

SURVEY OF FUTURE WATER RECLAMATION POTENTIAL

FINAL REPORT

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EXECUTIVE SUMMARY

This is a report of a survey of public and private water and sewerage agencies in California involved in water recycling. The central purpose of the survey was to determine the agencies' plans, projections and vision for future water reuse by category of use and by region. Even though the report frequently refers to this as the "potential" for reuse, readers should bear in mind that the real potential reuse is the total wastewater stream in the state—currently being wasted—some 2.5 to 3 million acre-ft per year (AFY). In addition, the survey set out to determine what factors stimulated growth in water reuse and which ones were deterrents. The survey was commissioned by the Board of Directors of the **WaterReuse** Association of California. The mission of this Association is to promote and increase water recycling in the State.

RATE OF WATER REUSE

The most startling finding of the survey is that water reclamation projects are being built at a rapid rate. Perhaps water reuse is not as difficult to accomplish as it is often portrayed to be. The survey results indicate that, over the past several years, great progress has been made in spite of the costs and other barriers. Current reuse has jumped from about 270,000 AFY in 1987 to over 380,000 AFY—more than 40 percent increase in less than five years. Agencies that are most successful at water recycling have developed the necessary attitudes and expertise to continue increasing water reuse and to expand the envelope aggressively, projecting relatively rapid increases in the future in spite of a variety of hardships. If the attitudes and expertise of the successful agencies could be transferred to other agencies, the statewide water recycling potential would certainly increase.

One hundred eleven agencies participated in the survey, reporting 230 existing and planned projects at 313 reuse sites. The rapid rate of increase in water reclamation activity over the past five years is projected to continue through the year 2000 by which time total reuse could exceed one million AFY. Projection for 2010 is over 1.3 million AFY with an "ultimate" reuse potential of close to 1.5 million AFY. Clearly, the word "ultimate" was not interpreted by most respondents to mean total recycling or zero

discharge. The results of the survey indicate that the State's goal¹ of achieving 700,000 acre-ft per year water reclamation by the year 2000 and surpassing one million acre-ft per year by the year 2010 is definitely within reach. In fact, the 2010 goal can be exceeded by over 30 percent if the responding agencies accomplish their own predictions.

The water recycling capital of the state is the area represented by Los Angeles and Orange counties. The aggressive rate of water reclamation and the sustained rapid increases projected into the future for these counties must be credited at least in part to the role of the Metropolitan Water District of Southern California's Local Projects Program (providing significant financial subsidies for water recycling to local entities). Geographic and other factors favoring water reuse in these areas have been cited as partial explanations for their early prominence in this field. Nonetheless, the lessons learned in these regions can be transferred to resolve the institutional and other barriers holding back water reuse in other parts of the State. This illustrates a clear need for statewide technology transfer and uniform policy development. **WaterReuse** must continue to play a major role in assuring that both of these needs are met.

Most of the growth in water reuse is expected to occur in the Los Angeles and Santa Ana regions. (Regions are defined as the California Regional Water Quality Control Board regions, separated by major watershed boundaries.) The San Diego region also is expected to undergo significant growth in reclaimed water use over the next two decades, nearly tripling its share of the statewide water reuse from the present four percent to an "ultimate" 11 percent. The San Francisco Bay region also is projected to undergo significant increase in both water reuse volume and its relative share statewide (from the current 6 percent to nearly 11 percent.) The Central Valley and Colorado River Basin regions' growth in water reuse is projected to be modest. Central Coast region will experience a substantial jump in reuse in the 1993 to 1995 period with very little additional growth in future years. Other regions (North Coast and Lahontan) project relatively slow growth in water reuse at this time. None of the nine regions project a decline in the rate of water recycling.

CATEGORIES AND PURPOSES OF REUSE

All traditional uses of reclaimed water are expected to grow in absolute volume while a number of new and unusual uses (aggregated as a Miscellaneous category) develop and grow. None of the uses is projected to decline in volume. The

¹The State's goals were enacted by the Legislature with the passage of the Water Recycling Act of 1991 (AB 673), Water Code Section 13577, Water Recycling Goal

relative proportions of the various categories of reuse will undergo significant change.

Groundwater recharge currently accounts for nearly half the total volume of water reused in the State. This proportion will gradually decline to about a third, as landscape irrigation grows from a mere 10 percent to almost a third of all reuse volume. Another major use of reclaimed water—agricultural irrigation—though expected to grow steadily, will decline in relative percent of total from 21 percent at present to 13 percent in the “ultimate” horizon. Other categories experiencing the greatest relative increases will be industrial uses and seawater intrusion barriers.

These changes in relative proportion reflect the increasing value of reclaimed water as a resource for direct utilization within the urban areas of origin. For example, the dramatic increase in landscape irrigation use of reclaimed water is indicative of a strong shift in attitude on water reuse. When asked for the “purpose” of project, most respondents (63 percent) cite *water supply* as the sole purpose, and only one percent mention *disposal* or *pollution control* as the only purpose of the project. Another 14 percent include *water supply* among a list of purposes.

INFLUENCES ON WATER REUSE

Survey respondents ranked the current statewide economic recession and local budgetary problems as the greatest impediments to implementing their water recycling projects. On the other hand, water shortage and the six-year drought were ranked as the factors most influential in motivating greater and faster development of water reclamation projects. The overwhelming thrust of the survey findings is that water recycling continues to be highly successful in California in spite of the impediments—real or imagined.

An interesting finding of the survey is that most respondents rated public opinion as a motivating influence for water reuse project development. About 75 percent rated public opinion as having a “positive” or “somewhat positive” influence on project development. This is probably due to the increased familiarity that most Californians have gained—especially in recent years—with water reclamation projects and their unblemished safety record. Many respondents attribute positive influence to recent legislative mandates for use of reclaimed water for all non-potable uses—where available at acceptable quality and reasonable cost. Others decry the strictness of regulatory agencies (and some local health authorities) in interpreting public health regulations, issuing permits and processing loan applications.

COSTS

Survey respondents providing cost data cumulatively expect to spend about \$2,850,000,000 in treatment and distribution capital costs over the next two decades to build capacity to reclaim about 830,000 AFY. This is a huge investment of resources and yet represents only a portion of the total projected water reuse costs. The implication of this commitment of resources is that water recycling is widely viewed as a proven, reliable, safe and economical locally controlled source of water supply. Viewed another way, three billion dollars is a huge commitment of resources at a time when all agencies in California are feeling the disastrous effects of the ongoing recession. The need for financial assistance, affordable financing mechanisms and achieving economies of scale is dramatized in this single figure.

POTENTIAL FOR THE FUTURE

The future looks bright for water reclamation, not only because of the numbers projected by the survey respondents, but also because of movements in the legislative, regulatory and other arenas. The *California Wastewater Reclamation Criteria* (Title 22) are being revised to reflect actual practice and to respond to the need for more streamlined and uniform public health regulation. The proposed revised regulations are expected to name over 30 new “allowed” uses of reclaimed water. The long-awaited groundwater recharge guidelines are expected to be included in this new version. The California Legislature also has been active in water reuse, expanding the envelope to allow mandated use of reclaimed water where available, and to specify several new uses of reclaimed water.

Another major event which will increase water recycling potential in the future substantially is the recent formation of two state-wide potable reuse committees (one is officially co-sponsored by the Department of Health Services and the Department of Water Resources while the other is a subcommittee of the **WaterReuse** Association’s Regulations Committee). Possibly, the next time survey questionnaires are mailed out, a new category of reuse will be potable, through surface water augmentation, river discharge or other acceptable routes.