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UAE

BIG TURNOUT FOR SWRO PROJECT

Of the 15 technical bids received, nine commercial offers were opened last week in response to an EPC tender for a seawater desal plant called by the Dubai-based Federal Electricity & Water Authority (FEWA). Bid prices for the 68,130 m³/d (18 MGD) SWRO project in Ras Al Khaimah, the UAE's northernmost emirate, follow:

Bidder	Base Price, AED (\$)	Discounted Price, AED (\$)	Energy, kWh/m ³ (kWh/kgal)
Utico	272,645,401 (\$74,189,225)	265,147,653 (\$72,149,021)	3.37 (12.76)
L&T India with ITT	275,000,000 (\$74,829,993)	266,400,000 (\$72,489,976)	3.67 (13.89)
Degrémont Middle East	288,847,350 (\$78,597,918)	269,970,705 (\$73,461,416)	4.06 (15.37)
Metito	284,670,000 (\$77,461,225)	274,494,000 (\$74,692,245)	3.84 (14.53)
Cadagua/Essa	345,000,000 (\$93,877,551)	298,494,000 (\$81,222,857)	3.89 (14.72)
Aquatech UAE	360,000,000 (\$97,959,184)	301,500,000 (\$82,040,816)	3.14 (11.89)
Habtoor, Leigh-ton, Doosan	335,089,268 (\$91,180,753)	325,089,268 (\$88,459,665)	4.15 (15.71)
Veolia/Tecton	371,820,283 (\$101,175,715)	342,765,000 (\$93,269,388)	3.75 (14.19)
GE Water with GSK	419,534,000 (\$114,158,912)	392,258,951 (\$106,737,130)	3.85 (14.57)

The base price in the above table represents the fixed price included with the proposal. FEWA then gave bidders a chance to submit a final, revised price in a sealed envelope prior to opening the commercial bids.

The six companies who are understood to have submitted bids but whose commercial offers were not opened were IVRCL India, Drake & Skull, Fisia, Al Badr with Befesa, Hitachi and AquaSwiss/Pall.

Company News

UAE'S BEST KEPT SECRET

Many readers outside the UAE will not recognize the name of Utico FZC, the low bidder in last week's FEWA bid opening (see previous story). However, the Ras Al Khaimah-based company has been very active in the country, particularly in

the northern emirates, and has undertaken numerous projects to provide utilities for municipal and industrial projects.

Utico is a subsidiary of the Abu Dhabi-based Ghanoot Group, a \$2 billion construction, development and service organization.

Last week, Richard Menezes, Utico's managing director, reminded *WDR* that the company has a 110,000 m³/d (29 MGD) SWRO project in Ras Al Khaimah; 45,000 m³/d of the total capacity has been installed and 12,000 m³/d is currently in commercial operation. According to Menezes, "It is the first and largest 100 percent privately owned, full service integrated water and power project [IWPP] in Asia and possibly the world."

In addition to the desal plant, the project includes a 70MW power plant, a 10,000 ton chilled water system, a 60km transmission pipeline and a billing and customer service system all in a single contract. The project is scheduled for completion by the end of the year.

He also said that it is the first project of this size and type built on a concession contract, without an off-take guarantee, where the developer actually pays a fee to the government for providing a consumer base.

California

CONSULTANT SELECTED FOR SWRO DESIGN

In a decision made late Friday afternoon, West Basin Municipal Water District's Water Resources Committee approved the selection of a team led by Arcadis/Malcolm Pirnie to assist in the planning and engineering of a comprehensive seawater desalination program master plan. Other team participants include Veolia, SKM, Halcrow, Alkyon, Dudek, RosTek Associates and Nexant.

Tasks to be undertaken include a feasibility study to identify the project's production capacity – which is expected to range from 20 to 100 MGD (75,700 to 387,500 m³/d) – as well as its location, permitting plan, power supply options, distribution piping network, scheduling and water quality requirements. It will also recommend a method of project delivery and will develop a "preferred" plant design and financial plan.

West Basin has been conducting a SWRO pilot plant program since 2002 and has been operating a 0.58 MGD (2,195 m³/d) demonstration facility at Redondo Beach since November 2010. The demonstration project's primary intake employs a passive screen, open ocean intake system to evaluate both 1mm and 2mm slot openings on a cylindrical wedgewire screen.

The team was selected over other teams led by RBF and Tetra Tech, and the formal award is scheduled to be made at the District's 23 May board meeting. The project recommendations, sequencing and program implementation requirements are due for delivery 300 calendar days from the Notice to Proceed.

At the same meeting, the Water Resources Committee also approved a two-year contract with Separation Processes Inc (SPI) to provide membrane technical support to the District. The contract has an estimated value of \$500,000.

Texas

IPR PROJECT AWARDED

An \$11.9 million contract to construct an indirect potable reuse (IPR) project in the West Texas city of Big Spring was awarded last week to CSA Construction. The plant is a part of the Colorado River Municipal Water District's (CRMWD) plan to provide new water sources for its municipal customers.

The preliminary design, which was prepared by Freese and Nichols, calls for treating tertiary effluent from the 3.8 MGD (14,383 m³/d) Big Spring Wastewater Treatment Plant. The wastewater plant employs a combination of trickling filter and activated sludge treatment prior to sand filtration, and has a total dissolved solids (TDS) ranging from about 1,500 to 2,200 mg/L.

The new water reclamation plant will employ MF/UF, RO and UV disinfection/advanced oxidation to produce 2 MGD (7,570 m³/d) of high quality effluent. The reclaimed water will be blended with water from Lake Spence and discharged in the Base 5 reservoir.

Meanwhile, the RO concentrate will be discharged to the high-TDS Beals Creek.

The net water cost for the reclaimed water was estimated at \$2.59/kgal (\$0.68/m³) during the project feasibility study. In addition to the reclamation plant, CRMWD will acquire a new well field and expand its existing well field infrastructure. The two projects will have a combined cost

estimated at \$72 million and are expected to result in an increased water cost of \$0.05 to \$0.10/kgal over the next two to three years to offset the cost of the projects and continue with a capital improvements program.

The project is scheduled to be completed in 2013.

Technology

OILFIELD TECHNOLOGY RESOURCES

Most desalination and reuse conferences now devote a special session or track to the application of desalination technology in the development and production of shale gas or coal bed methane. Barely a week goes by without some mention of these technologies or applications in *WDR*, and this week is no exception.

For those readers who are unfamiliar with water's oilfield uses, the need for wastewater treatment or volume reduction or the potential environmental implications of oilfield activities, *WDR* would like to recommend two references.

The first is a short video that can be viewed at <http://www.northernoil.com/drilling.php>. This video illustrates the horizontal drilling process that is used in developing shale gas reserves.

The second reference is a December 2009 report prepared by Hazen and Sawyer for New York City's Department of Environmental Protection. The 51-page report (plus appendices) considers the possible impacts from developing natural gas resources in the Marcellus Shale on the City's water supply watershed. The report, which may be downloaded at http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf, provides a background on the issue and addresses impacts ranging from land disturbance and truck traffic to water withdrawals, subsurface migration and wastewater disposal.

Marcellus Shale

DISTILLER REDUCES FRAC WATER VOLUME

In November, Clean Streams LLC began operating the first of four treatment modules to treat and recycle frac flowback and produced water from shale gas operations in the Marcellus Shale. In mid-April, the Williamsport, Pennsylvania facility began operating three more AltelaRain evaporative units capable of treating 2,400 bbl/d (380 m³/d) of wastewater.

The wastewater treatment system was designed by New Mexico-based Altela and was selected by Clean Streams after a DOE-funded pilot study demonstrated that the units

could reduce the cost of conventional transportation and disposal of the wastewater by 20 to 50 percent.

According to Altela CEO Ned Godshall, the AltelaRain units reduce the feedwater volume by up to 80 percent using a humidification-dehumidification process that produces pure distillate, which can be beneficially reused, and a humid vapor that is discharged to the atmosphere.

Godshall told *WDR*, “The system is more cost effective than other processes because the entire unit, including the heat transfer surfaces, is constructed of plastic materials and operate at atmospheric pressure. The only moving parts are the recycle pump and a fan that circulates air through the unit.”

He explained that feedwater is introduced at the top of evaporator modules filled with vertical heat exchanger sheets constructed of plastic. As brine runs down the sheets, air is circulated through the unit to promote evaporation, and humid air is vented from the unit.



Altela module



12 Towers per module

Concentrated brine falls into a trough at the bottom of the module and is recirculated back to the top. The concentrate is recirculated until it reaches a predetermined density, after which it is removed for disposal.

Each 600 bbl/d (95 m³/d) treatment module consists of 12 distillation towers and has a 520 ft² (48 m²) footprint. The system uses about 0.2 MCF of natural gas per barrel treated, and 1.0 kWh per barrel of water treated.

Although Clean Streams purchased the units from Altela

and operates the facility, Godshall said that Altela’s business model includes owning and operating additional facilities and offering its waste treatment/volume reduction services directly to well operators for approximately \$5.40/bbl (\$34.00/m³).

United States

SOUTHWEST WATER PROSPECTS LOOK BLEAK

The US Department of the Interior has released a report highlighting the impacts of climate change on water resources in the Western US. The report was prepared by Bureau of Reclamation and represents the first consistent and coordinated assessment of risks to future water supplies across eight major Reclamation river basins, including the Colorado, Rio Grande and Missouri river basins. Some of the 21st century projections include:

- a temperature increase of 5° to 7°F;
- a decrease for almost all of the April snowpack, a standard benchmark measurement used to project river basin runoff;
- an 8 to 20 percent decrease in average annual stream flow in several river basins, including the Colorado, the Rio Grande, and the San Joaquin; and
- a precipitation increase over the northwestern and north-central portions of the western United States and a decrease over the southwestern and south-central areas.

The report notes that projected changes in temperature and precipitation are likely to impact the timing and quantity of stream flows in all western basins, which could impact water available to farms and cities, hydropower generation, fish and wildlife, and other uses such as recreation.

The report can be downloaded at <http://www.usbr.gov/climate/SECURE/>.

Texas

DESAL DATABASE GOES LIVE

An updated database of the state’s desalination projects is now available online at <http://www.twdb.state.tx.us/apps/desal/default.aspx>. The database was initially developed in 2005 by the Bureau of Economic Geology and has been updated by the Texas Water Development Board (TWDB). The database contains detailed technical information on 44 public water supply desalination plants currently operating in Texas.

Information for the database was gathered through interviews with plant operators, survey forms and www.DesalData.com. Only public water supply plants with capacities greater than 25,000 GPD (95 m³/d) are reported in the database.

Plants which were under construction or not yet operational at the time the survey was conducted have not been included. TWDB's Jorge Arroyo told *WDR* that plans call for the database to be updated on a quarterly basis.

IN BRIEF

Citigroup will host a **Global Water Investment Conference** at London's May Fair Hotel on 7 June. Citi's Deane Dray told *WDR* that the event will include a series of panel discussions on themes including investing in the water sector, water infrastructure development, desalination and reuse and "the next big things in water." Panels will feature leading public and private water industry specialists, private equity investors and regulators. For information, visit <https://www.citievents.com/Metron/forms/meetingformfiller.aspx?id=07988b34-6e64-4722-8329-e050d1edfdal&preview=true>.

Australia's **National Centre of Excellence in Desalination** (NCED) is offering scholarships to honors students enrolled in one of 12 participating universities. A maximum of \$10,000 per year will be offered to successful applicants in any field of study whose area of research contributes to the knowledge of desalination and aligns with the NCED's Research Roadmap. For more information, visit <http://desalination.edu.au/2011/05/nced-honours-scholarships/>.

Despite the fact that it has been in operation since last November, the President of the **Republic of Cyprus** held a formal unveiling last week of a 30,000 m³/d (8 MGD) SWRO plant at the village of Kouklia in southwest Cyprus' Paphos District. According to Andreas Manoli of Cyprus' Water Development Department, Italy's Protecno constructed the plant under an EPC contract. The four-train plant is fitted with ERI PX energy recovery devices, DOW membranes and BEL pressure vessels.

Plans for expanding the capacity and treatment capabilities of the 47 MGD **Dublin Road WTP** in Columbus, Ohio with a BWRO system have apparently been scuttled. A large-diameter KMS RO system had been pilot tested at the facility, but it now appears that a biological filter system with ozone and/or granular activated carbon, plus ion exchange for nitrate removal, may be selected. CH2M Hill is the city's consultant on the project.

Over the last twelve months, Desalcott has expanded the capacity of its **Point Lisas SWRO plant** in Trinidad from a guaranteed 24 MIGD (28.8 MGD) to a current peak capacity of 32 MIGD (38.4 MGD). According to Desalcott general manager John Thompson, the plant will reach a peak capacity of 34 MIGD (40.8 MGD) within one month, and a peak capacity of 40 MIGD (48 MGD) by 2012. Plans call for the eventual expansion to 60 MIGD (72 MGD). Desalcott is a joint venture between Hafeez Karamath Engineering Services (60%) and GE Water (40%).

San Antonio Water System (SAWS) is expected to issue an RFQ for a program manager for a 10 MGD (37,850 m³/d) BWRO project in the near future, perhaps in June. The \$145.3 million project will desalinate brackish groundwater from the Wilcox aquifer in southern Bexar County, Texas.

PEOPLE

Seven Seas Water has announced that **John Curtis**, its former CFO, has been appointed president. Meanwhile, **Jeffrey Lentz** has been promoted from his role as vice president and controller to senior vice president and CFO. Both men are based in Tampa, Florida.

JOBS

H2O Innovation has an opening for a regional sales manager covering the East Coast Region of the USA. The successful candidate will possess an engineering degree and at least 10 years of direct sales experience, selling water treatment systems. Main responsibilities will include attaining revenue targets, developing and expanding existing customer base – working closely with support network, including engineers, technicians, vendors, and suppliers. For more information, send your resume to info@h2oinnovation.com.

Herschell Environmental has an immediate opening for a Process Engineer. The successful candidate will possess an engineering degree and at least 10 years of water treatment experience, including a commercial understanding of how new technologies are implemented in North America. A broad background is preferred. Responsibilities include engineering and technical service. Travel is required. Candidate may be located anywhere in the US. For more information, send resume and salary requirements to info@h-env.com.