

## VI. IID Reasonable and Beneficial Use

As noted elsewhere, the IID has a quantified appropriative water right which is based on irrigation and domestic needs (with flexibility up to certain maximum quantities under priority 3 and priority 6 and 7 of the incorporated Seven-Party Agreement). The IID's annual water use fluctuates for many reasons, including agricultural market conditions, the amount and timing of rainfall, and the salinity of Colorado River water. Stronger economic conditions in crop markets increase the use of Colorado River water by bringing more acreage into production. Less rainfall means that more Colorado River water must be used to grow crops. Higher salinity means that more Colorado River water is used to leach salt from the soil. Additionally, different types of crops require differing amounts (and methods) of irrigation.

The IID's diversions (less return flows) reached a ten-year low of 2.62 million AF in 1992 (inclusive of diversions by MWD under the 1988 IID/MWD Agreement), when whitefly infestation devastated major crops in the Imperial Valley. The IID's diversions (less return flows) reached new highs of 3.22 million AF in 1996 and 3.27 million AF in 1997 (inclusive of diversions by MWD under the 1988 IID/MWD Agreement), due to strong economic conditions in crop markets, below normal rainfall, and changes in salinity of Colorado River water.

The IID's irrigation system includes the 82-mile All-American Canal, as well as 1,675 miles of other canals which serve about 5,600 headgates. In addition to the canals, the IID manages 10 regulating reservoirs. The drainage system in the Imperial Valley has over 1,400 miles of drain ditches and another 33,600 miles of tile drains which underlie cultivated fields. The flows from the surface and tile drains ultimately go into the New River or the Alamo River, or directly into the Salton Sea. Though the IID operates the distribution system and the off-farm drainage collection system, tile drains and tailwater discharge systems are operated by land owners.

Water orders and deliveries by the IID require substantial management effort. The IID places orders each week with the BOR for water from primary storage at Lake Mead. These orders are typically placed about five days before the beginning of the week in which the deliveries are requested. However, farmers order water from the IID only one to two days in advance of delivery. Therefore, the IID has to estimate its water needs when placing its orders with the BOR up to ten days before the farmers' requests.

In making its deliveries, the IID diverts water from the main canals to laterals, and then to headgates. Virtually the entire flow--from the diversion at Imperial Dam to delivery at the headgate to drainage into the Salton Sea--is by gravity. Once the IID has diverted water into the All-American Canal, there is only a small amount of storage (0.1% of annual diversions) available to regulate delivery of the water supply within the IID. All headgate deliveries and tailwater outflow are measured at regular intervals during delivery periods by Zanjeros (ditch riders) who open and close headgates and adjust lateral canal checks and gates to deliver water orders at the specified times and flow rates. Therefore, the IID must estimate its water needs very carefully. Due to the many complexities of this gravity open canal delivery system the IID cannot perfectly control the water, even under ideal conditions, such that all deliveries are met without any water discharges at the end of the canals. Nonetheless, despite such unavoidable constraints, IID delivers over 90% of the Colorado River water it diverts to its users. The water that is not delivered includes losses from evaporation, seepage, and operational spills.

The most important measure of irrigation water use within an irrigation project is irrigation efficiency. The California Department of Water Resources ("DWR") suggests that by the year 2020 on-farm irrigation efficiency in California should approach 73%. IID Appendix, Tab 10, p. 6-16. However, the on-farm irrigation efficiency of the IID is already about 79%, while its

conveyance and distribution efficiency is about 90%. By the DWR's account, 73% on-farm efficiency might be generally achieved in California by the year 2020. Thus, the IID is more than 20 years ahead in achieving the target on-farm irrigation efficiency. In fact, the IID's on-farm irrigation efficiency is one of the highest in the state and nation.

In some areas of the State, agencies such as Westlands Water District, Kern County Water Agency, and Imperial Irrigation District generally have on-farm efficiencies ranging from 75 percent to more than 80 percent.

Id. at p. 6-15.<sup>20</sup>

The on-farm irrigation efficiency of the IID is higher, for example, than two nearby irrigation districts that also use Colorado River Water (Wellton-Mohawk and CVWD), meaning the ratio of water used by the plants to the amount of water delivered to the headgate is lower in those two districts than within the IID. In other words, both CVWD and Wellton-Mohawk lose more water than the IID relative to the respective amount of water delivered to the farms.

The IID's on-farm and conveyance efficiencies are high largely due to the fact that IID and its farmers have historically invested money and resources to rehabilitate and modernize irrigation systems in an effort to improve water management. Farmers have lined ditches, leveled farm land, and implemented many water management measures. Over the past 50 years, farmers have made a large investment in time and money to conserve water within the IID. Collectively, farmers have spent about \$340 million (in 1996 equivalent dollars) to improve delivery and on-farm irrigation efficiency, resulting in an estimated annual savings of 385,000 AFY. Although the IID's on-farm irrigation efficiency is already very high compared to other districts, the revenues to be generated by the proposed IID/Authority transfer will enable the IID and its farmers to employ new irrigation methods and technologies to further improve their efficiency.

The IID has been at the forefront of agricultural water conservation. For example, the IID was one of the first agricultural agencies to sign the 1996 Memorandum of Understanding Regarding Efficient Water Management Practices ("MOU"). IID Appendix, Tab 11. The MOU creates the Agricultural Water Management Council, which will be in charge of implementing the MOU, analyzing local water management plans, and overseeing cost-effective and efficient water management practices. Over 29 water suppliers serving about 2.8 million irrigated acres have now also signed the MOU. DWR Update, IID Appendix, Tab 10, p. 6-14.

In the early 1990's, the BOR commissioned several studies by Marvin E. Jensen to evaluate water use in the IID. Mr. Jensen issued various reports (collectively "Jensen Report") which concluded that the IID was not effectively utilizing its water diversions from the Colorado River. Opponents of the proposed transfer between the IID and the Authority will no doubt cite the Jensen Report as grounds to disapprove the transfer. However, the Jensen Report is fundamentally flawed. The IID's total diversions did not decline after implementation of the IID/MWD 1988 conservation agreement. The Jensen Report mistakenly relies on this fact to conclude that the IID must therefore have become less efficient. This false conclusion is predicated upon an assumption that water conservation efforts in the IID must result in reduced diversions of Colorado River water by the IID. In reality, the IID's diversions depend on a variety of factors which the Jensen Report ignored, such as increased salinity of Colorado River water (requiring leaching of soil with extra water), varied cropping and market conditions, and rainfall. Additionally, the Jensen Report ignored the fact that the IID's Colorado River water rights are legally flexible (see Sections III and IX), and diversions may lawfully increase with the IID's increasing irrigation needs in any given year, even if new verified conservation is in place.

Even though the IID has diverted (less return flows) 3.22 and 3.27 million AF of Colorado River water in the past few years (inclusive of diversions by MWD under the 1988 IID/MWD

Agreement), the IID is willing to forbear diverting more than 3.1 million AF of its priority 3 entitlement, inclusive of the transfer of conserved water to MWD under the 1988 transfer agreement, so that junior right holder CVWD can benefit by enhancing the reliability of its priority 3 and priority 6 water in order to make available to CVWD in priority 3 the 10-year average use of Colorado River water.<sup>21</sup>

<sup>20</sup> The DWR Update also notes that to raise efficiency in the Colorado River region, conservation costs are high. To increase from 73% efficiency to 76% will cost about \$100 per AF; to go to 78% will cost about \$250 per AF; and to go to 80% would cost about \$450 per AF. IID Appendix, Tab 10, p. 6-16.

<sup>21</sup> CVWD's average annual diversion of Colorado River water over the past decade has been approximately 330,000 AFY, consisting of approximately an average of 270,000 AFY of priority 3 and 60,000 AFY of priority 6 water.