the PermaSep permeators resulted in the development of an antiscalant, rather than a cleaner, designated PermaTreat 191 and introduced to the market in 1991.

The PermaCare marketing policy for RO antiscalants was an updated version of the same successful marketing policy used 20 years earlier to promote MSF antiscalants; nothing much had changed.

Having retired from the water treatment industry, Ursula Annunziata and I set up Genesys International in 2001, and it has been an exhilarating challenge for the past 15 years.

I met Sidney Loeb at an EDS meeting in 2005 and count myself most fortunate to be one of the few people who has met the inventors of both the RO membrane and the MSF process. Lucky indeed! The rest is history, though rapidly dimming in the memory. — *Ted Darton, February, 2016*

IN BRIEF

Boston-based **Desalitech** said that it has furnished two ReFlex RO systems to the Atlanta-based Novelis’ aluminum sheet manufacturing facility in Changzhou, China. The two 50 GPM (3.2 L/s) BWRO units will be operated in series as a two-pass system with an overall 90 percent recovery to provide permeate with a TDS of less than 1 mg/L for use as high-purity process water and cooling tower makeup. The units, which employ Desalitech’s Closed Circuit Desalination process, are part of a ZLD system and will minimize the flow to a downstream evaporator. Desalitech CEO Rick Stover told *WDR* that the units are scheduled for startup next month.

The National Water Research Institute is now accepting nominations for its **23rd Annual Clarke Prize**, which includes a cash prize of \$50,000 and rewards scholarly and practical achievements in water research. The Prize acknowledges an individual actively contributing toward

any of the following areas: the discovery, development, improvement and/or understanding of issues associated with water quality, quantity, technology or public policy. Nominations are due on 1 April and details are available at www.nwri-usa.org/nominations.htm.

Procurement of the 400,000 m³/d (106 MGD) **Jeddah 4 SWRO project** is understood to have been put on hold following the submission of bids. It appears that Saudi Arabia’s Saline Water Conversion Corp (SWCC) may be considering retendering the project, which was being developed on a design-build basis, using a privately-financed contract model. Black & Veatch is the SWCC’s engineer on the project.

Companies and consortia who are understood to be interested in ing in the developer role for the proposed **Rosarito seawater desalination project** in Baja California in Mexico include: NSC Agua/CWCO; Hydrochem (Hyflux)/CGM Servicios; Valoriza Agua; Acciona Agua; Proactiva (Veolia); IDE Technologies; FCC Aqualia; Constructora los Potros; and Grupo Financiero Interacciones. *WDR* has not been able to confirm whether all of the interested companies have been pre-qualified to submit bids on the 380,000 m³/d (100 MGD) SWRO project, which are due on 23 March.

Errata: The Water Environment Federation (WEF) and the WaterReuse Association will participate along with the American Water Works Association (AWWA) and American Membrane Technology Association (AMTA) to jointly host the 2018 Membrane Technology Conference (MTC) in West Palm Beach, Florida on 12-15 March 2018. Last week’s *WDR* incorrectly said that WEF and WaterReuse would participate in the 2017 MTC.

PEOPLE

CDM Smith has named **Greg Wetterau**, a vice president with the firm, as its technical strategy leader for water reuse and desalination. He is based in southern California and may be contacted at WetterauGD@cdmsmith.com.

Chad Dannemann has been appointed as business development manager for Desalitech. Formerly with Ashbrook Simon-Hartley, which is now part of Alfa Laval, he is based in Houston, Texas, and may be contacted at chad.dannemann@desalitech.com.

Second desalination plant for Baja California

First public private venture in the state



[\(/staff/sandra-dibble/\)](/staff/sandra-dibble/)

By [Sandra Dibble \(/staff/sandra-dibble/\)](/staff/sandra-dibble/) | 3:58 p.m. March 7, 2016



Baja California Gov. Francisco Vega de Lamadrid, at center in beige jacket, presides at a groundbreaking ceremony in the community of La Chorera, site of desalination plant set to open in 2017 to supply residents in the San Quintin agricultural region. — *Gob. de Baja California*

TIJUANA — A New York City-based company working with two Mexican partners has launched construction of an ocean water desalination plant in the agricultural region of San Quintin some 160 miles from the San Diego border.

Scheduled to open in the summer of 2017, the plant would provide 5.8 million gallons of water daily to more than 100,000 residents of the region.

The cost of the project is about \$32 million at current exchange rates. It is the first to be approved under Baja California's new public-private partnership law.

"This would not have been possible without this new very important tool that we have in Baja California," Baja California Gov. Francisco Vega de Lamadrid said at a groundbreaking ceremony on Saturday.

The financing and construction of the facility is being carried out by a consortium made up of [RWL Water Group \(http://www.rwlwater.com\)](http://www.rwlwater.com) and two Mexican partners, Libra Ingenieros Civiles and R.J. Ingenieria. Under the agreement, the group would operate the plant for 30 years.

RWL Water's founder and chairman is Ronald S. Lauder, a former U.S. ambassador to Austria who also served as the president of the World Jewish Congress.

San Quintin is an important agricultural region that specializes in export-oriented produce, such as strawberries, tomatoes and cucumbers. But unlike other areas of Baja California, it does not receive water from the Colorado River and has struggled with a limited water supply.

The future facility, located in the fishing community of La Chorera, is one of two desalination plants now under construction in Baja California. A similar-sized reverse-osmosis plant in the port city of Ensenada is scheduled for opening in April 2017.

The state of Baja California also has been pursuing the possibility of a public-private partnership to build a third desalination plant with a capacity for 100 million gallons a day, with the possibility of selling some of that water to U.S. consumers.

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Lawsuits cloud bid to build Rosarito desalination plant

Project would be largest in Western Hemisphere



[\(/staff/sandra-dibble/\)](#)

By [Sandra Dibble \(/staff/sandra-dibble/\)](#) | 9 a.m. March 13, 2016



The Presidente Juarez thermoelectric plant in Rosarito Beach, a key component in proposals to build a seawater desalination plant. *San Diego County Water Authority*

It would be a ground-breaking project for Baja California, the largest desalination plant in the Western Hemisphere, situated on the Pacific Ocean in a corner of Rosarito Beach — and could one day serve as a supply for water consumers in San Diego County as well.

But as a critical deadline approaches, two partners in the group that proposed the 100 million-gallon-a-day facility are bitterly at odds, suing each other in U.S. and Mexican courts.

On one side is San Diego resident Gough Thompson, an early champion of the desalination project who claims his partners illegally sidelined him starting in February 2012, effectively reducing his shares from 25 percent to 0.1 percent without his knowledge or consent. At age 86, and just three months out of double-bypass heart surgery, he is demanding that his original shares be restored.

“They viewed setting him aside as an easy thing to do,” said Thompson’s Mexican attorney, Roberto Vega, saying his client’s age led them his partners to underestimate him. “They wanted complete control of the company.”

On the other side are his current and former partners. One is Baja California businessman Alejandro de la Vega, who was bought out in 2014. The other is the Cayman Islands company, Consolidated Water Co., which now controls 99.9 percent of the shares in NSC Agua, the Mexican company it formed in 2010 with Thompson and de la Vega to develop the Rosarito desalination proposal.

Consolidated Water Chief Executive Rick McTaggart said no laws were violated by his company, accusing Thompson of breaching an April 2012 agreement that included a “large settlement” that released NSC Agua from future claims. “Thompson is clearly after money, and has brought these claims at a critical time in the project expecting us to capitulate,” said McTaggart.

Despite the continuing legal issues, NSC Agua is preparing to submit its bid under Baja California's new public-private partnership law to build, finance and operate the giant facility, with the first phase scheduled for opening in 2019 and full buildout by 2024. State officials say seven groups have expressed initial interest, with final proposals due by March 23, and the winner scheduled to be announced in May.

The plant would be the third utility-scale desalination plant to come online in Baja California, following the scheduled 2017 opening of two smaller ones farther down the Pacific coast, the first in the port city of Ensenada and the second in the agricultural region of San Quintin.

The Rosarito plant (<http://www.sandiegouniontribune.com/news/2014/aug/24/rosarito-Mexico-desalination-plant-binational/>) would be a project of unprecedented scale for the state, and a test of the public-private partnership law adopted in 2014. "It's a very important project," Baja California Gov. Francisco Vega de Lamadrid said at a recent presentation of state infrastructure plans — a project that would expand Tijuana's water supply, and decrease its near-total reliance on water deliveries from the Colorado River.

Baja California's largest city, Tijuana currently exceeds its allocation of Colorado River water, and gets by through the purchase of water rights from Mexicali farmers, said German Lizola, director of the Baja California Water Commission.

Though Baja California officials say the intent of the plant is to meet the state's needs, authorities also have been in talks with the Otay Water District in San Diego County, which has expressed interest in purchasing some of the water once the project moves forward to its second phase.

"We're still pursuing it," said Mark Watton, general manager of the Otay Water District. The district has sought a presidential permit to build a cross-border pipeline to carry up to 50 million gallons per day from Mexico to California.

Baja California's secretary of economic development, Carlo Bonfante, "seems to want to have Otay as an offtaker," Watton said. "We need to see what happens with the presidential permit."

At this point, plans for the plant continue to move forward. Lizola, the head of the Baja California Water Commission, said any litigation taking place among partners in NSC Agua "is not a matter for the state." The government's concern is the bidding process, he said: "It's a public tender, and we have to follow all the established steps."

Thompson's original legal action in Baja California dates to June 2015, when he filed suit against Consolidated Water, de la Vega, and others, challenging the actions that increased Consolidated Water's ownership interest, and demanding the suspension of transactions made at a Feb. 8, 2012, shareholders meeting that led to the changes.

Upon learning of the Mexican litigation last fall, Consolidated Water filed a suit against Thompson in New York City, asking the judge to issue an injunction preventing the continuation of the Baja California lawsuit.

Documents filed in the New York case speak to origins of the dispute.

Thompson's involvement in the project dates to 2008, with the incorporation of EWG Water LLC, "to sponsor a consortium to design, build and operate a large-scale desalination plant at Rosarito Beach," according to his affidavit filed in New York federal court.

Though he had never done a project in Mexico, Thompson came with years of experience forming international consortium projects in the Middle East, where he advised U.S. companies working in Saudi Arabia during the desert kingdom's initial desalination efforts, the affidavit said.

For the Rosarito project, Thompson formed a partnership with Mexican businessman Alejandro de la Vega. One of the first moves was to contact the Otay Water District, Thompson said in the court document, and in 2009, they received a letter of intent from the district "to purchase 25 million gallons a day of desalinated water," the affidavit said.

Moving forward, they contacted Mexico's Federal Electricity Commission, which operates the Presidente Juarez thermoelectric plant in Rosarito Beach, "to buy power and secure exclusive rights to its spent cooling water," according to the affidavit, and launched the process of land acquisition for the desalination plant.

After spending close to \$500,000 of his own money, Thompson said he searched for a partner that could bring in more funding. Through an Internet search, he found Consolidated Water, "a publicly traded, Cayman Islands owner-operator for four desalination plants" with cash reserves of about \$40 million, according to the affidavit. In 2010, they formed a partnership with Consolidated Water, creating NSC Agua "to serve as the new project vehicle."

Under the new agreement, Thompson and de la Vega controlled half the shares, with Consolidated Water holding the other half. In late 2011, de la Vega proposed splitting off his shares from Thompson's, with each controlling 25 percent.

Thompson "agreed to do so, with the strict instruction that the newly minted 25 percent certificates must be placed in escrow and released only upon our joint approval. Otherwise we would lose our 50 percent voting bloc" of NSC Agua, Thompson's affidavit read.

But in February 2012 “and entirely unknown to me at the time,” de la Vega and Consolidated Water “signed a secret agreement,” obtaining de la Vega’s voting rights and an option to purchase de la Vega’s shares by February 2014, according to Thompson’s affidavit.

But Consolidated Water’s account of events, in an Securities and Exchange Commission filing late last year said it paid \$300,000 in February 2012 and entered into a “option agreement” with de la Vega, “along with an immediate power of attorney to vote those shares, for \$1 million.” In May 2013, NSC issued new shares, and a result, “acquired 99.9 percent of the ownership of NSC,” according to its SEC filing from November that is posted on its website.

“We were looking for a path to break this logjam that we were in at the time with the partnership,” McTaggart said in an interview. “My recollection is that Thompson tried to buy us out, and we were talking at the same time with de la Vega about buying him out. Ultimately, we got to the finish line faster with de la Vega.”

McTaggart said Thompson was paid more than \$500,000 by NSC Agua, “including a large settlement in 2012” in exchange for releasing Consolidated Water and its subsidiary “from all future claims for the events that occurred at the Feb. 8, 2012, meeting,” he said. By suing in Mexico, “Thompson clearly breached that release.”

Thompson’s former partner, de la Vega, could not be located.

Roberto Vega, Thompson’s attorney, said the April 2012 agreement that his client signed “simply terminated a consulting agreement between the parties.”

Last month, a judge in the New York case denied Consolidated Water’s petition, ruling that the dispute should be settled in Mexico. Consolidated Water is asking the judge to reconsider.

McTaggart said he is not giving in to Thompson’s demands, and is preparing to submit NSC Agua’s bid for the project. “We think it’s going to be a fantastic project for the region if it’s ultimately completed.”

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WATER DESALINATION REPORT

The international weekly for desalination and advanced water treatment since 1965

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Oman

A NEW WEEK, ANOTHER NEW SWRO IWP

Last Tuesday, for the second week in a row, Oman Power and Water Procurement Company (OPWP) signed a water purchase agreement for a major seawater desalination project.

The 250,000 m³/d (66 MGD) Sohar 3 Independent Water Project (IWP) was awarded to a consortium that includes Valoriza Agua (51%), the Oman Brunei Investment Company (25%) and Sogex Oman (24%). The award was based on the team's winning bid, which was quoted at a water tariff of OMR0.32/m³ (\$0.83/m³; \$3.22/kgal).

The plant will be located 200km (125 mi) north of Muscat on the Batinah Coast, and is scheduled to begin supplying water in 2018.

Fichtner is supporting the client as technical advisor.

Sacyr, Valoriza Agua and Sadyt – Who's whom?

When reporting on stories involving the captioned companies, it is not always clear as to which one should be credited. *WDR* has therefore taken the liberty of defining the relationships as follows:

- **Sacyr** (pronounced saa-seer) is a multinational infrastructures and services company listed on Spain's Ibex 35 index.
- **Valoriza Agua** was founded in 2005, and is the entity under which Sacyr's water activities—water management, engineering, construction and operation & maintenance—are grouped.
- **Sadyt** (pronounced saa-deet) was founded in 1995, and is the Sacyr water treatment company specializing in the design, construction and operations of RO and EDR desalination projects around the world. Sadyt and Valoriza Agua are sometimes used interchangeably.

Egypt

LOI FOR IWPP ANNOUNCED

Singapore's Hyflux has announced that it received a letter of intent (LOI) from the General Authority for the Suez Canal Economic Zone (SCZone) to construct the Ain Sokhna Integrated Water and Power Project (IWPP) in Egypt. This would be the first IWPP to be undertaken in Egypt.

The project will include a 150,000 m³/d (40 MGD) SWRO plant and a 457 MW combined cycle gas turbine power plant. Hyflux estimated the total value of its EPC contract at \$500 million, and said that it would be awarded a 25-year contract to operate and maintain the plant.

The company gave no indication of when a formal contract might be signed, nor when the desalination or power plant might be commissioned.

California

SWRO WATER DECLARED 'DROUGHT-RESILIENT'

State regulators certified the water supply from the Carlsbad Desal Plant as drought-resilient, reducing the regional impacts of emergency water-use mandates the state imposed in June 2015. The State Water Resources Control Board's certification lowers the regional aggregate water conservation goal from 20 percent to about 13 percent, though water-use targets will continue to vary by local water agency.

Vallecitos Water District, the only retail water provider with a direct connection to the Carlsbad plant, will have its conservation target dropped to 16 percent compared to its previously mandated 24 percent reduction in potable water use. The District receives up to 4,083 AFY (13,800 m³/d) of desalted water from the plant.

Some environmental groups have opposed giving local governments credit for new supplies on the basis that it will discourage conservation. However, Bob Yamada, the director of water resources for the San Diego County Water Authority, told *WDR* that the 50 MGD (189,250 m³/d) desal plant is a major component of the area's water portfolio, and reduces the reliance on imported water.

"Water-use efficiency is critical because we don't know how long the current drought will last or when the next one will happen, but the reduced conservation targets begin to recognize our local communities' investment in the Claude 'Bud' Lewis Carlsbad Desalination Plant, which is a buffer against drought. It provides increased flexibility for residents to deep-water trees, maintain living landscapes in the summer and preserve fire-safe buffers around homes,



and gives breathing room for businesses to expand water-efficient production,” said Yamada.

The State Board may make additional adjustments to its water-use mandate based on how El Niño conditions affect state and local water supplies over the next several months. While the Sierra snowpack is better than in recent years, it would need to be around 150 percent of normal for the state to emerge from the drought, according to officials at the California Department of Water Resources.

Israel

DEVELOPER BUYS OUT SWRO PLANT PARTNER

IDE Technologies has acquired full ownership of the 347,945 m³/d Hadera Desalination Plant after paying Shikun & Binui NIS80 million (\$20.7 million) for its 40 percent stake in the operating company. Shikun & Binui said that an additional sum would be paid in the future based on the volumes of water produced during the remainder of the 25-year BOT contract, which extends through 2032.

The 347,945 m³/d (92 MGD) SWRO plant was originally constructed by an IDE and Shikun & Binui consortium at a cost of NIS1.5 billion (\$387 million) and was commissioned in May 2010.

At the end of 2014, the outstanding loan balance for the project totaled a reported NIS1.1 billion (\$284 million).

Renewable Energy

PV-POWERED DESAL REPORT AVAILABLE

Abundant solar resources, combined with large amounts of brackish groundwater, can make the coupling of solar power and desalination an attractive water supply alternative in areas without access to grid electricity.

Julie Korak, an environmental engineer with the Bureau of Reclamation’s Technical Service Center in Denver, Colorado, and the co-author of a Reclamation report entitled *Evaluation of PV-Powered RO Systems for Desalination of Brackish Groundwater*, recently presented a webinar that summarized the study’s findings.

Her presentation reviewed field test work in which a photovoltaic-powered RO (PVRO) unit was operated at the Brackish Groundwater National Desalination Research Facility in Alamogordo, New Mexico, and the Denver Federal Center. During the tests, desalination performance and global horizontal irradiance (GHI) measurements were taken at different PV panel bearings and inclination angles to develop a data analysis method that accounts for differences in solar position and geographic location.

According to Dr. Korak, “There is a need to develop a standardized yet simple methodology for relating desalination performance to solar energy input. The proposed methodology helps provide a common benchmark to compare solar-powered desal systems in different geographic locations and under different solar irradiance conditions.”

Funding is being sought for future work to expand the methodology to solar thermal systems.

The report may be downloaded at <http://tinyurl.com/zysz5at>.

Company News

TEXAS FIRM FOCUSES ON MEMBRANE CLEANING

Throughout his 40-year desalting career, Stuart Mitchell spent most of his time in the field—the first 15 years in operations and service roles and the rest as a sales engineer with large membrane and chemical companies. During that time, he saw many opportunities fall through the cracks. Some projects were either too small or too specialized to attract a larger company’s attention, while other sites were simply too far off the beaten path for an out-of-town sales engineer to visit.

“The number of small RO installations in the Gulf Coast region keeps growing, and many of the facilities can’t afford a dedicated maintenance staff or don’t have experienced RO plant operators. When membranes become fouled, the staff doesn’t know how to do an effective CIP [clean-in-place], and often ends up throwing away elements that still have a lot of useful life left in them,” Mitchell told *WDR*.

“About six years ago, I realized that there were enough of these projects to support a company specialized in servicing them...so I started Membrane Services. Although we have clients as far away as California and Florida, over 90 percent of our business is in Texas, Oklahoma and Louisiana.”

Besides trouble-shooting, overhauling and retrofitting small to mid-size RO systems, the company performs onsite membrane cleaning with its 24-foot trailer-mounted CIP system. It also serves as a distributor for several RO membrane and chemical companies, but its primary activity is its offsite RO membrane cleaning service, including the cleanings it does for OEMs who don’t have the equipment or capabilities to do it themselves.

Mitchell says that his technicians can usually complete an onsite membrane cleaning project faster, and with better results, than almost any plant operator. However, to ensure optimum cleaning results, Membrane Services prefers to perform membrane cleanings offsite, at their own state-of-the-art cleaning facility in Montgomery, Texas, near Houston.



A Membrane Services test skid

“Membranes aren’t cheap and they must be handled properly. We’ve cleaned thousands of elements and have found that offsite cleaning is the best way to restore them to as close to original performance as possible. We can provide labor to remove the membranes, arrange transportation and provide the owner with pre- and post-cleaning tests on every element. We also can provide and install interim membranes if required.

“And when a plant decides to replace their membranes, we’re often able to clean the discarded membranes and recycle them so they can be kept as backups, or sold to another facility instead of being sent to a landfill.”

“Big companies often act like a super tanker that is slow and deliberate, and unable to maneuver in smaller ports, whereas we consider ourselves to be a speed boat; we can respond quickly and efficiently, and no installation is too small,” he concluded.

Membrane Services currently focuses on RO installations, although Mitchell said that they are beginning to see more interest from MF/UF plant operators.

Technology

WATER-FROM-AIR DEVICE WINS AWARD

Every few weeks, a new company seems to be promoting another water-from-air generator. Although usually touted as sustainable, low-energy, environmentally friendly affordable solutions to the world’s water crisis, none of the systems reviewed by *WDR* have come close to living up to their claims. Most are simply glorified humidifiers designed for household or personal use, and their performance is highly dependent on the ambient wet-bulb temperature.

Though they do offer some level of convenience—they don’t require an intake or concentrate disposal—the specific energy consumption and cost of water are always much higher than conventional desal processes.

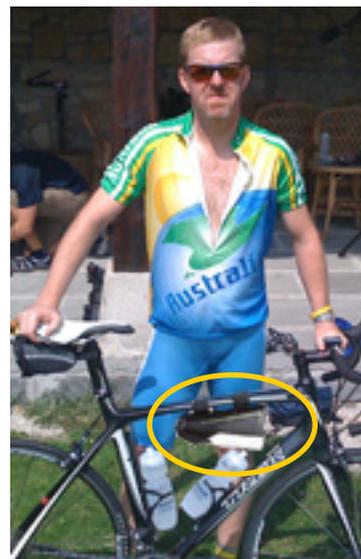
In 2011, a water-from-air generator developed for use in irrigation applications won an annual engineering award sponsored by James Dyson, the British vacuum cleaner designer. The ‘Airdrop’ device consisted of a small turbine intake that its inventor said would drive atmospheric air underground where it would be cooled to the point that water would condense and irrigate plant roots.

Last year, another water-to-air generator was a Dyson Award finalist. An Austrian student inventor developed the ‘Fontus Ryde’ self-filling water bottle, and is about to launch a crowdfunding campaign to commercialize the product.

The Fontus Ryde includes a small two-part, solar-powered Peltier cooler, which creates a heat flux between an air intake chamber and a baffled condensation chamber as the bicycle moves forward “at a high speed”, and condensed water flows into an attached water bottle.

While riding during a sunny day, at a temperature of 20°C (68°F) and 50 percent humidity, the unit should be able to produce about 0.8L (27 oz) of water per hour—a rate that doesn’t seem adequate to keep the rider hydrated.

Although the device contains a filter to prevent dust particles and insects from getting into the water, it doesn’t contain any purification provisions, and may not be suitable for use in highly polluted areas.



Fontus Ryde installation depiction

Association News

REGIONAL WINNERS ANNOUNCED

The Northwest Membrane Operators Association (NWMOA) has announced the winners in the outstanding membrane plant and membrane plant operator categories as follows:

Outstanding Large Membrane Plant: The city of Bozeman, Montana’s Hyalite/Sourdough Water Treatment Plant. The 22 MGD (83,270 m³/d) surface water plant employs MF membranes, was designed by HDR and was commissioned in July 2014.



Oxbow Wastewater Treatment Plant

Outstanding Small Membrane Plant: The Eastern Idaho Regional Wastewater Treatment Authority's Oxbow Wastewater Treatment Plant. This plant has a 2 MGD (7,570 m³/d) design capacity, employs an Evoqua MBR and is located in Shelley, Idaho.

Outstanding Membrane Plant Operator: Andrew Albee, the city of Myrtle Creek, Oregon.

IN BRIEF

Breaking News: WDR understands that **Stantec Corp.**, a publicly traded, Canadian consulting firm and **MWH Global**, an employee-owned, Colorado-based consultant are involved in high-level talks about a possible acquisition/merger. No further details were available at press time.

Mexican billionaire Carlos Slim has launched a full takeover bid of Spain's Fomento de Construcciones y Contratas SA (FCC), one of the country's largest construction groups and the parent company of **aqualia**, a water management and desalination company. Inversora Carso, Slim's holding company, already owns more than 36 percent of FCC, which has a market cap of €2.9 billion (\$3.2 billion). Last week, it offered €7.60 (\$8.48) a share, representing a 15 percent premium, to buy the remainder of the company. FCC aqualia is one of the companies reported to be interested in the Rosarito SWRO project that is set to bid next week.

The Southwest Membrane Operator Association (SWMOA) will host a **workshop** entitled, *Operating Membranes at an Advanced Water Recycling Plant*, on 12 April in San Jose, California. For info, visit <http://tinyurl.com/zwcsz9o>.

Akkim Water Solutions, a Turkish water treatment chemicals business and subsidiary of Akkök Holding, has announced its introduction into the low-pressure water filtration market with a modified PVDF hollow fiber UF

membrane module. The modules are available for pressurized UF applications with an outside-in flow arrangement in two sizes: a 1,000mm long module with 35m² (376 ft²) of membrane area and a 1,000mm long module with 70m² (753 ft²) of membrane area. Both units have a 250mm diameter and a nominal MWCO of 150,000 Daltons.

Australia's **Osmoflo** has been awarded a contract to supply an integrated UF/RO system to treat wastewater from the Stone & Wood Brewery in northeastern New South Wales. The system will reclaim water for use in the facilities' boilers and cooling towers. Osmoflo also said that this has secured a contact to provide O&M support of existing water treatment system at the Oaky Number 1 underground mine in central Queensland. The support will include dedicated on-site technicians and remote, 24-hour monitoring.

WDR and GWI subscribers, as well as individual members of the IDA and early registrants for the Global Water Summit will be emailed a unique URL to vote for the **Global Water Award** winners from the shortlist at <http://globalwaterawards.com/2016-shortlist>. Voting will close on 6 April and winners will be announced at the Global Water Awards Gala Dinner on 19 April in Abu Dhabi. The awards will be presented by Felipe Calderón, former President of Mexico and the Chairman of the Global Commission on the Economy and Climate.

PEOPLE

Veteran desalter **Chris Martin**, formerly a senior process engineer at Water Standard, is entertaining opportunities to apply his water quality and treatment expertise in the municipal or oilfield arenas. He may be contacted at waterfixer@att.net.

JOBS

Water Planet, Inc., a global supplier of high-performance membrane based water treatment solutions, seeks a Vice President & General Manager for its *IntelliFlux*TM Systems & Services business unit. The ideal candidate possesses a proven track record of successfully managing multiple business initiatives in a start-up environment including business development, revenue generation and strategic partnerships development and management, with at least 10 years of marketing and/or sales experience and P&L responsibility. Submit resumes to info@waterplanet.com.

WATER DESALINATION REPORT

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GW Water Summit TECHNOLOGY IDOL LINEUP SET

Participants have now been chosen for the ninth annual Technology Idol event, which showcases early stage, desalination-related technologies, and will be held on Tuesday, 19 April, in conjunction with GWI's Global Water Summit (www.watermeetsmoney.com) in Abu Dhabi, UAE. The participants will be:

D&D Manufacturing

Dale Polk, the director of operations and inventor, will present the company's CSMED solar-powered desalination system employing a parabolic trough with an integrated multiple effect, multistage flash evaporation system to produce fresh water.

Econopure

CEO Daniel Bertram will present the company's LFNano, low-fouling nanofiltration system, which employs an open channel membrane configuration with an operational sequence that includes membrane coating, internal recirculation and a rest cycle for high-solids applications.

Membran-Filtrations-Technik (MFT)

Andreas Flach, the managing director, will present the company's new, circular disc RO module that can be operated at pressures up to 140 bar (2,030 psi) to treat feedwater with a total dissolved solids concentration of up to 100,000 mg/L.

Nano Water Structures

Allan Pronovost, the company's chief science officer, will present the company's proprietary process, which employs a powered nanomaterial and clathrate hydrate chemistry, to desalinate seawater, concentrated brines or produced water.

Water Planet

CEO Eric Hoek will present the company's Intelliflux automated, self-adaptive process control technology for low- and high-pressure membrane and granular media filtration systems to optimize recovery, process uptime and media life.

Each participant will give a brief presentation describing their organization's innovative new technology and its plans for commercialization, after which a panel will ask follow-up questions. After the presentations, an audience vote will select the technology that it believes has the highest probability of fulfilling the presenter's expectations.

Mexico

BID DATE EXTENDED FOR MEGA-PROJECT

Late last week, the state government of Mexico's Baja California extended the bid deadline for the Rosarito Desalination Project from 23 March until 21 April. The extension is believed to have been granted so that the state can complete the mandatory Q&A process and finalize some revisions to the regulations associated with newly instituted Asociaciones Público Privadas (APP) public-private partnership laws.

When considering the unknown scope of changes, and that the coming Easter holidays will effectively shut down government activities for one week, one wonders if another delay is inevitable.

Teams understood to have been pre-qualified to bid on the 380,000 m³/d (100 MGD) SWRO project, which will be located near CFE's Rosarito Power Station, include NSC Agua/CWCO; Hydrochem (Hyflux)/CGM Servicios; Valoriza Agua; Acciona Agua; Proactiva (Veolia); IDE Technologies; FCC Aqualia; Constructora los Potros; and Grupo Financiero Interacciones.

Mexico

PROJECT KICKS OFF BEFORE FINANCIAL CLOSURE

A consortium led by New York-based RWL Water and including Libra Ingenieros Civiles and RJ Ingeniería, has begun work on the 22,000 m³/d (5.8 MGD) San Quintín SWRO project, in Baja California, Mexico. The plant will be the first project to be delivered under the state of Baja California's new Asociaciones Público Privadas (APP) public-private partnership laws.

Miki Tramer, RWL's vice president of business development and a veteran in the Caribbean and Latin American desal



markets, told *WDR* that although the \$32 million project has not yet reached financial closure, they are jump-starting the engineering and design work, adding, “We have signed the APP agreement with the offtaker [Comisión Estatal del Agua de Baja California], and have a valid guarantee structure in place. Everything is in line with the lender’s requirements with whom we are currently negotiating.”

The preliminary plans for the project, which is located 250km (156 miles) south of the US/Mexico border, call for using pressurized multimedia filters to pretreat feedwater for the six SWRO trains. The plant is expected to begin operation in the second half of 2017.

Jordan

EOI SUBMISSION DATE EXTENDED

Ministry of Water and Irrigation (MWI), through the Jordan Valley Authority, has extended the deadline for the purchase of pre-qualification documents for the Red Sea-Dead Sea project until 30 March, the same date as the deadline for submission of the completed documents.

The project, which has an estimated value of \$1 billion, includes a SWRO plant on the Gulf of Aqaba, a brine conveyance line to the Dead Sea, a distribution pipeline and a possible hydropower generation station, and is planned for commercial operation in 2021.

Egypt

TENDERS IMMINENT FOR THREE DESAL PLANTS

Egypt’s National Organization for Potable Water and Sanitary Drainage (NOPWASD), which is being advised by the PPP Central Unit—the country’s privatization body—is expected to start a tendering process for three long-planned seawater desalination projects during the second quarter of this year. The projects are:

- 20,000 m³/d (5.3 MGD) El Tor Project
- 40,000 m³/d (10.6 MGD) Safaga Project
- 100,000 m³/d (26.4 MGD) Al Alamein Project

Pre-feasibility projects have been completed for the first two projects, which would be located on the Gulf of Suez and Red Sea coasts, respectively. Atkins UK is currently completing a study on the Al Alamein facility, which would be located on the Mediterranean coast, west of Alexandria. Plans call for all to be delivered on a build-own-operate (BOO) basis, although the contract lengths have not yet been specified.

IN BRIEF

Hitachi Infrastructure Systems has announced that it will merge **Hitachi Aqua-Tech**, its Singapore-based subsidiary that specializes in the supply of UF, RO and sulfate removal membrane systems, with **Aqua Works and Engineering Pte Ltd**, an engineering contractor focusing on applying water as a creative element in landscape facilities including fountains and pools. Hitachi said that the merger would generate synergistic effects, strengthening its water and environmental solutions business, which targets resorts, commercial facilities and high-rise condominiums in Asia and island countries.

The deadline for submitting applications for grants, scholarships and stipends for the **American Membrane Technology Association (AMTA)** for this year is 1 June. The Affordable Desalination Collaboration has donated the funding for these annual opportunities, which include graduate level research fellowships, undergraduate research and AMTA event registrations, through 2018. Online applications are available at www.amtaorg.com under the “resource” tab.

Calendar Update: The Southwest Membrane Operator Association has changed the date of its 2016 Annual Symposium from 16-18 May to 13-15 June. The event will be held in Scottsdale, Arizona. For more information, visit <http://tinyurl.com/h9bmp7z>.

PEOPLE

Applied Biomimetic A/S has appointed **Bill Harvey** as vice president to lead its product strategy, business development and commercial activities. Formerly with Modern Water and GE Water/Ionics, he will remain based in Boston, Massachusetts, and may be contacted at wh@appliedbiomimetic.com.

Desalitech has announced the appointment of **Rafael Simon** to the company’s advisory board to help guide development and implementation of the company’s high recovery RO technology. Formerly a venture partner with VantagePoint, and the COO of Zenon Environmental, Dr Simon may now be contacted at Rafael.Simon@Desalitech.com.

Shortened Holiday Issue

Due to the US Spring Break holidays, *WDR* is providing a shortened, two-page issue this week and next, rather than taking its usual one week break.

Major Baja projects touted at World Investment Forum

Rosarito desal plant would be operational by 2019



(/staff/sandra-dibble/)

By Sandra Dibble (/staff/sandra-dibble/) | 6:44 p.m. April 5, 2016



Containers at the port of Ensenada, where state and federal authorities are preparing an expansion. *Gobierno de Baja California*

A planned desalination plant in Rosarito Beach, a cargo airport outside Ensenada and the expansion of Ensenada's seaport are key to Baja California's economic growth, a state official said Tuesday in San Diego.

"We strongly believe in developing infrastructure (<http://www.sandiegouniontribune.com/news/2013/oct/04/baja-california-governor-elect-rail-line/>) as strategic to becoming more competitive," Carlo Bonfante Olache, Baja California's secretary of economic development, told participants at the World Forum for Foreign Direct Investment, which ends Wednesday.

The three-day conference has drawn more than 350 participants from 33 countries, said Bob Watkins, vice-chair of the Cali Baja Bi-National Mega-Region, one of the event's main sponsors. Now its fourth year, the conference has been staged in Shanghai, Philadelphia and Sharjah, in the United Arab Emirates.

Monday's schedule included tours of the Imperial Valley and Baja California, with visits to alternative energy production facilities, and advanced manufacturing plants.

In an interview, Bonfante said the Baja California government is preparing to receive bids April 21 on a large desalination plant in Rosarito Beach (<http://www.sandiegouniontribune.com/news/2014/aug/24/rosarito-Mexico-desalination-plant-binational/>), with the eventual capacity of 100,000 acre-feet of water a day.

The facility is being developed as a public-private partnership. Bonfante said the state plans to select a bidder by mid-May, launch construction by the end of the year, and make the plant operational by the first quarter of 2019.

Other projects in the works include the federal government's expansion of the port of Ensenada, increasing its capacity from 250,000 containers a year to 400,000.

A project outside Ensenada involves the establishment of a public/private partnership to build and operate a cargo airport in the Ojos

Negros Valley. Bonfante said the state has acquired land for the project and is looking to the private sector as operators.

Though initially the airport would serve a national market, "we believe that it's a good hub for cargo transfer in the long run to Asia and other places," Bonfante said.

The state is also looking to the private sector for the development of energy projects, Bonfante said. By the end of this month, the state is preparing to receive proposals from three companies that would supply power to the state for 25 years, with prices at least 25 percent lower than those of Mexico's Federal Electricity Commission, Bonfante said.

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