

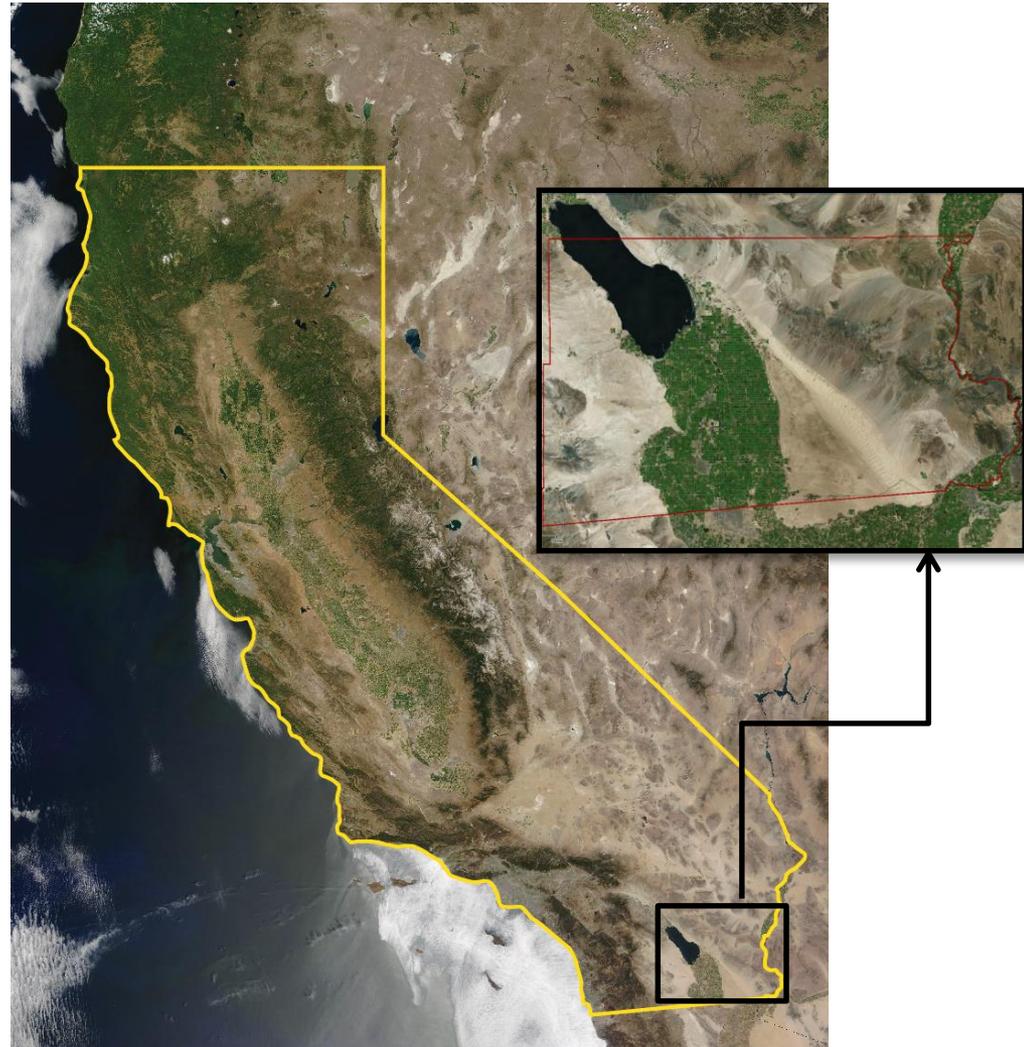
The Salton Sea Challenge: Consequences of Agricultural-to- Urban Water Conservation Transfers

Tina Shields, PE
Water Manager
tshields@iid.com



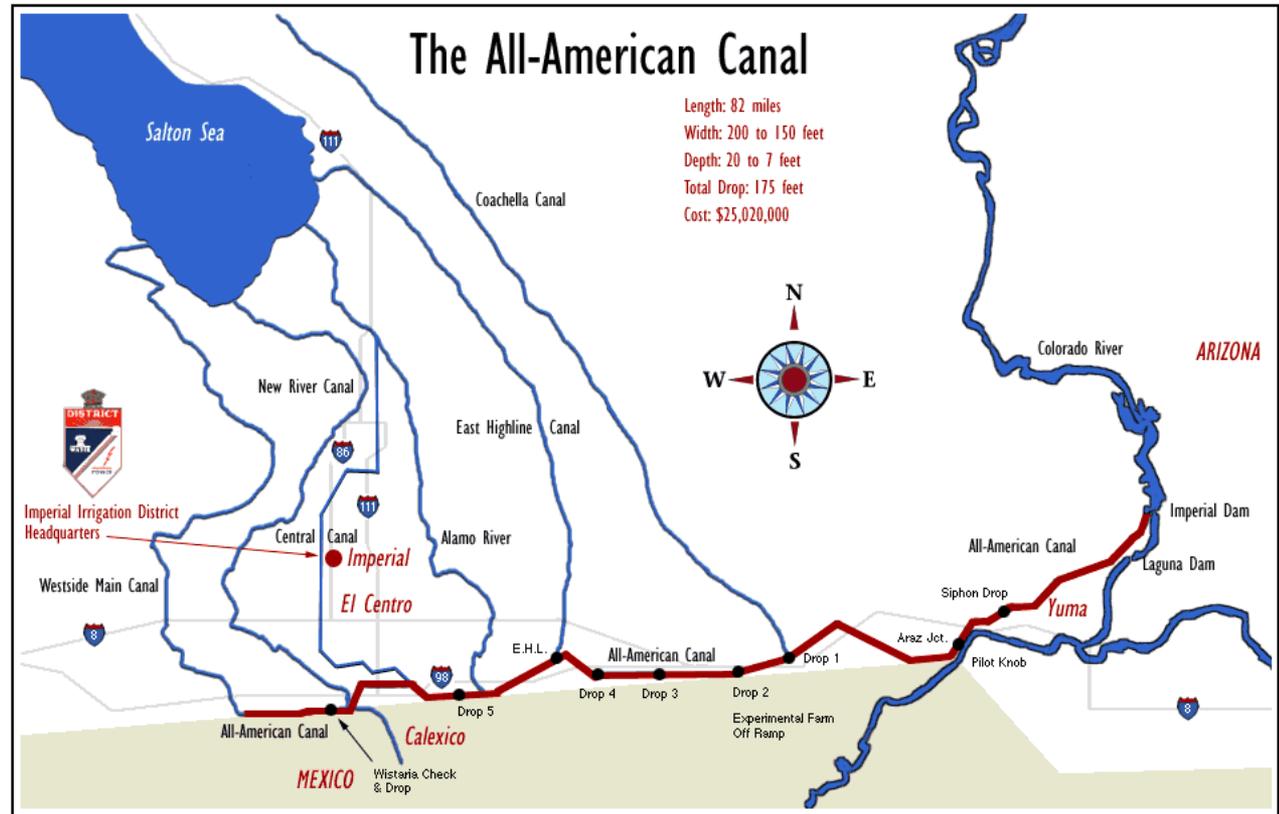
IID

A century of service.



IID's Water Supply & Service Area

- 3,100,000 acre-feet annual Colorado River consumptive use entitlement
- 1,062,216 – gross acres within boundaries
- 520,307 – total acreage receiving water
- 471,435 – total farmable acreage
- Imperial Dam diversion structure, headworks and six desilting basins
- 82-mile long All-American Canal



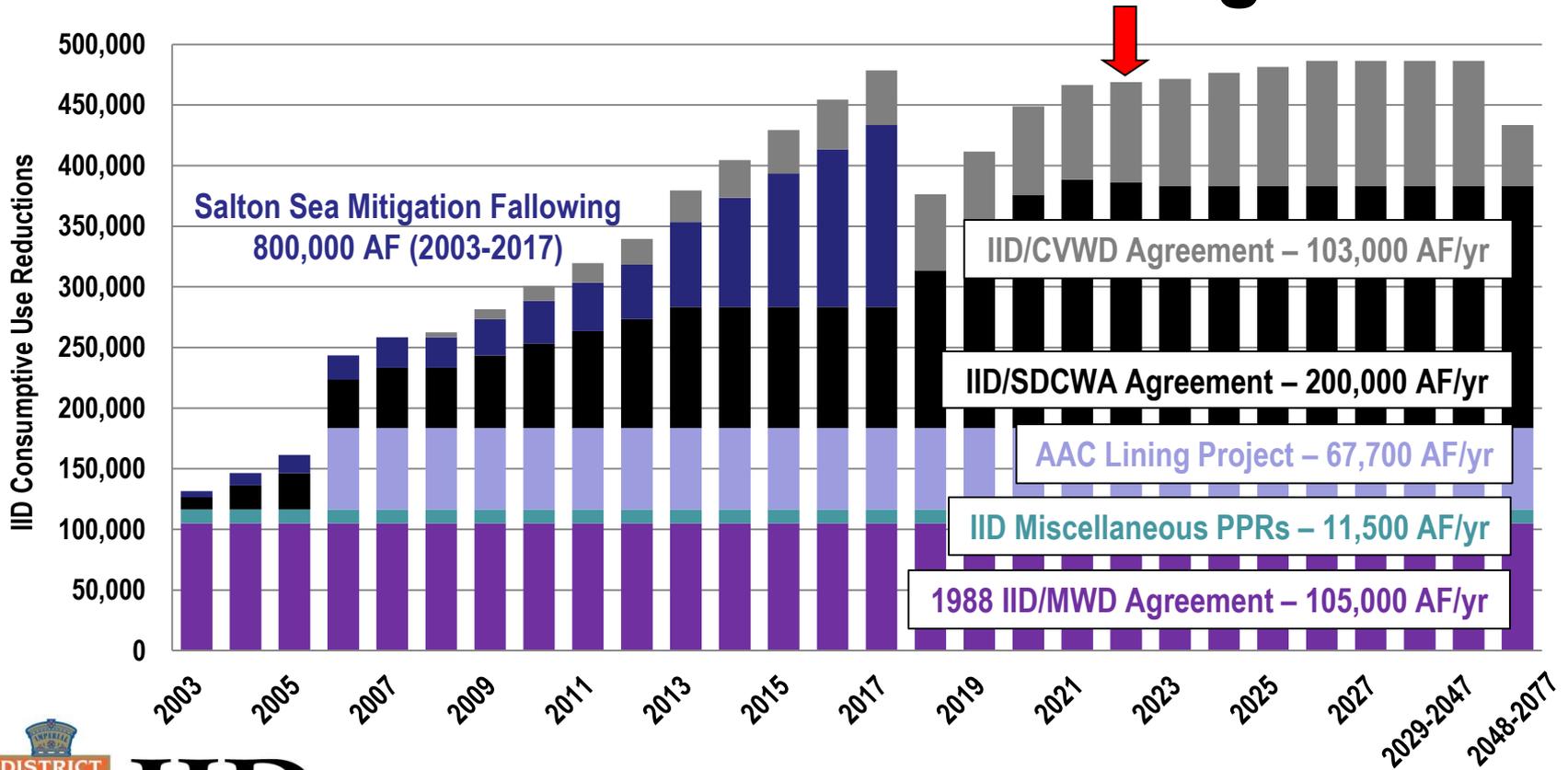
The California Problem

(pre-Quantification Settlement Agreement)

- California's basic annual apportionment is 4.4 maf, but urban use exceeded its entitlement causing total uses of up to 5.2 maf.
- Excess water used by California was legally diverted by MWD from Arizona and Nevada's unused apportionments, but there were concerns about California's dependence on these unused flows and how it might affect other states' future growth.
- In 1996 Arizona created the Arizona Water Banking Authority to fully use its apportionment. In 2001 Nevada signed an intra-state water storage agreement with Arizona.



The California Solution: QSA/Water Conservation & Transfer Programs

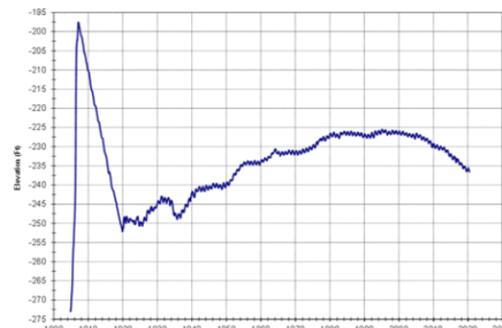


The California Consequence: the Salton Sea



- 360 square miles, up to 52' deep
- Congressionally designated agricultural sump for IID/CVWD
- Volume of 7.5 MAF with annual inflow of up to 1.3 MAF, no outflow
- Nearly 50% saltier than the ocean
- Repository for agricultural drainage
- Heavily used by migratory waterfowl including endangered species
- \approx 10' elevation decline since 2003; despite the replacement of conserved water reductions through the delivery of mitigation water
- Without transfers, Sea was estimated to turn hypersaline between 2010 and 2025; with transfers, Sea was estimated to turn hypersaline 1-9 years earlier

Salton Sea Elevation @ Fig Tree John



IID

A century of service.

www.iid.com

California Salton Sea Commitments

- SB 277 (Ducheny 2003), part of legislation authorized to facilitate approval of the QSA, established California's intent to restore the Salton Sea and initiated a process to develop a Salton Sea restoration and financing plan.
- SB 654 (Machado, 2003) established a mechanism to allocate and cap environmental mitigation costs to the QSA water agencies (\$133 million, 2003 nominal dollars) with a funding backstop by the state of California, who also took on Salton Sea restoration responsibilities.
- A 2007 study identified a \$8.9 billion preferred restoration alternative which was promptly shelved (and became the impetus for IID's current "smaller but sustainable" advocacy position).



Fallowing and Salton Sea Mitigation Water Requirements (2003 – 2017)

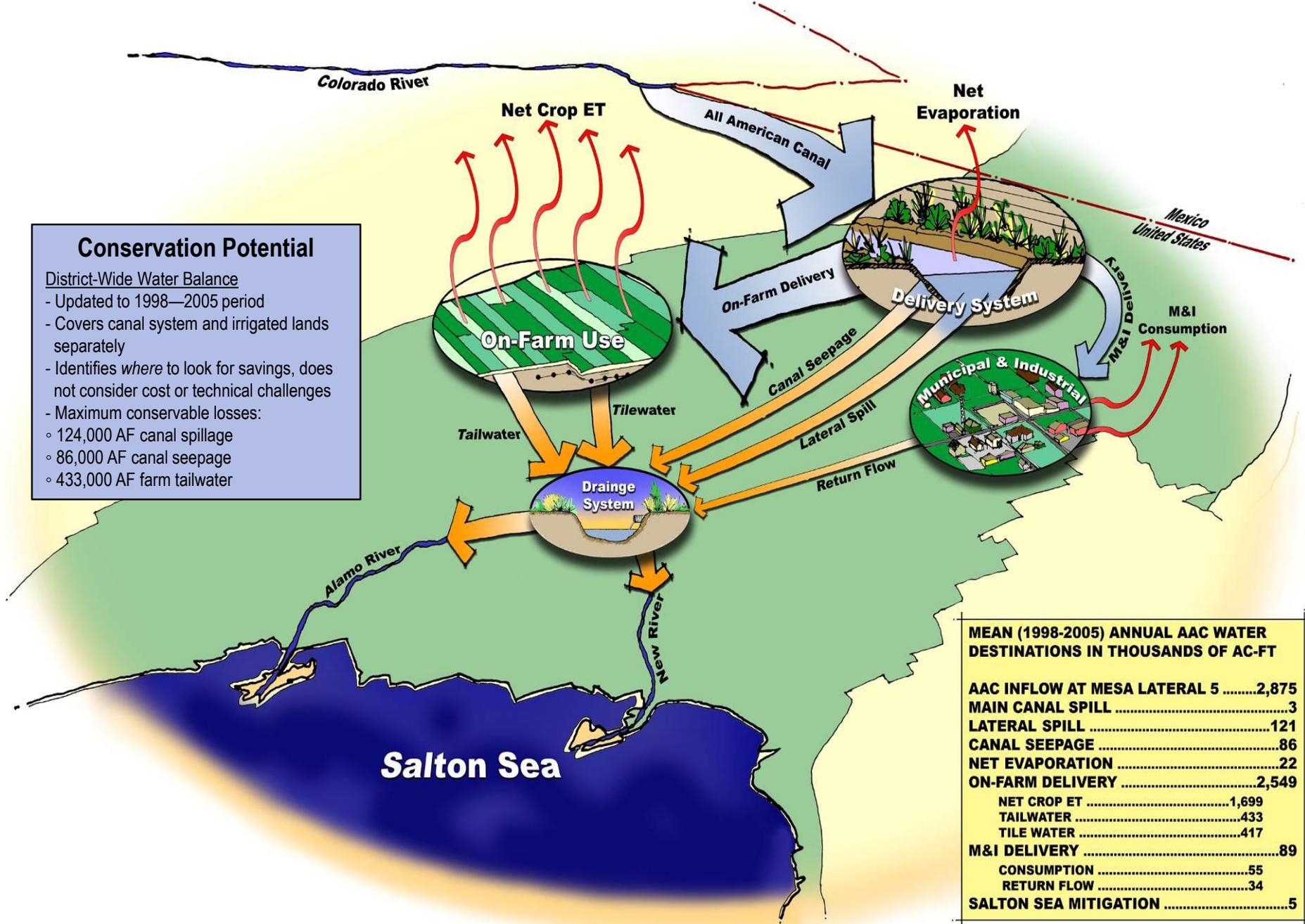
- The SWRCB imposed a 15-year mitigation delivery requirement that was intended to maintain salinity levels for a long enough period of time for the state to study Salton Sea restoration feasibility, develop a plan, find funding and begin implementation. IID conserved and delivered nearly 800,000 AF of mitigation water during this 15-year restoration planning period.
- IID was required to delay efficiency-based conservation measures in favor of fallowing, contrary to IID's opposition to this conservation methodology due to its third-party socioeconomic impacts on the community and farm service providers. Nearly 300,000 acres were fallowed in order to minimize impacts to the Salton Sea and create mitigation water during the 15-years.



Conservation Potential

District-Wide Water Balance

- Updated to 1998—2005 period
- Covers canal system and irrigated lands separately
- Identifies *where* to look for savings, does not consider cost or technical challenges
- Maximum conservable losses:
 - o 124,000 AF canal spillage
 - o 86,000 AF canal seepage
 - o 433,000 AF farm tailwater



MEAN (1998-2005) ANNUAL AAC WATER DESTINATIONS IN THOUSANDS OF AC-FT	
AAC INFLOW AT MESA LATERAL 5	2,875
MAIN CANAL SPILL	3
LATERAL SPILL	121
CANAL SEEPAGE	86
NET EVAPORATION	22
ON-FARM DELIVERY	2,549
NET CROP ET	1,699
TAILWATER	433
TILE WATER	417
M&I DELIVERY	89
CONSUMPTION	55
RETURN FLOW	34
SALTON SEA MITIGATION	5

A Call to Action: IID's SWRCB Petition

- On November 18, 2014 IID submitted a petition to the California State Water Resources Control Board to exercise its continuing authority over the nation's largest agricultural-to-urban water transfer.
 - *The petition called on the SWRCB to commence a facilitated dialog to identify the most realistic, smaller but sustainable, Salton Sea restoration plan and a durable funding mechanism, and then condition the water transfers on the state satisfying its unmet restoration obligation.*
- On March 4, 2017, IID filed a request for a SWRCB evidentiary hearing to ensure the long-term viability of the QSA water transfers and require a state implementation plan
- On September 7, 2017 the SWRCB held a public workshop regarding the SSMP and draft stipulated order developed by IID, IC and SDCWA, in consultation with NGOs, that was adopted with minor modifications to improve public outreach and coordination on November 7, 2017.
 - *Annual acreage milestones and performance standards, an adaptive management implementation plan, funding alternatives, permit streamlining options, a five-year reconsultation process to initiate Phase II planning efforts, and an affirmative state restoration commitment with SWRCB oversight.*



1988 IID/MWD Conservation Program



MWD funded capital improvements to IID's conveyance system (completed in 1997), the related annual O&M expenses and operational staff through 2041 in exchange for the transfer of a 105,000 AFY fixed conservation yield.



- 5 Reservoirs (Bevins, Young, Russel, Willey and Galleano)
- 270 miles of concrete lined canals
- 3 Lateral Interceptors (Plum-Oasis, Mulberry-D, Trifolium)
- System Automation (SCADA, main canal automated gates, water information system and Water Control Center)
- 12-Hour Delivery Program



IID

A century of service.

QSA System Conservation Program + Flexibility

Increases operational flexibility and system water delivery efficiencies to provide water management opportunities.

- *Main canal seepage interception and recovery systems*
- *Lateral interties*
- *Main system and mid-lateral operational reservoirs*
- *Groundwater recovery, storage and conjunctive use projects*



QSA SCP Discharge Reduction Program

Integrate new system improvements, technology and real-time operational data to reduce operational discharge.

- *233 automated lateral headings and 115 operational discharge monitoring sites*
- *Computers in 110 zanjero vehicles with flow information and decision support features*
- *SCADA upgrades*



QSA On-Farm Efficiency Conservation Program

2008 conservation yield =	581 AF
2009 conservation yield =	236 AF
2013 conservation yield =	17,276 AF
2014 conservation yield =	44,371 AF
2015 conservation yield =	87,721 AF
2016 conservation yield =	138,585 AF
2017 conservation yield =	151,750 AF
2018 conservation yield =	190,969 AF
2019 conservation yield =	178,742 AF
2020 conservation yield =	177,552 AF
<u>2021 conservation yield =</u>	<u>163,069 AF</u>

Total OFECP conservation = 1,150,852 AF

- Program is designed for maximum flexibility to allow for broad farmer participation and a wide variety of crops and growing seasons
- Incentivizes landowners and tenants to reduce water deliveries by improving on-farm water use efficiencies
- Conservation is measured relative to a ten-year historical baseline specific to each field and crop
- Payment rate up to \approx \$296/AF (2021 payment cap; prorated downward since 2019 to avoid exceeding fixed budget)
- 4 AF/AC payment cap
- Two-tiered conservation payment structure (prioritizing capital investment measures) established in 2021



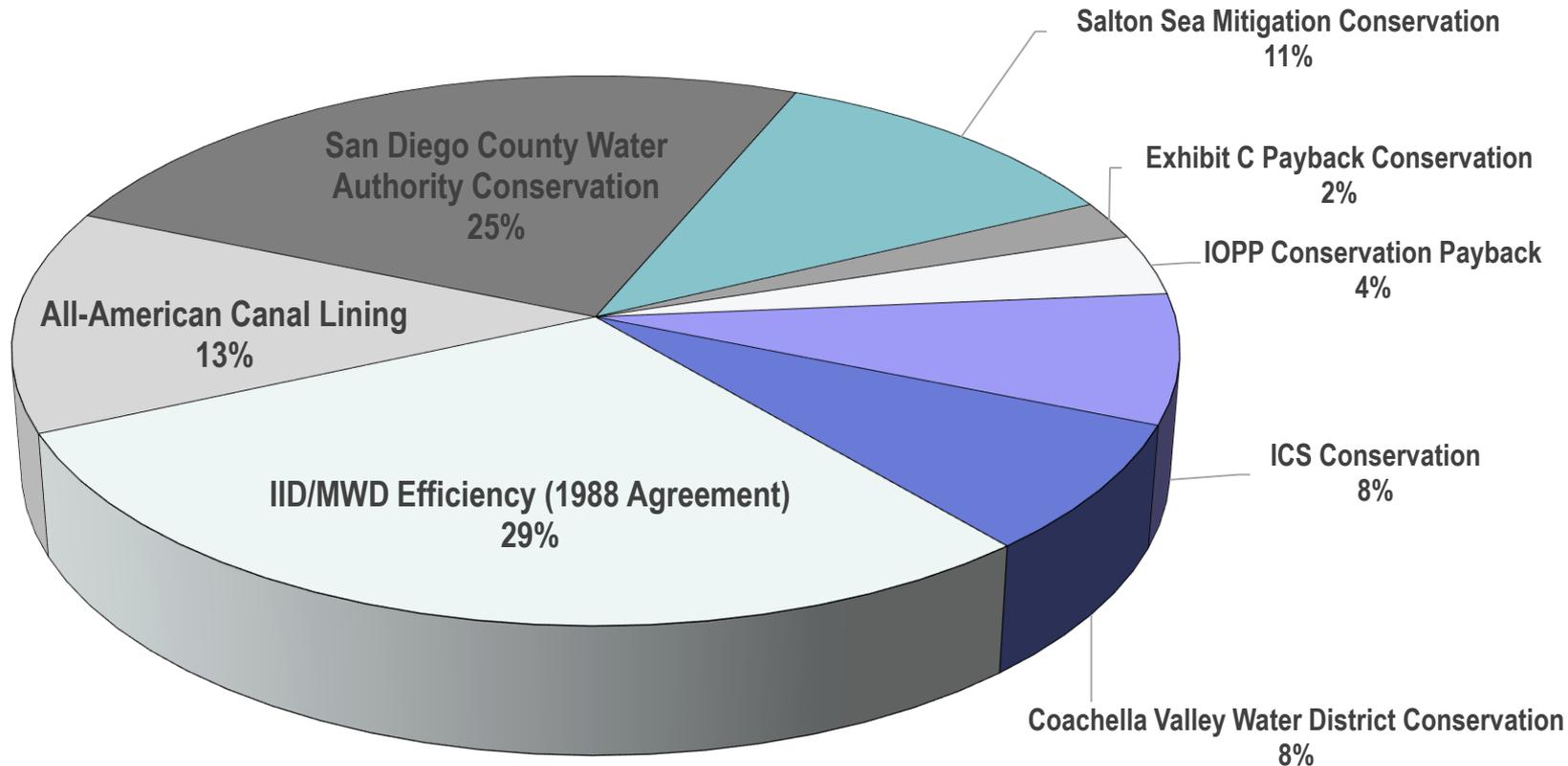
IID

* estimated

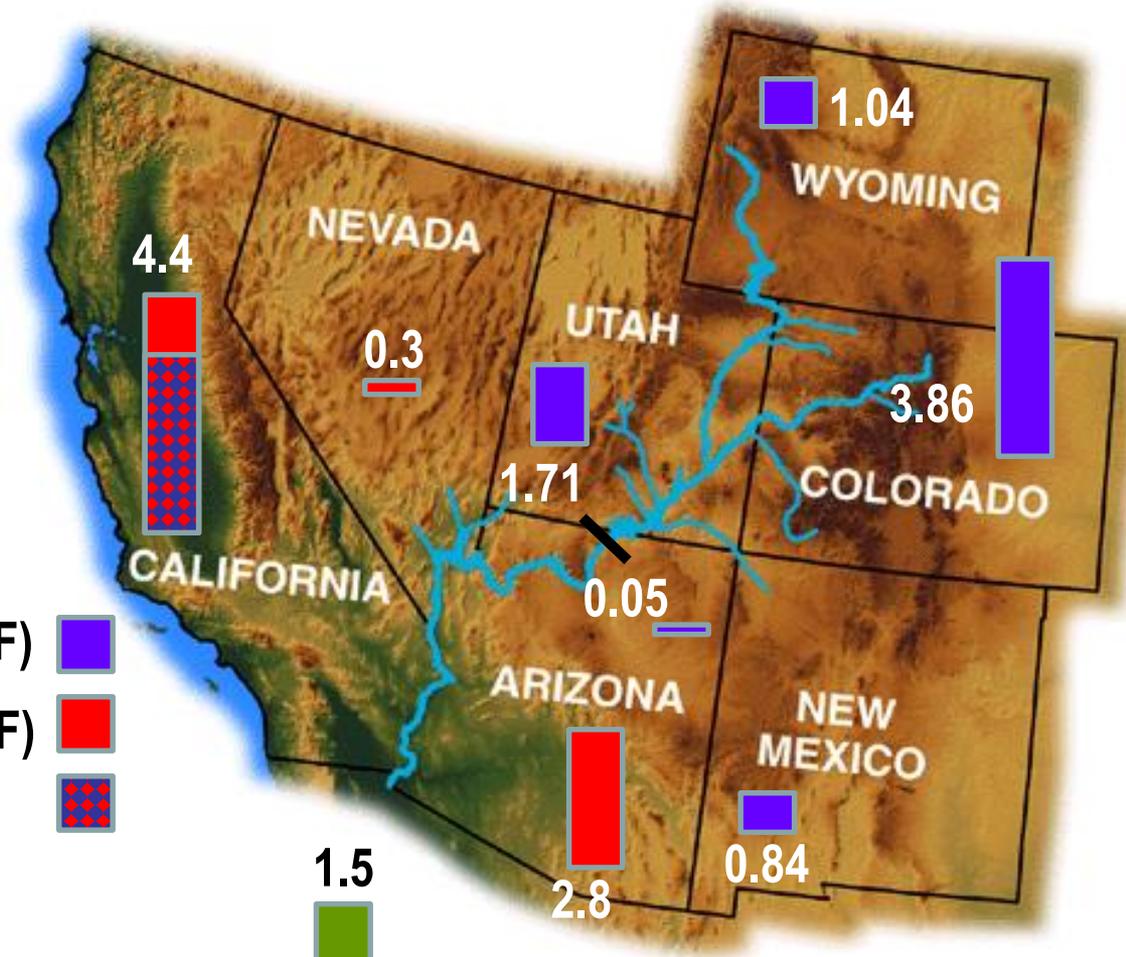
A century of service.

www.iid.com

IID's QSA Water Conservation & Transfer Summary (2003-2021 Total = 6,754,287 AF)



Colorado River Basin State Entitlements



Upper Basin (7.5 MAF)



Lower Basin (7.5 MAF)



IID (3.1 MAF)



IID

A century of service.

1.5
Mexico