

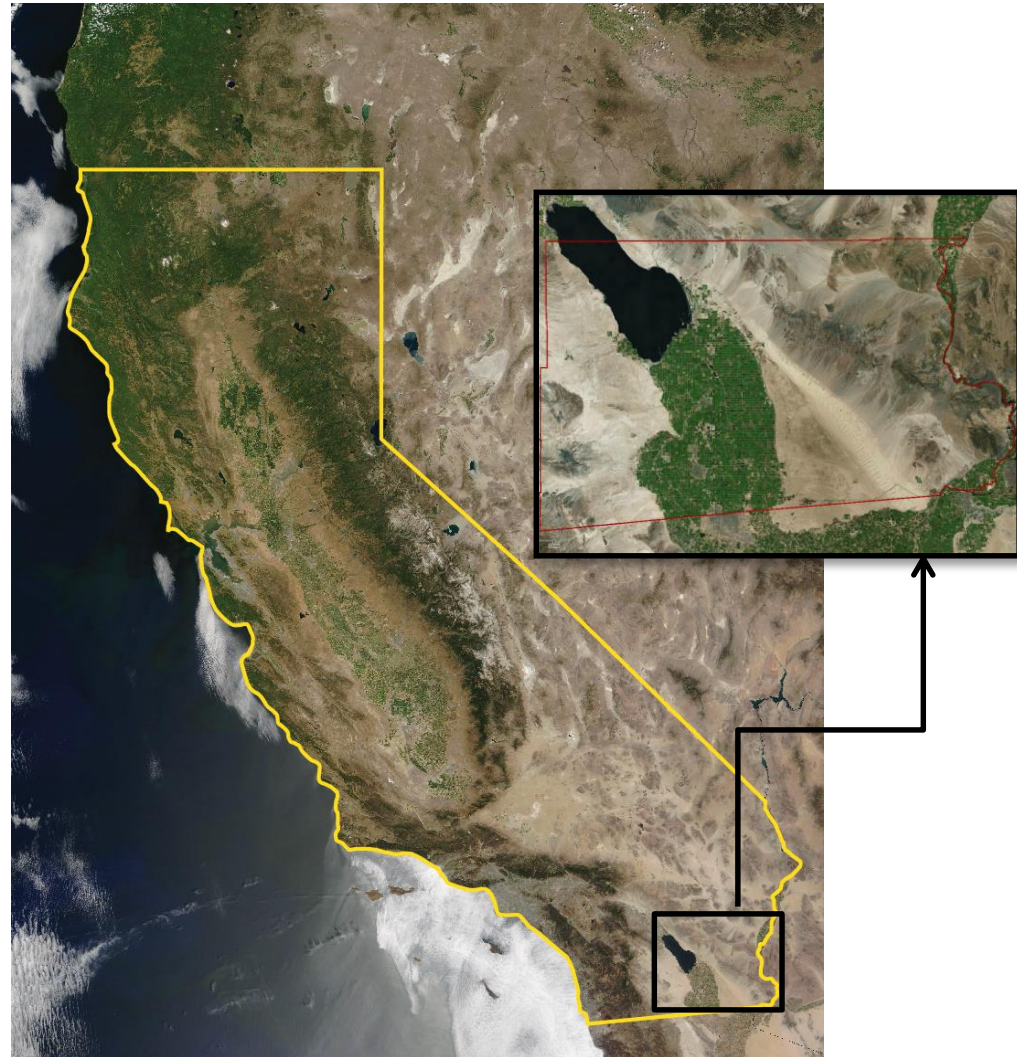
# Agricultural-to-Urban Water Conservation Transfers: Imperial Irrigation District's Efficiency Conservation Programs

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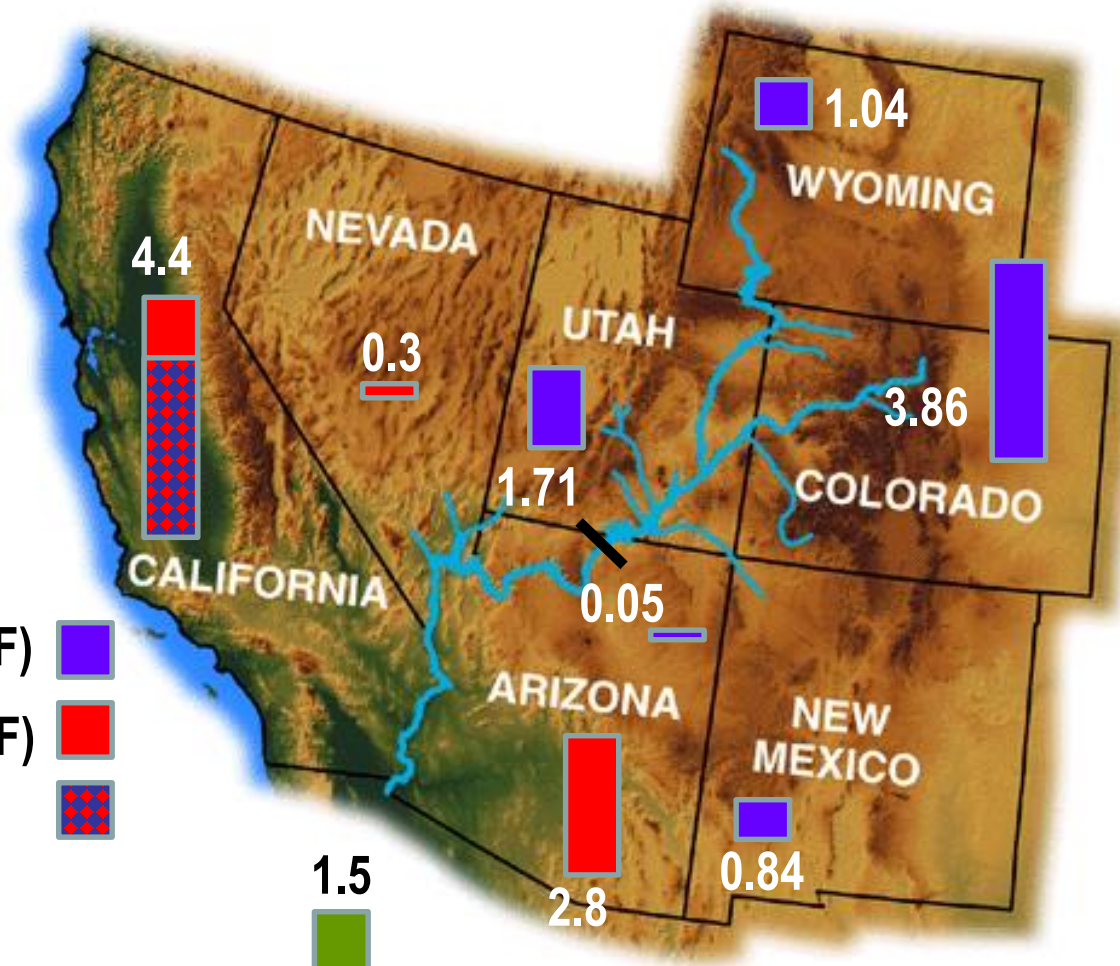
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# Colorado River Basin State Entitlements



Upper Basin (7.5 MAF)



Lower Basin (7.5 MAF)



IID (3.1 MAF)



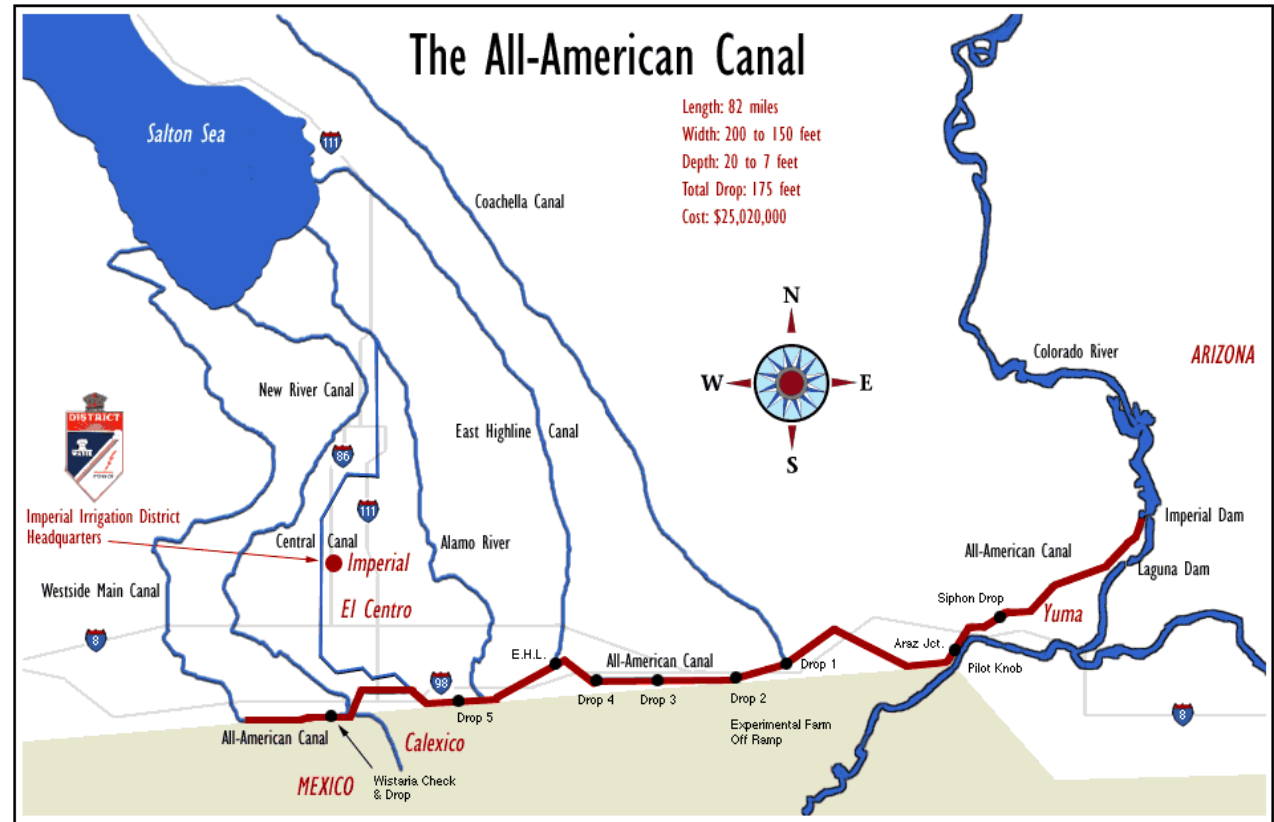
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1.5  
Mexico

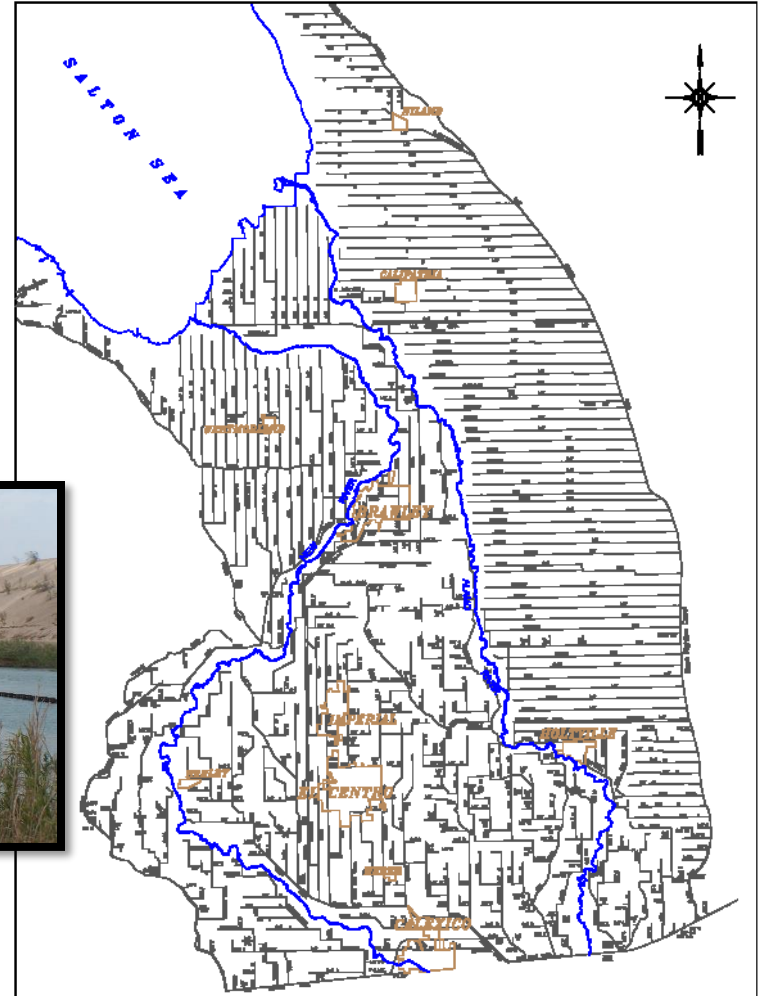
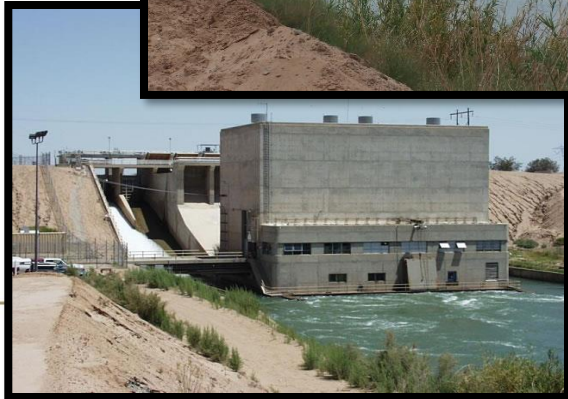
# IID's Water Supply & Service Area

- 3,100,000 acre-feet annual Colorado River consumptive use entitlement
- 1,061,637 – gross acres within boundaries
- 520,307 – total acreage receiving water
- 471,682 – total farmable acreage
- Imperial Dam diversion structure, headworks and six desilting basins
- 82-mile long All-American Canal



# Irrigation and Drainage System

- 1,590 miles of conveyance facilities
- 1,457 miles of surface drains



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# Permanent Crops

- Permanent crops make up less than 5% of the total acreage.
- Feedlots, Sheep, Asparagus, Citrus, Aviary (Bees), Duck Ponds



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# Garden Crops

- Garden Crops account for nearly 26% of total acreage.
- Carrots, Lettuce, Melons, Cauliflower, Onions, Flowers



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# Field Crops

- Field Crops account for over 69% of total acreage.
- Alfalfa, Bermuda Grass, Sudan Grass, Wheat, Sugar Beets



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# 2018 Top 14 Crops (Acres)

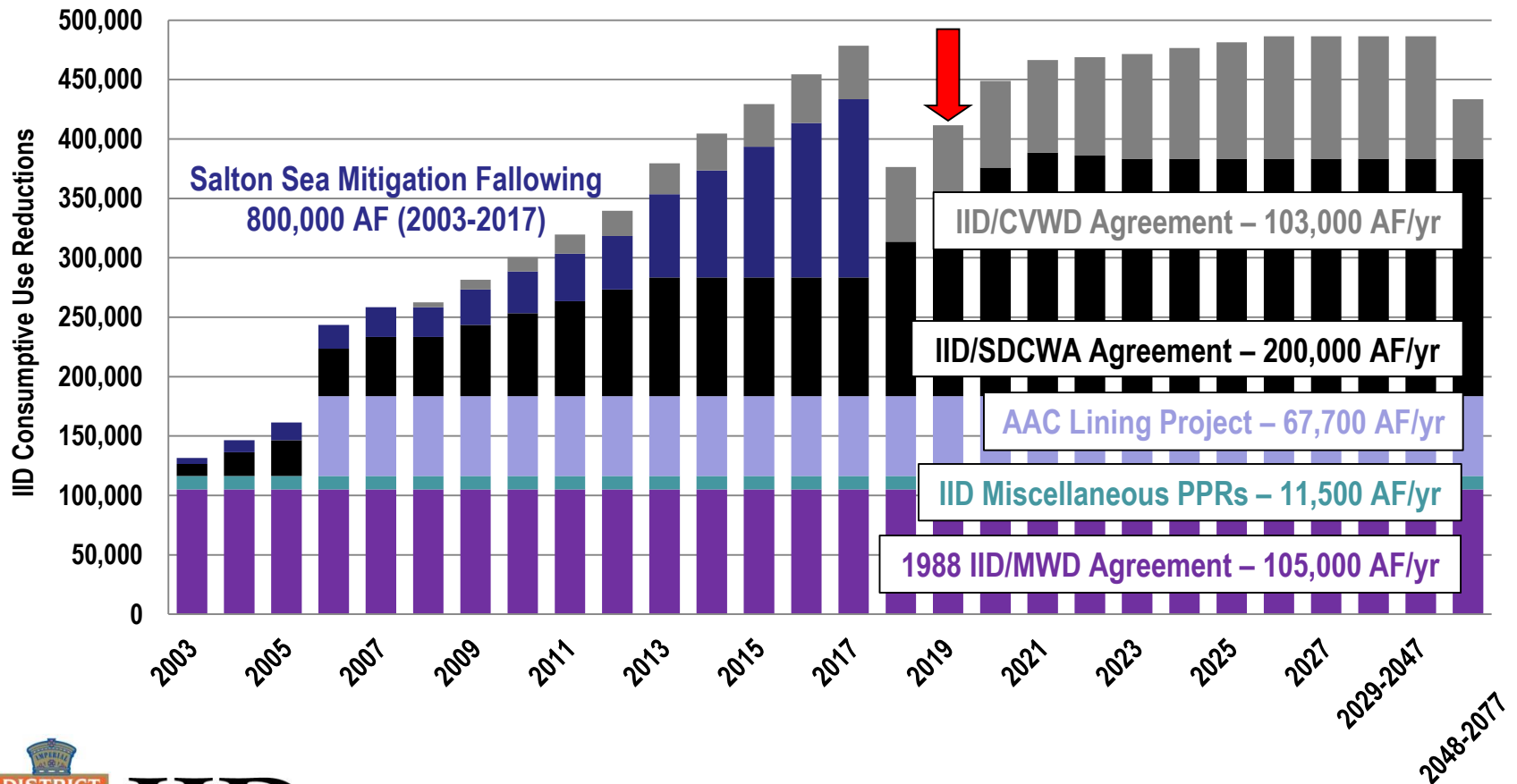


Alfalfa	138,453	30.6%
Bermuda Grass	55,587	12.3%
Sudan Grass	48,692	10.7%
Lettuce	32,069	6.5%
Sugar Beets	25,632	5.7%
Wheat	22,181	4.9%
Klein Grass	17,932	4.0%
Carrots	15,897	3.5%
Onions	12,912	2.9%
Broccoli	12,282	2.7%
Duck Ponds	9,664	2.1%
Sweet Corn	8,569	1.9%
Spinach	8,237	1.8%
Citrus	7,013	1.5%
<b>Top 14 Crops Total Acres</b>	<b>412,682</b>	<b>91.1%</b>
<b>Total Acreage of Crops at IID</b>	<b>452,976</b>	<b>100.0%</b>





# Water Conservation & Transfer Programs



# System Conservation Program - Flexibility

Increases operational flexibility 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*



# On-Farm Efficiency Conservation Program

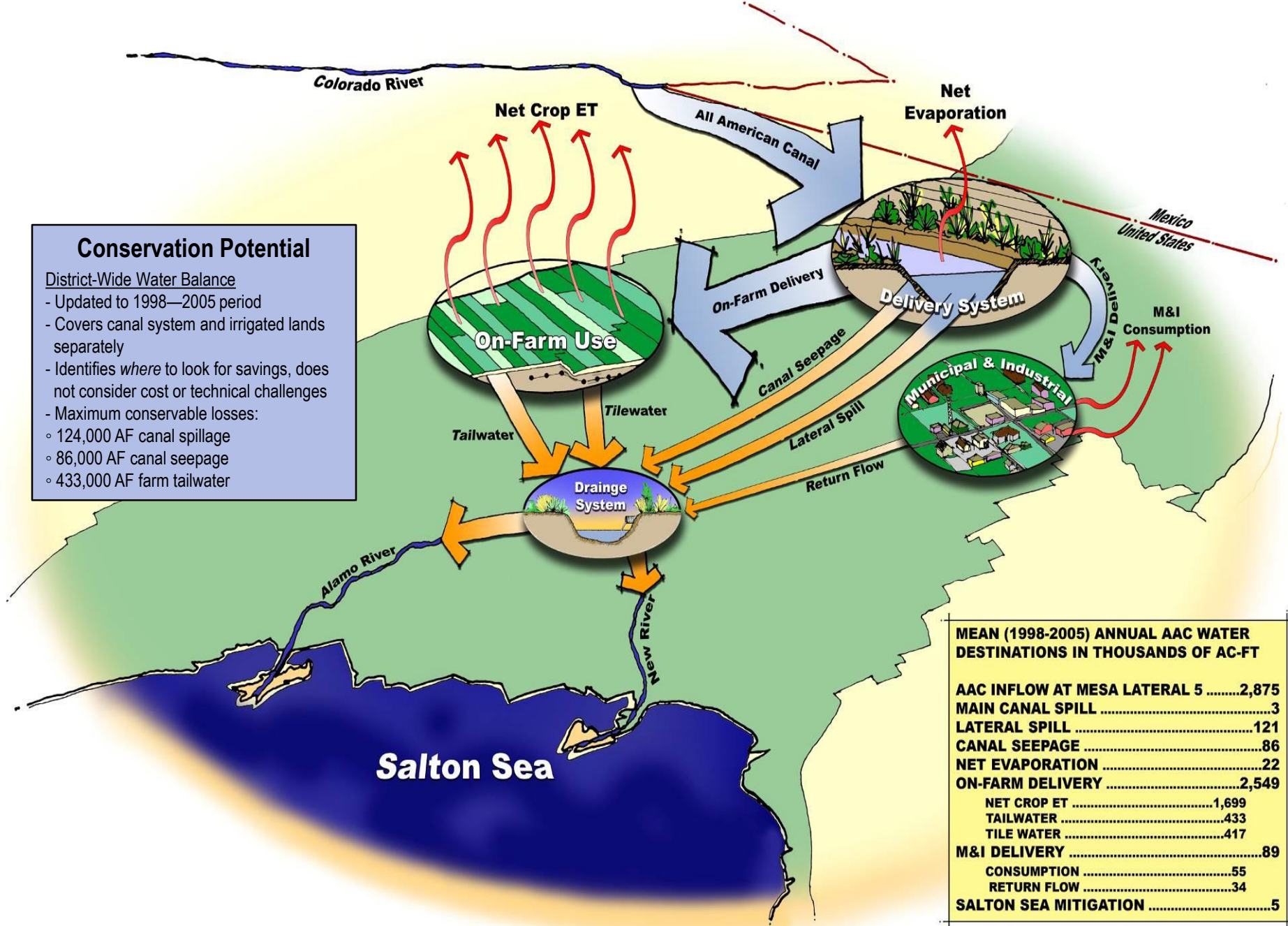
- 2008 conservation yield = 581 AF
  - 2009 conservation yield = 236 AF
  - 2013 conservation yield = 17,276 AF
  - 2014 conservation yield = 44,371 AF
  - 2015 conservation yield = 87,721 AF
  - 2016 conservation yield = 138,585 AF
  - 2017 conservation yield = 151,750 AF
  - 2018 conservation yield = 190,969 AF
- Total OFECP conservation > 631,000 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 = \$285/AF
  - 4 AF/AC payment cap



### 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

# The Salton Sea

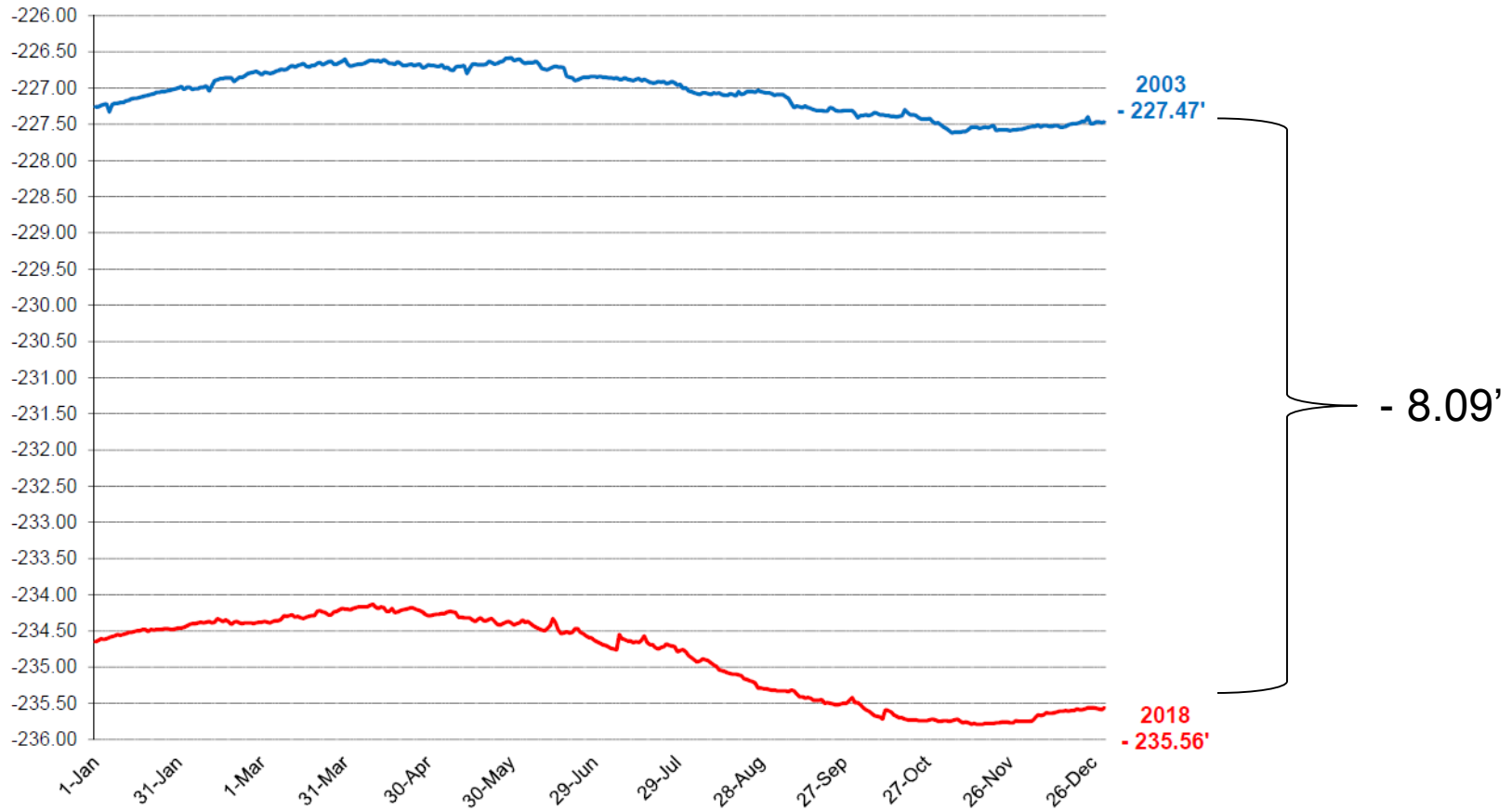


- 360 square miles, up to 52' deep
- Congressionally designated agricultural sump for IID/CVWD
- Volume of 7.5 MAF with annual inflow of up to 1.3 MAF, no outflow
- Nearly 50% saltier than the ocean
- Repository for agricultural drainage
- Heavily used by migratory waterfowl including endangered species
- > 7' 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 is estimated to turn hypersaline 1-9 years earlier

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# Salton Sea Elevation @ Fig Tree John (2003 – 2018)



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Uncontrolled Playa

Edge of Field Scale Pilot Study

# Why restoration?



ch2m



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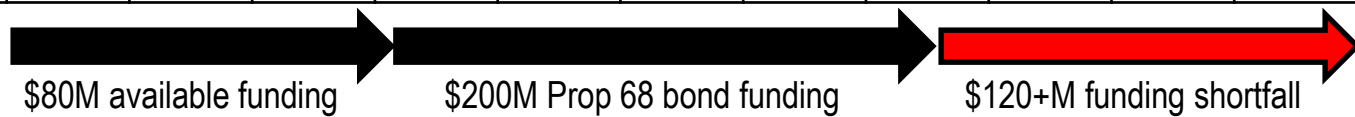
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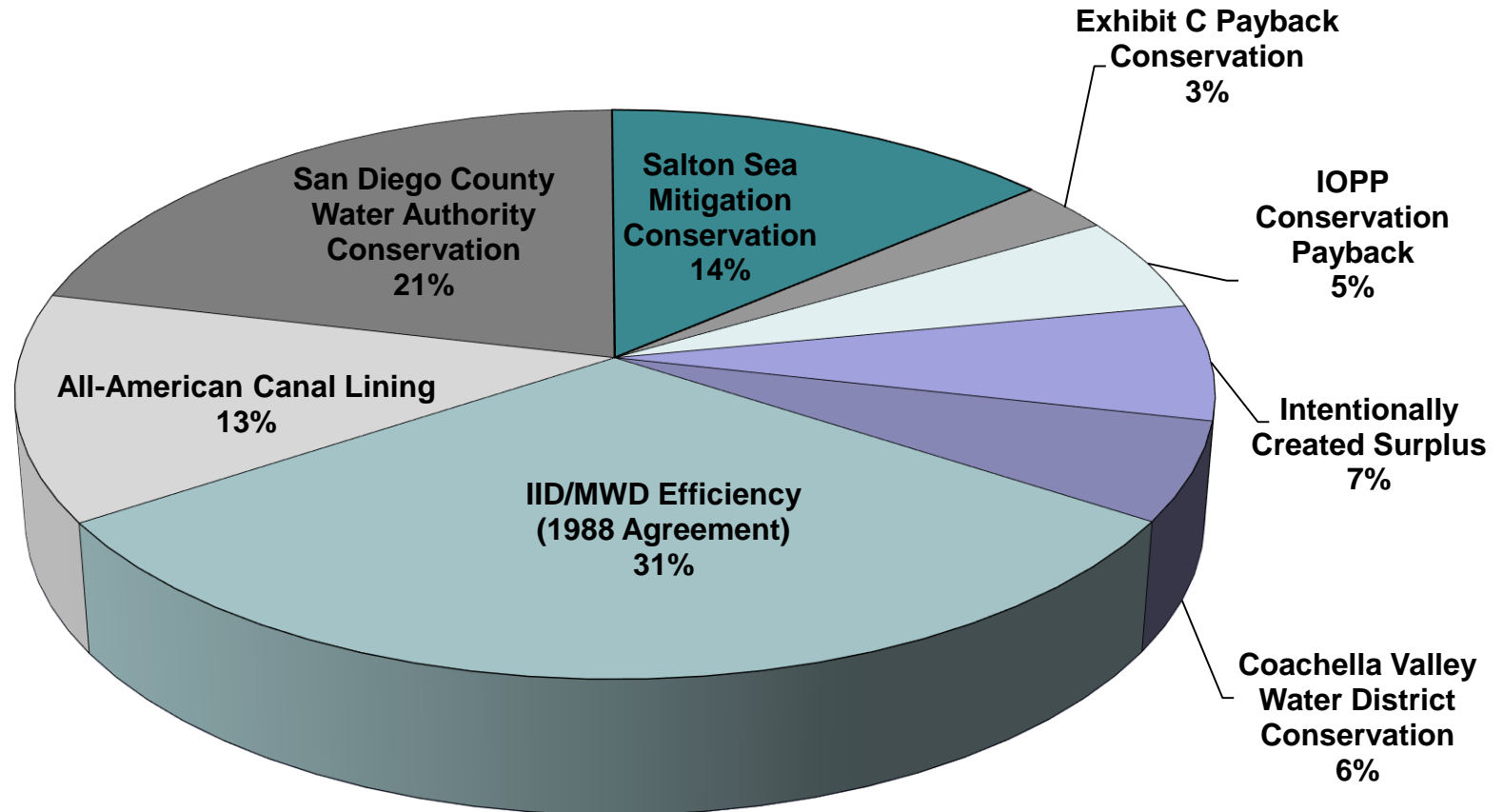


# California's Phase I Salton Sea Management Plan

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Projected Salton Sea Exposed Playa Acreage	18,625	22,172	26,381	31,427	37,011	42,540	47,863	52,752	57,067	60,905	64,200	66,948
Annual Projected Increase in Exposed Playa Acreage		3,547	4,209	5,046	5,584	5,529	5,323	4,889	4,315	3,838	3,295	2,748
Cumulative Projected Increase in Exposed Playa Acreage		3,547	7,756	12,802	18,386	23,915	29,238	34,127	38,442	42,280	45,575	48,323
Annual Playa Acreage Coverage Milestones		500	1,300	1,700	3,500	1,750	2,750	2,700	3,400	4,000	4,000	4,200
Cumulative Playa Acreage Coverage Milestones		500	1,800	3,500	7,000	8,750	11,500	14,200	17,600	21,600	25,600	29,800
Projected SSMP Cost		\$10M	\$27M	\$35.5M	\$43.5M	\$33.5M	\$35.5M	\$34M	\$42.5M	\$47.5M	\$37.5M	\$36.5M



# IID's QSA Water Conservation & Transfer Summary (2003-2018 Total = 5,288,696 AF)



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