

WEST BASIN MUNICIPAL WATER DISTRICT

NOVEMBER 17, 2005 – Water Resources
 Little, Baker

NOVEMBER 28, 2005 – Board Meeting

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Approved by: Richard Nagel

ACTION CALENDAR

BARRIER/CHEVRON REVERSE OSMOSIS MEMBRANE REPLACEMENTS

SUMMARY:

BARRIER

Barrier Reverse Osmosis (RO) Train No.s 1 and 2 receive lime clarified pretreated recycled water that has a higher turbidity than microfiltered pretreated recycled water. Fouling and scaling of these membranes can be expected to happen in a shorter time than membranes running on microfiltered water. Barrier Train No.s 1 and 2 originally used cellulose acetate (CA) membranes; however, because the industry was moving away from CA membranes and the water quality was better with thin-film composite membranes, the District decided to install thin-film composite membranes in the Trains starting in 2001. The thin-film composite RO membranes in Barrier Train No. 1 are over six-years old. The membranes in Train No. 2, installed in stages, have been in service on lime clarified water for four to five years. Although still producing water of acceptable quality, these membranes are generally running at higher pressures due to fouling and have to be cleaned every two to four weeks. These membranes need to be replaced when the Phase IV microfiltration units are completed and placed into service. Accordingly, staff issued a “Request for Bids” to our qualified membrane manufacturers for replacement of the thin-film composite membranes in Train No.s 1 and 2.

The District received two bids to supply 1,545 elements and associated membrane element inter-connectors, end cap adapters, o-rings, and shims. The bids are summarized below:

Bidder	Bid Amount
Hydranautics	\$672,075
Koch Membrane Systems	\$700,179

The low-bid equates to \$435 per element.

CHEVRON

As reported in October, the lining in the Chevron low- and high-pressure boilerfeed clearwells is separating from the concrete. An autopsy of a lead position RO element in a second pass pressure vessel revealed that a large number of small particles had worked its way onto the face of the lead element causing the feed channel spacer to protrude out the back of the element. Some particles had actually worked their way into the feed channel spacer. Based on these findings it is recommended that the lead element in each second pass

RO pressure vessel be replaced, 54 membranes total. Staff also autopsied a second position element in a second pass pressure vessel. There was also a large amount of small debris on the face of the element, but not as much as on the lead element. The feed channel was not protruding as in the lead element. Based on the second autopsy, it does not appear that all of the second position elements need to be replaced. It is recommended that 11 additional elements be purchased in preparation for replacement of the second position elements as needed. The Chevron second pass membranes are higher rejection membranes, meaning they produce slightly better water quality than those specified for the Barrier. Hydranautics, the low-bidder, has agreed to sell us the higher rejection Chevron RO elements for the same unit price as proposed for the standard elements for the Barrier. The cost for 65 elements will be \$28,275.

FISCAL IMPACTS:

Funds are available in the Facility Replacement Fund for fiscal year 2005-06.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on November 17, 2005 and was recommended for approval at the November 28, 2005 Board meeting.

RECOMMENDED MOTION:

That the Board authorizes the Co-General Managers to enter into an agreement with Hydranautics to:

- 1) Provide 1,545 reverse osmosis membranes and appurtenant supplies for the Barrier for \$672,075, plus 10% for contingencies for a total not-to-exceed amount of \$739,282.50; and
- 2) Provide 65 reverse osmosis membranes and appurtenant supplies for Chevron Boilerfeed for \$28,275, plus 10% for contingencies for a total not-to-exceed amount of \$31,102.50.

For a total not-to-exceed contract amount of \$770,385.

LIST OF EXHIBITS:

None.