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IMPORTANCE OF STATE PROJECT WATER TO SAN DIEGO COUNTY WATER RECLAMATION DEVELOPMENT

SAN DIEGO COUNTY WATER AUTHORITY

Importance of State Project Water to San Diego County Water Reclamation Development

The development of reclaimed water supplies is vital to reducing the San Diego County Water Authority's dependence on State Project water. As stated in *Water Recycling 2000: California's Plan for the Future*, the additional dependable reclaimed water supply by year 2000 for the San Diego County region is estimated at 37,000 acre-feet per year (AFY).[1] This is an ambitious projection considering current reclaimed water supplies total only 8,000 AFY.

There are a number of constraints that must be overcome prior to the development of reclaimed water supplies. In *Water Recycling 2000*, the funding of reclamation facilities is identified as the number one constraint throughout the State. Regulatory issues relating to permitting and expanding the uses of reclaimed water is second followed by institutional issues and public acceptance.

The Authority is actively assisting local agencies in San Diego County to overcome these constraints. The Authority has two funding programs to assist in the planning and implementation of projects. To expedite permitting, the Authority is also funding two positions at the San Diego Regional Water Quality Control Board. The Authority has also prepared a model water reclamation ordinance and model rules and regulations for the use of reclaimed water. These two models have been widely utilized by agencies developing water reclamation projects in San Diego County.

An additional implementation constraint that has been identified by the Authority and local agencies in San Diego County is the potential for high levels of total dissolved solids (TDS) in reclaimed water. An average 90% of the water supply within the Authority's service area is imported.[2] If this supply continues to consist primarily of Colorado River water the TDS levels in reclaimed water will substantially limit the application of reclaimed water as a resource in San Diego County. In order to maximize development of reclaimed water supplies in San Diego County and thereby reducing our dependance on State Project water, a minimum amount of State Project water is required for blending with Colorado River water supplies.

The impact of Colorado River water deliveries on water reclamation within the Authority's service area was evident in 1991.[3] Due to drought conditions the Authority received 100% Colorado River water. This caused TDS levels in the imported water supply to reach 657 mg/l. As a result, the reclaimed water supply from the Fallbrook Sanitary District Water Reclamation Facility had an average TDS level of 905 mg/l and peak of over 1000 mg/l.[4] This trend cannot continue if the water supply is to be beneficially used.

As a result of high runoff, the salinity level of the Colorado River remained relatively low in the mid-1980's. Since then TDS levels have steadily increased and are expected to continue to rise.[5] Without implementation of salinity control measures on the Colorado, the TDS level will exceed the 747 mg/l objective at Parker Dam established by the Environmental Protection Agency.[6]

To achieve an acceptable TDS level of 800 mg/l in reclaimed water, which will allow for a full range of beneficial uses, the Authority's future imported water supplies must contain 50% State Project water. In year 2000 this equates to 324,606 AFY of State Water delivered to the Authority.[7]

Based on dependable supplies and projected demands the Metropolitan Water District states that they will require 1.7 million AFY of State Project water supplies by year 2000. At a minimum, to maintain a reliable long-term reclaimed water supply in San Diego, Metropolitan must consistently receive at least 1.1 million AFY State Project water by year 2000, assuming the Authority's share of the Metropolitan water supply remains static at 30%.[8] This minimum delivery will provide the Authority the 50% blend State Project water required to maintain acceptable reclaimed water salinity levels.

An acceptable salinity level of 500 mg/l TDS in the imported water supply results from a 50% blend State Project water. The 500 mg/l TDS level in imported water supplies coupled with an increase of approximately 300 mg/l TDS due to normal municipal uses equates to an estimated 800 mg/l TDS in reclaimed water. A TDS level greater than 800 mg/l will reduce the beneficial uses that could be served with reclaimed water. This casts doubt on the ability to achieve 37,000 AFY of beneficial reuse within the Authority's service area by year 2000. For example, there is a great potential to serve reclaimed water to the avocado and citrus orchards in San Diego County, but these crops as well as certain varieties of ornamental landscaping cannot tolerate a TDS consistently above 800 mg/l.[9]

The Authority is taking steps locally to control and decrease salinity levels in the wastewater to be reclaimed. The model water reclamation ordinance adopted by the Authority Board of Directors, mandates the use of reclaimed water in certain circumstances and restricts brine discharges to wastewater systems. A number of agencies have adopted ordinances that restrict the use of permanent, self-regenerating water softeners and also have effective industrial discharge programs to reduce the salinity in the wastewater.

In conclusion, if the reclaimed water projection of 37,000 AFY by year 2000 within San Diego County is to be met, the Authority's imported water supply must consistently contain 50% State Project water. In year 2000 this equates to a <u>minimum</u> 1.1 million AFY delivery of State Project water to Metropolitan.

NOTES

[1] *Water Recycling 2000: California's Plan for the Future.* State Water Conservation Coalition Reclamation/Reuse Task Force and Department of Water Resources Bay-Delta Reclamation Sub-Work Group, Sept. 1991.

[2] *San Diego County Annual Reports.* FY1987-FY1990

[3] *Analysis of the District Water Supplies, Table D.* Metropolitan Water District, 1/91-1/92.

[4] Fallbrook Sanitary District. Michael P. Page, District Superintendent, May 1992.

[5] *Estimating Economic Impacts of Salinity of the Colorado River.* U.S. Department of the Interior, Bureau of Reclamation, Feb. 1988.

[6] *Salinity Update: Controlling Salinity in the Colorado River Basin.* Bureau of Reclamation, U.S. Department of Agriculture, Colorado River Basin Salinity Control Forum, Feb. 1989.

[7,8] (Please refer to attached worksheet.)

[9] *Estimating Economic Impacts of Salinity of the Colorado River.* U.S. Department of the Interior, Bureau of Reclamation, Feb. 1988.

Irrigation with Reclaimed Municipal Wastewater: A Guidance Manual. University of California, Davis and State Water Resources Control Board, July 1984.

Water Quality: Its Effects on Ornamental Plants. Cooperative Extension University of California, May 1985.

SDCWA

MINIMUM STATE PROJECT WATER DELIVERIES, YEAR 2000

1. Calculate required blend of State Project water to achieve acceptable reclaimed water TDS level of 800 mg/l .

Assume: 747 mg/l TDS Colorado River Water (EPA Objective)
241 mg/l TDS State Project Water (10 year average – MWD FY 1991 Annual Report)

30% blend State Project water at Skinner (10 year average – MWD Annual Reports)

747(.70) + 241(.30) = 595 mg/l TDS
595 + 300 = 895 mg/l > 800 mg/l

40% blend State Project water at Skinner

747(.60) + 241(.40) = 544 mg/l TDS
544 + 300 = 844 mg/l > 800mg/l

50% blend State Project water at Skinner (MWD Objective)

747(.50) + 241(.50) = 494 mg/l TDS
494 + 300 = 794 mg/l < 800 mg/l

2. Calculate State Project water deliveries based on 50% blend State Project water in Authority's imported supply.

Estimated Water Demands within Authority service area by year 2000: 728,743 AFY (Grace Chan, MWD, June 1992)

Estimated Local Supplies:

25,000 AFY Existing dependable groundwater and surface water supplies (Draft Resources Plan, May 1992)
44,350 AFY Existing and Projected reclaimed water supplies (SDCWA FY 90 Annual Report and Water Recycling 2000)
10,000 AFY Groundwater Recovery supplies (Draft Resources Plan, May 1992)
79,530 AFY Estimated Total Local Supplies

Projected Imported Water Supply Demands CWA service area, year 2000:

728,743 AFY	Total Demands
79,530 AFY	Estimated Local Supplies
649,213 AFY	Imported Water Supply Demands

Based on 50% blend State Project water, determine State Project water deliveries to San Diego:

649,213(.50) = 324,606 AFY

Minimum required State Project water deliveries to MWD:

324,606/.30 = 1,082,020 AFY