## Colorado River Basin Salinity Control Program

Don A. Barnett, P.E., P.G.

Colorado River Basin Salinity Control Forum

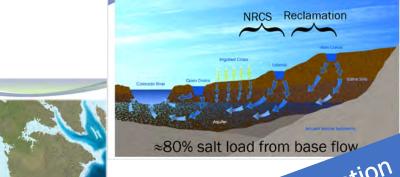
CRWUA - No Spare Change

December 14, 2021

Las Vegas, NV



#### **Colorado River Salinity Control Program**



Implementation

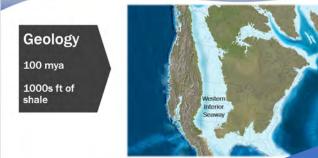


Funding

**Improved** Water Quality

100 mg/L less salt





Genesis



# Improved Water Quality

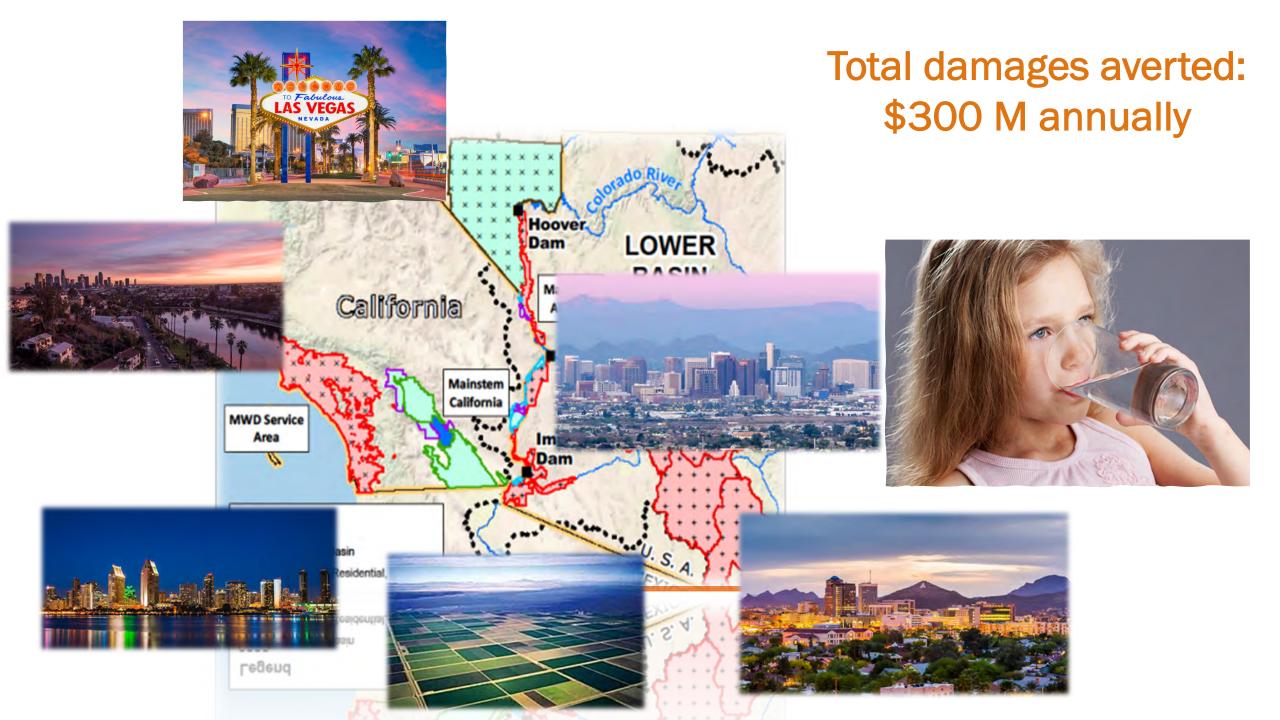
100 mg/L less salt



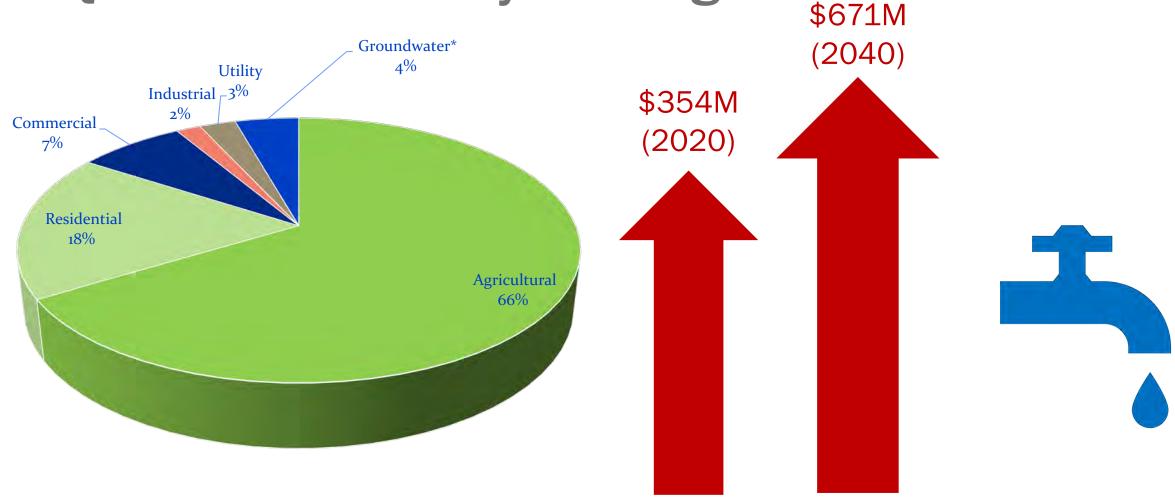


## **Clark County**

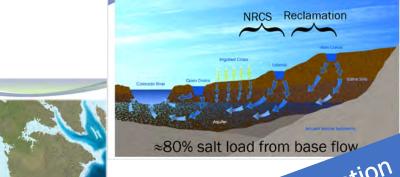
Quantified salinity damages \$45 million less per year due to the salinity control program.



## **Quantified Salinity Damages**



#### **Colorado River Salinity Control Program**



Implementation

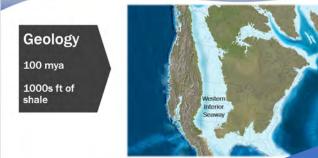


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## Geology

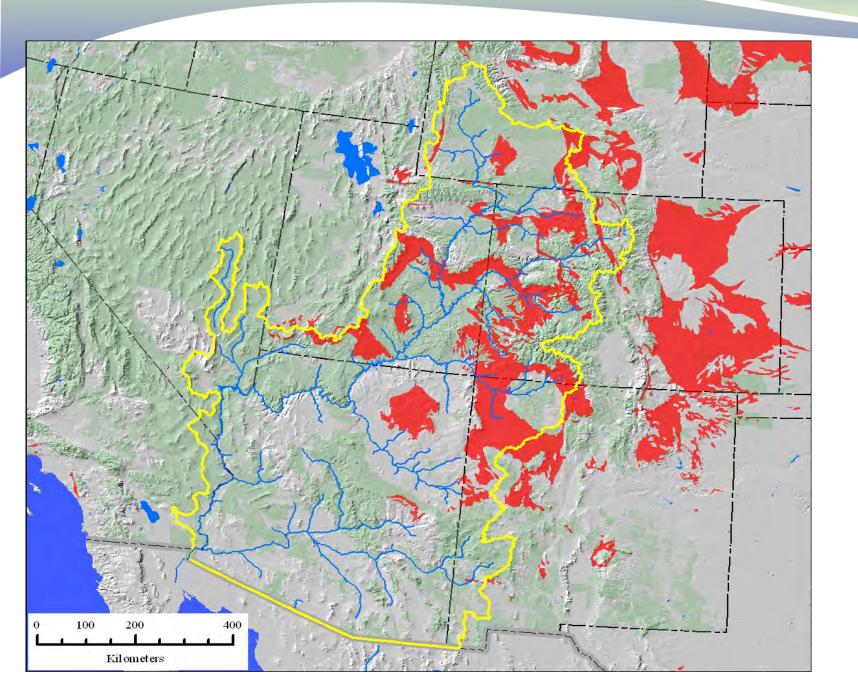
**100** mya

1000s ft of shale



## Mancos Shale

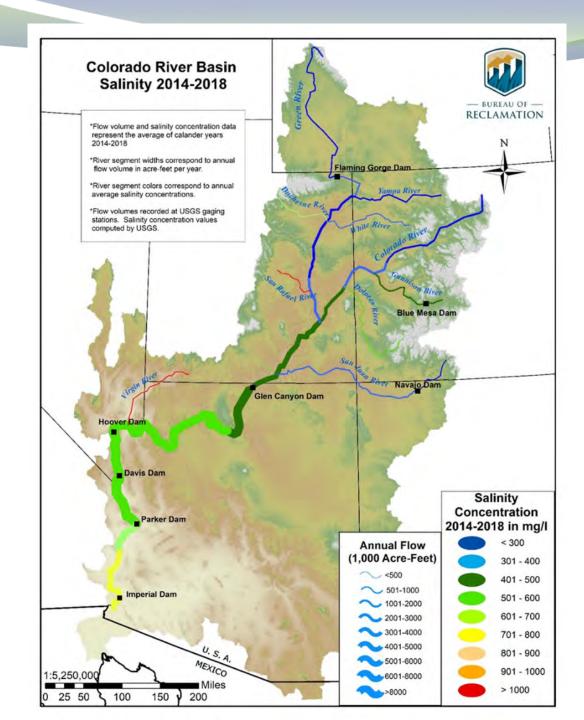


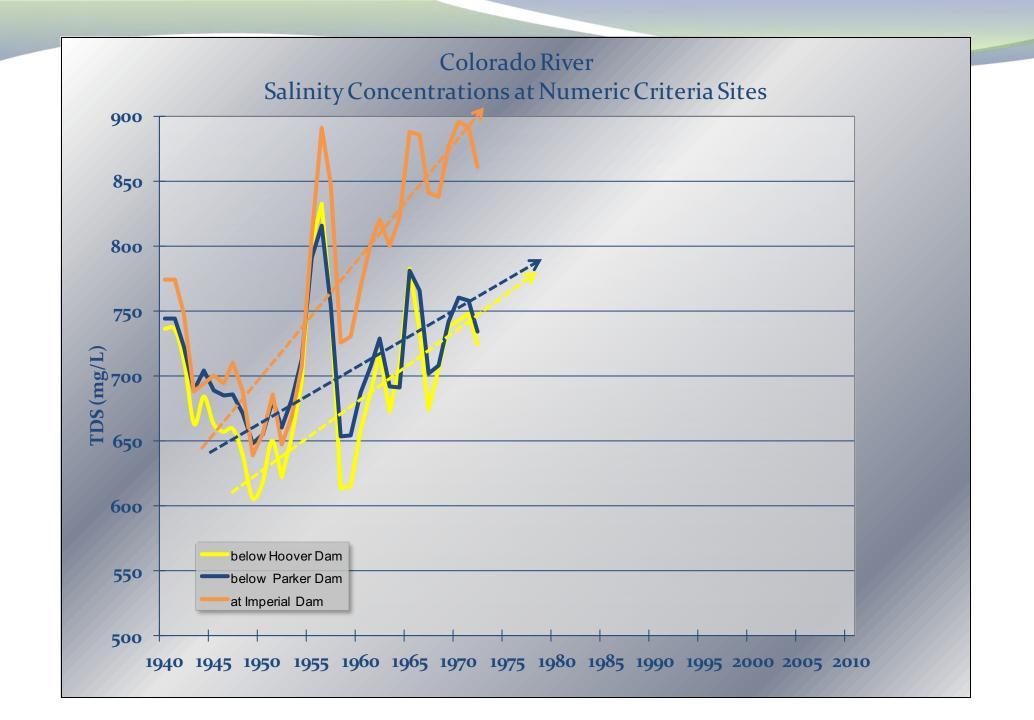


- Pervasive through Upper Basin
- o Highly erodible
- o Forms valleys
- Loaded with salt

Increases in salinity

50 mg/L -800 mg/L





## Salinity Control Program History

- Early 1970's
  - Salinity of the Colorado River was rising
  - Significant concerns by Mexico



#### Salinity Control Program History

- Early 1970's
  - Salinity of the Colorado River was rising
  - Significant concerns by Mexico
  - 1972 Amendments: Federal Water Pollution Control Act

## Salinity Control Program His

 1973 – created the Colorado Rive Basin Salinity Control Forum (For

- 1974 passed the Colorado Rive Salinity Control Act (Act)
  - Title I and Title II

Title 40—Protection of Environment CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY [FRL 298-5]

PART 120-WATER QUALITY STANDARDS

Colorado River System; Salinity Control Policy and Standards Procedures

Policy and Standards Procedures

The purpose of this notice is to amend
40 CFR Part 120 to set forth a salinity
control policy and procedures and requirements for establishing after quality
standards for sailnity and a sale quality
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standards for sailnity and the sale of the set of the The purpose of this notice is to amend

rouning specific sources, sufficient information is available to develop a salinity control program.

Strain program.

Strain program.

Strain program of the Colorado Siver System of the Colorado Siver S

(1) The Colorado River Basin Salinity (1) The Colorado River Basin Salinity Control Forum stated that it did not object to the proposed regulation, and believed that it satisfied the requirements of section 303(b) (2) of P.L. 92-500 until Cotober 18, 1975. The Forum reported that the seven Colorado River Basin States were actively working on the development of water quality standards and a plan of implementation for salinity

(2) The Colorado River Water Conservation District inquired as to whether the definition of the Colorado River Basin contained in Article II.(1) of the Colorado River Compact of 1922 would be followed in the development of salinity standards and the salinity control plan. The requirement for stabilishing water

oe lonowed in the development of salinity studiards and the salinity control of the salinity contained in Article salinity of the contained in Article salinity of the contained in Article salinity compact. The regulation state is that the compact. The regulation state is salinity of the contained in Article salinity of the compact. The regulation shall be treated by the salinity of the contained in Article salinity of the sali be required for streams located outside the System.

the system.

The District also questioned the feasibility of relying on irrisation improvement programs as a means of alleviating the salinity problem.

leviating the sainity problem.

EPA believes that adequate information is available to initiate controls for
irrigated agriculture, yet at the same
time acknowledges that additional work
is needed to demonstrate the efficacy of
certain control measures. Protest presis needed to demonstrate the efficacy of certain control measures. Projects pres-ently being supported by EPA and others should demonstrate the adequacy of various control measures including management and non-structural tech-niques. These measures will be consid-ered during the development of the im-niementation plan.

plementation plan.

(3) The Environmental Defense Fund
(EDF) testified that it believed that EPA
was not complying with the equipments
of the Federal Water Polharist
Act, as amended, chiefly because
EFA's late response to the timetable delineated in the Act for establishing
and also because numerical
etandards, and also because numerical
etandards with the proposed regulation and promptly on the proposed regulation and please that a more to prompt

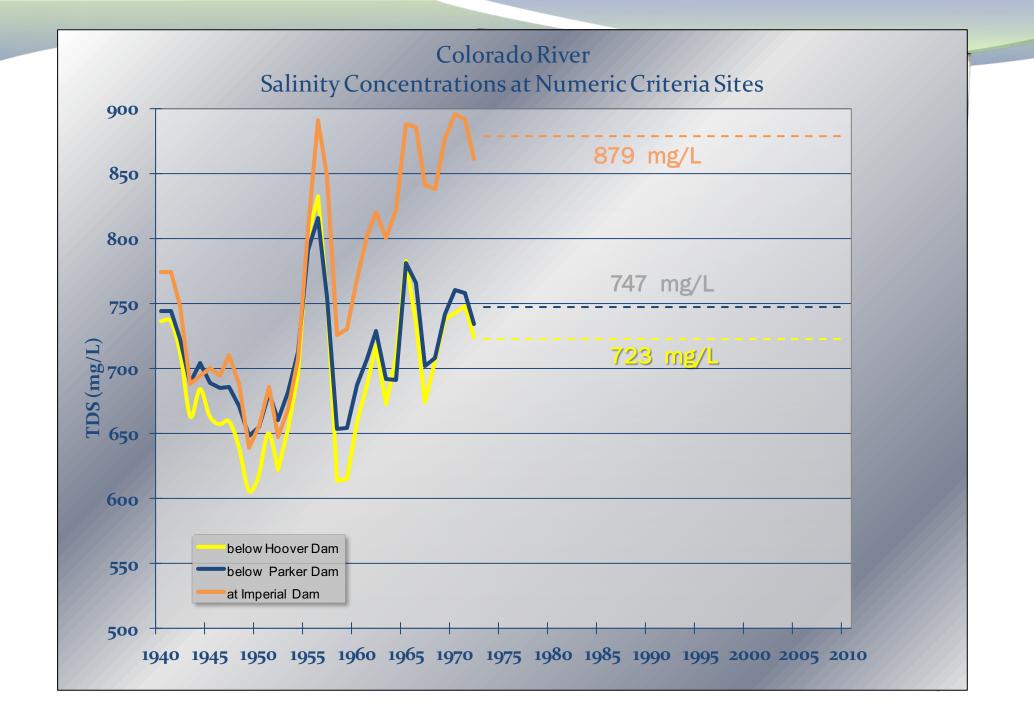
can ammes for sainity.

EFA believes that a move to promulgate numerical standards at this time could cause even further delays in controlling salinity due to the problems introlling salinity due to the problems in any object with obtaining interstate cooperation and public acceptance of such a promulgation. promulgation.

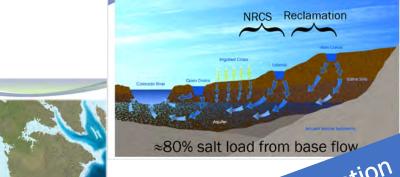
(4) The Sierra Club raised a number .(4) The Sierra Ciub raised a number of objections to the proposed resulation, principally because, in its opinion, it permits further development of the waters of the Colorado River without re-quiring that adequate salinity controls be on line prior to development. Spe-cific susgestions are:

(a) Section 120.5(c) (2). Shorten the deadline for submission of the standards and implementation plan to May 30.

 1975 – adopted salinity standards for the Colorado River



#### **Colorado River Salinity Control Program**



Implementation

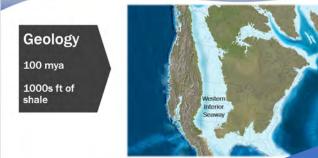


Funding

**Improved** Water Quality

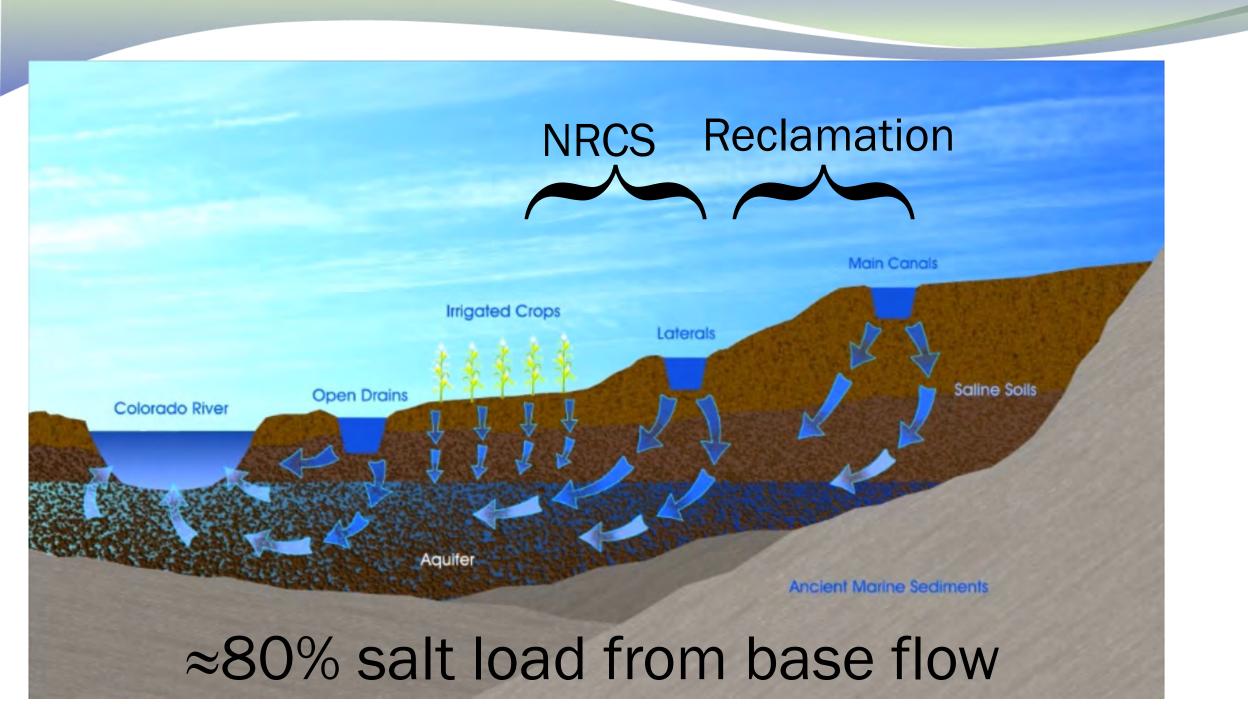
100 mg/L less salt





Genesis



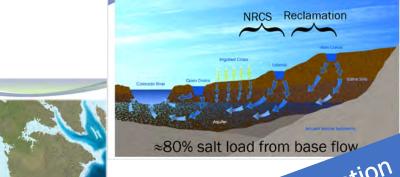








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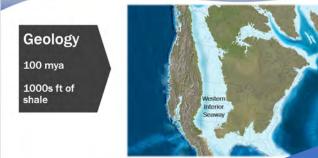


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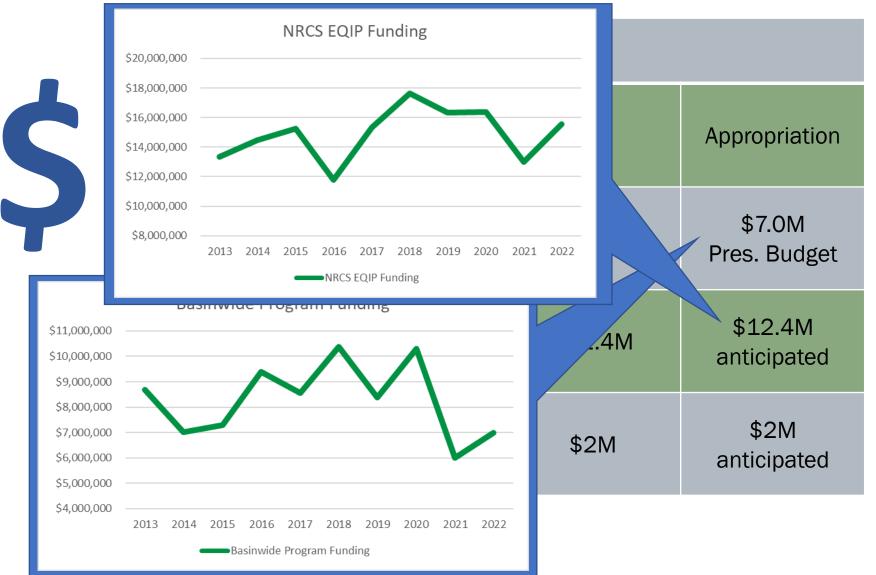
Genesis



## **Program Funding**



## FY 2022 Program Funding







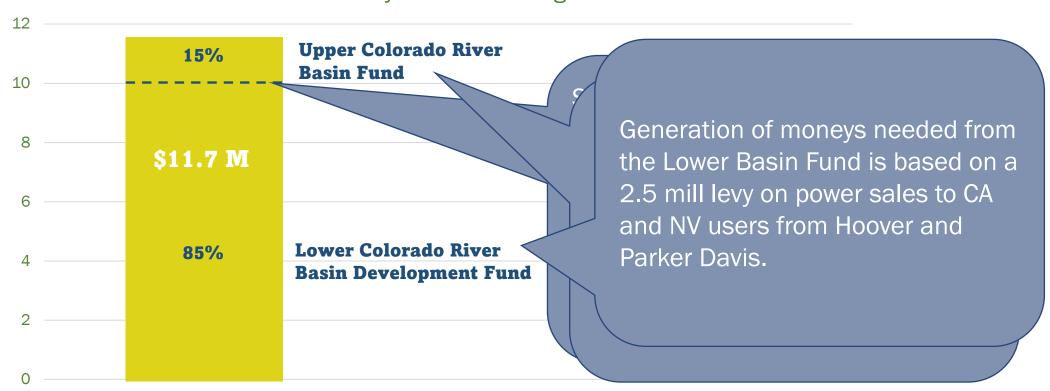
#### **Appropriation and Cost Share**



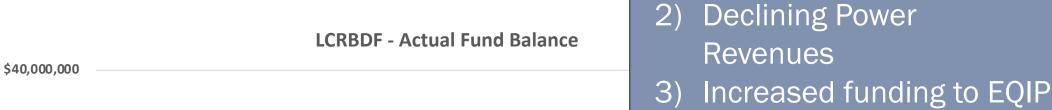


#### **Cost Share**

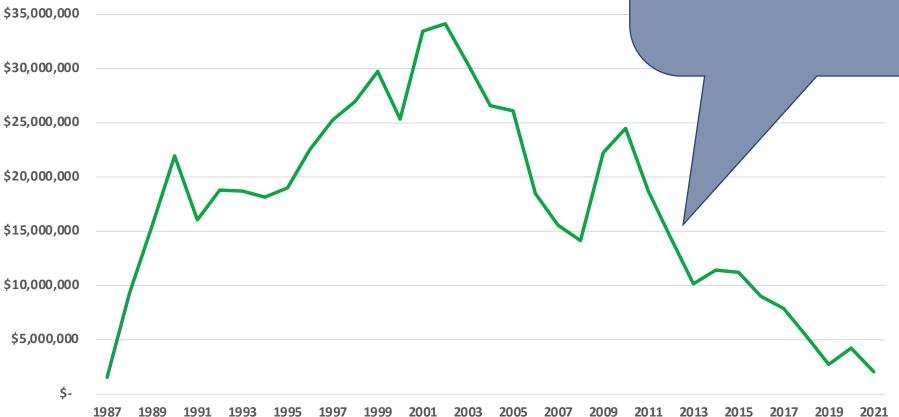
#### Colorado River Basin Salinity Control Funding



#### **Cost Share (LCRBDF)**



1) Upfront cost share



#### What if the cost share \$ are insufficient?



#### <u>Upper Colorado River Basin Fund</u>

- Was not contemplated (adjust rates)
- We don't know

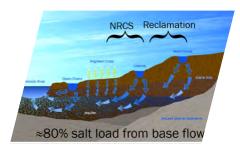
#### Lower Colorado River Basin Development Fund

- Repayment: delay repayment with interest
- Upfront: no provision delay implementation
- Program Funding Committee

#### Summary









#### Why

- To improve water quality to water users
- To reduce damages

#### Need

- Because there is an infinite supply of salt
- Because salinity levels were increasing
- Because of regulatory requirements

#### How

- By dramatically improving irrigation efficiencies
- By reducing contact between water and saline soils

#### **Funding**

- A combination of appropriation and cost share
- Costs share from power revenues is reducing or is threatened
- Looking for creative solutions