



Turning seawater into a valuable resource

Sitting on the coast of the South China Sea, Hong Kong has a never-ending supply of seawater. However, the supply of fresh water available to serve the almost 7 million people who inhabit this "Pearl of the Orient," along with the millions who visit each year, is limited.

But what if seawater could be desalinated and used for everything from drinking water to industrial process water? The Water Supplies Department of the Hong Kong government recently signed a consulting agreement with CH2M-IDC Hong Kong to examine the feasibility of such an idea.

Under the 32-month contract, CH2M-IDC will prepare the preliminary design, drawings, cost

estimate, documentation, tender evaluation and supervision to install two pilot plants capable of producing approximately 52,840 gallons per day of treated water.

Each plant will use reverse osmosis technology and will include pre- and post-treatment processes. As part of the agreement, the CH2M HILL team also will develop a physical-chemical water quality sampling and monitoring program.

"This agreement will lead to recommendations for a path forward and any further studies that are necessary to develop the desalination facilities in Hong Kong," said Alex Au, managing director, CH2M-IDC Hong Kong, Ltd. "This forward-thinking plan will



CH2M-IDC Hong Kong employees met in April with Hong Kong's Water Supplies Department to sign the desalination project contract. From left: Damien Ku, assistant director, WSD; P.W. Chan, J.P. deputy director, WSD; Alex Au, managing director, CH2M-IDC China; and Pong Lai, director of operations, CH2M-IDC Hong Kong Ltd.

propose the best methods to integrate desalination into the overall Hong Kong water supply and build community acceptance of the process."

Major milestones of the project include pilot plant site selection within the first month. The design, construction and operation of the pilot facilities are fast-tracked for completion within 22 months of project initiation.

A true comparison of the costs associated with full-scale facilities must be based on a design that can perform year-round. Because the quality of the feed water may vary seasonally, the pilot plants will be required to run for a period of 12 consecutive months. This ensures that the data gathered will reflect water quality and plant performance over all seasons.

An important component of the project is public outreach to key government, industry and citizen stakeholders.

It is expected that public outreach activities will be ongoing through the duration of the study.

"One critical emphasis of the study will be to carefully analyze the quality of the product water to determine if it meets all applicable drinking water standards, including the absence of emerging contaminants," Au said. "As part of this ongoing process, we'll establish the level of post-treatment necessary to ensure compatibility with WSD's water distribution infrastructure."

The product water quality will be examined at the mid-point of the study. "By then, the treatment trains will have been operating long enough to produce reliable data," Au said. "In addition, by pulling samples halfway through the study, we'll have sufficient study time to make any required adjustments to optimize system performance and product water quality."

Book awash in desalination facts



Tom Pankratz's latest book is hot off the presses. "*Desalination.com, an Environmental Primer*," explores various approaches to treating seawater for domestic and industrial uses.

Desalination, a common method for bringing fresh water to arid areas such as Persian Gulf states, dates back to 200 BC, when sailors would boil water and capture the fresh-water vapor. Typically, though, desalination has been too expensive to become a viable solution for most industries and municipalities. Times are a-changing, however, and Pankratz's book, co-authored with John Tonner, who specializes in desalination and water-treatment technologies, reveals advancements in technologies that today make tapping into the world's saltwater a realistic alternative for providing potable water.

This book is written for a broad audience and is well illustrated. Further, it examines a variety of project delivery methods.

Pankratz is based in CH2M HILL's Houston office. He is an officer of the International Desalination Association and a member of the National Academy of Sciences' committee to review the Desalination and Water Purification Roadmap. Pankratz is currently working on CH2M HILL's pilot desalination project in Hong Kong. He has authored several books, including *Wastewater Treatment: An Environmental Primer*. To purchase Pankratz's book on desalination, you can order it on-line at www.desalination.com or from your local book store (ISBN No. 0-929244-02-8).