

WEST BASIN MUNICIPAL WATER DISTRICT

JULY 9, 2003 - Water Resources

McDonald, Kwan

JULY 28, 2003 - Board Meeting

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INFORMATION CALENDAR

SEAWATER BARRIER WATER CONSERVATION PROJECT UPDATESUMMARY:**Groundwater Monitoring Plan**

State Department of Health Services (DHS) granted conditional concept project approval to allow West Basin's plant expansion to deliver up to 75% of the total injection supply to the Barrier, contingent on a number of "conditions".

One condition is for West Basin to develop a groundwater monitoring plan that contains an approach to track and verify the travel time of the recycled water after its injection underground. DHS also requires the plan to address the potential red ox conditions in the aquifer due to the higher percentages of recycled water and the associated elevated levels of nitrogen, namely ammonia.

DHS' new regulations require that a monitoring Well be located within three months travel time from the Barrier and demonstrate that the Well has received recycled water for at least one year, prior to any future plant expansions to increase the percentage up to 100%.

The three month travel time monitoring Well or "indicator" Well, would also serve as an "early warning" in the event that contaminants of concern reached that Well as a result of the Barrier injection project.

To that end, the Board authorized the services of CH2M Hill and McGuire Environmental to assist in the development of the Groundwater Monitoring Plan.

Draft Monitoring Plan

One of the key items to the plan is a monitoring Well that can clearly demonstrate the travel time of the injected water. The alternatives are injection of an artificial conservative tracer such as sodium bisulfate, isotope age dating of the water or simply using the changes in water chemistry before and after the injection Project, this is referred to as using an intrinsic tracer.

What is a Tracer?

A tracer generally refers to a compound that is inorganic and conservative in the aquifer, is dissolved in water, and does not easily biodegrade or attach to soil particles. Examples are total dissolved solids, especially chlorides and bromide.

Intrinsic Tracer

An intrinsic tracer refers to a compound inherent in or naturally present in a water supply. Compounds that are typically present in water are minerals such as total dissolved solids.

The Approach

The most pragmatic approach to this type of a monitoring plan is to compare the water chemistry changes in parent (native) groundwater, to the injection of MWD water, to the combination of injecting MWD and RO-treated recycled water. We are fortunate to have these circumstances in the West Coast Basin Barrier. There are noticeable differences in the water chemistry of MWD water to that of RO-treated recycled water, namely inorganic compounds such as total dissolved solids (TDS). On average, TDS of MWD water is near 500 ppm, compared to RO water that averages around 100 ppm. Parent groundwater is typically between these two values.

After review of the historical database, it has been determined that one well demonstrates this change in water chemistry, which results in a credible estimate of travel time.

The study shows that Well 17B demonstrates these characteristics. 17B is located in the southern end of the Barrier and is approximately 570 feet from the Barrier. It is screened in both the 200 foot Sand and Silverado aquifers. The estimated travel time of Barrier water is 2 to 2.5 years. This Well also meets the criteria in that it is in a conservative location where the injection rates and aquifer permeability tend to be on the high side. Staff intends to present this to DHS as the program's key monitoring Well. The chloride graph of 17B illustrates these points. (Exhibit A).

New Monitoring Well(s)

As noted, 17B is an excellent "indicator" Well and should meet all of DHS' criteria except the "three-month" travel time criteria. Staff is investigating using existing monitoring Wells to meet this criterion, but the distinct possibility remains of installing a new cluster Well that is aligned in the flow path to 17B. Should a new Well(s) be necessary, it is recommended to be installed this year to allow for at least four quarters (1 year) of baseline monitoring prior to the plant's 12.5 mgd expansion.

In addition, the new approach proposes to add up to five existing monitoring Wells to the groundwater monitoring plan.

DHS Meeting

Staff will be presenting this approach to State DHS on August 21, 2003.

FISCAL IMPACTS:

The fiscal year 2003-04 budget programs include designated funds in the Capital Improvement budget to achieve the aforementioned Project activities.

ENVIRONMENTAL COMPLIANCE:

The Board has authorized staff to engage consulting services for developing the documents to comply with the CEQA and NEPA requirements.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on July 9, 2003 and agendaized to the July 28, 2003 Board meeting as information.

RECOMMENDED MOTION:

This item is for information only.

EXHIBITS:

Exhibit "A" - Chloride Concentrations Well 17B

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