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Managing Water in the West

Impacts on Irrigated Agriculture by the Colorado River Basin Salinity Control Program

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Overview

1. Background of salt-loading in the Colorado River System
2. Colorado River Basin Salinity Control Act (PL 93-320)
3. Colorado River Basin, Title II, Salinity Control Units and Programs
4. Impacts on irrigated agriculture
   a. Upper Colorado River Basin
   b. Lower Colorado River Basin

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The Colorado River Basin

246,000 square miles

Water for 40+ million people

More than 4 million acres irrigated

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The Problem

Historically, 9 million tons of salt passed Lees Ferry every year

47% occurs naturally

53% is human-caused

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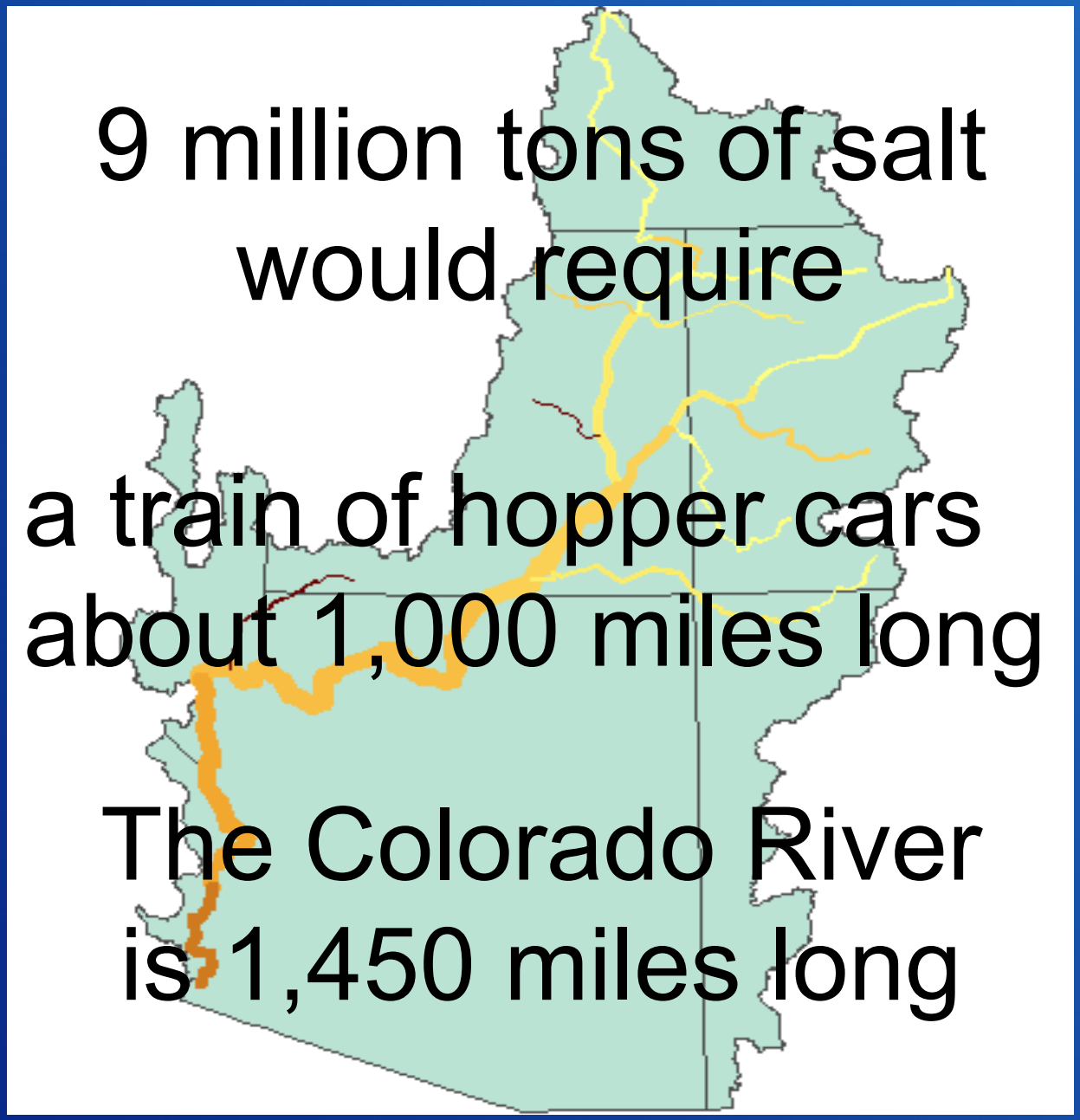
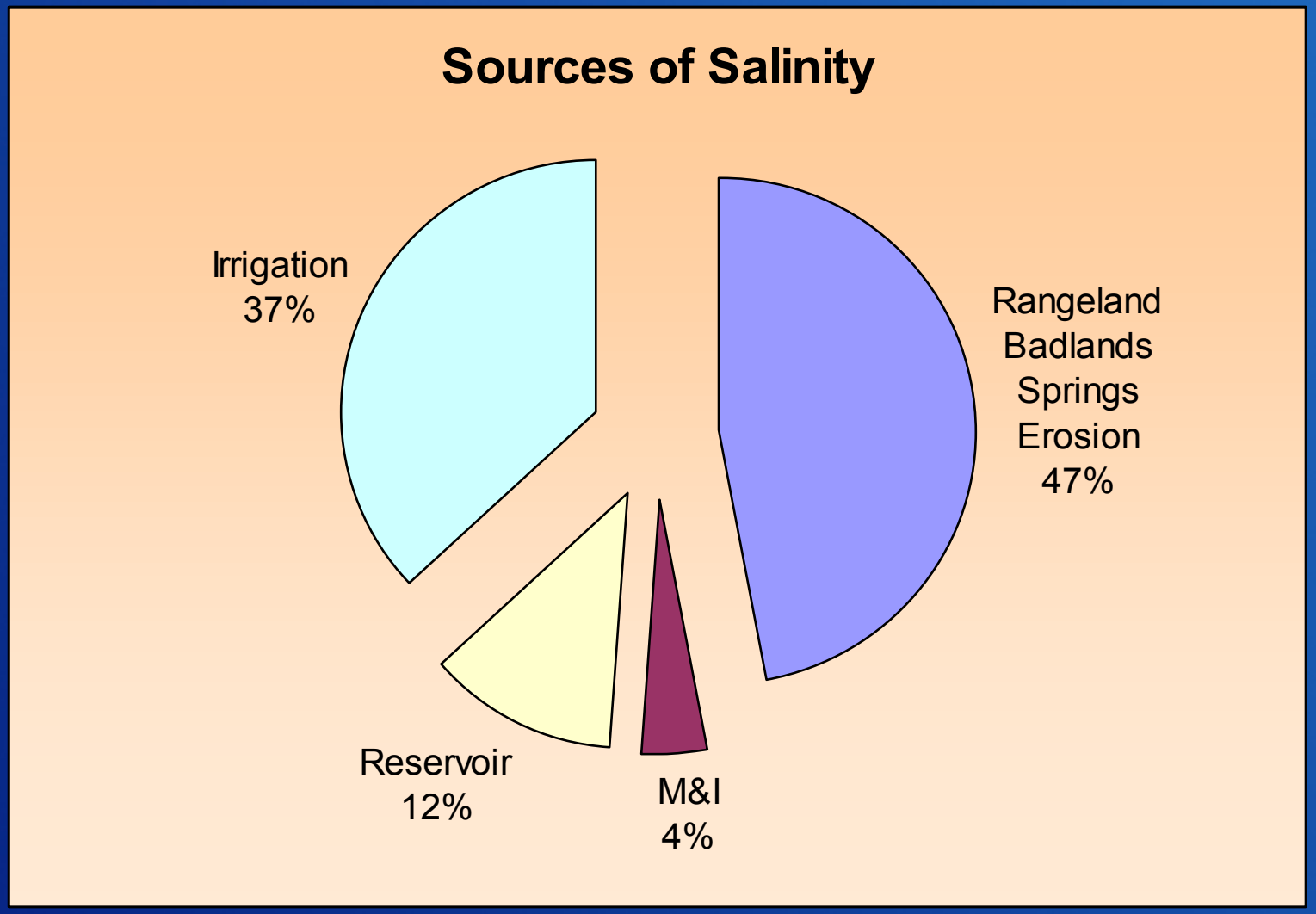


9 million tons of salt would require

a train of hopper cars about 1,000 miles long

The Colorado River is 1,450 miles long

Source Sectors



Natural Salt-Loading

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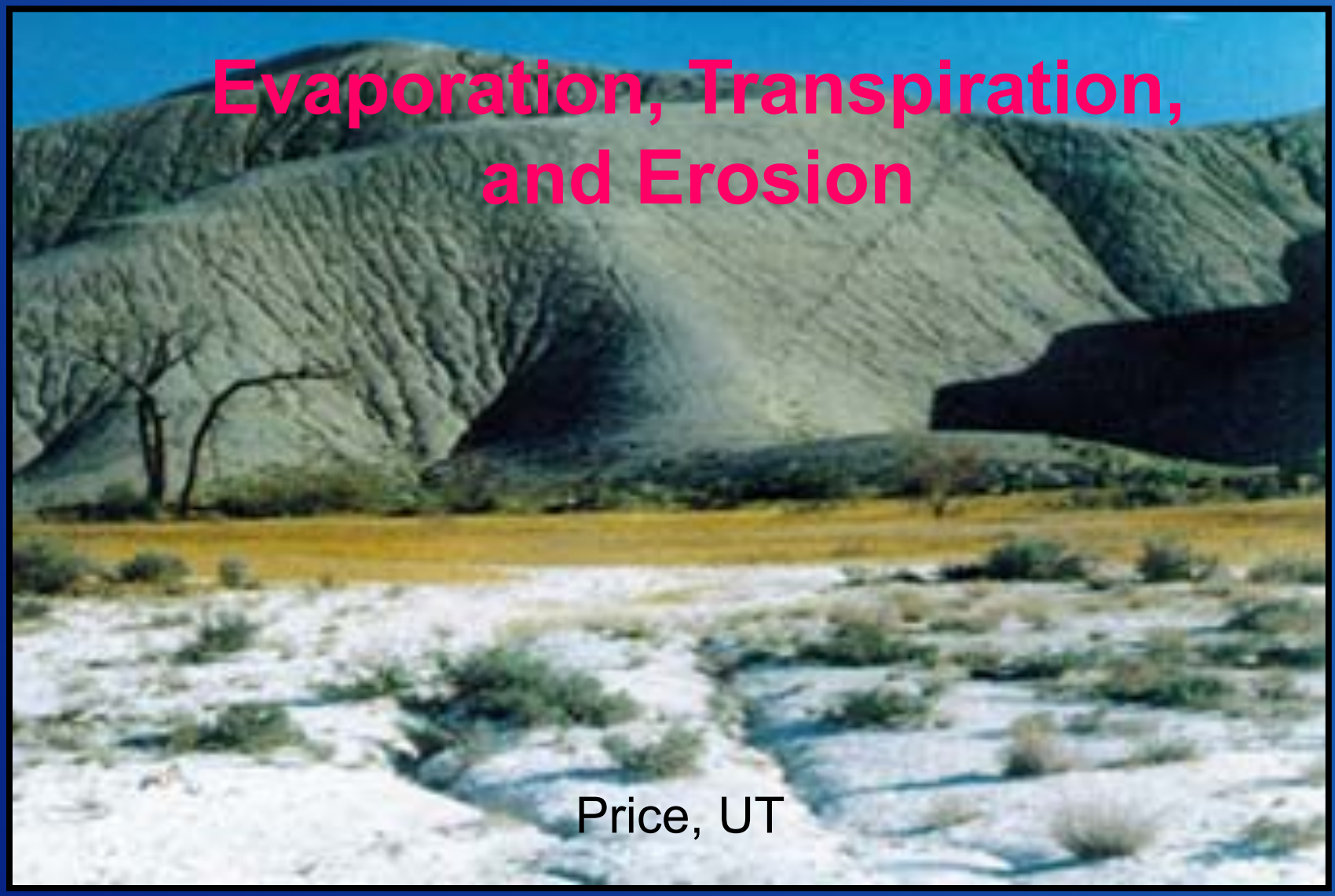
Natural Salt-Loading



Natural Salt-Loading

La Verkin Springs

Human-Caused Salt-Loading

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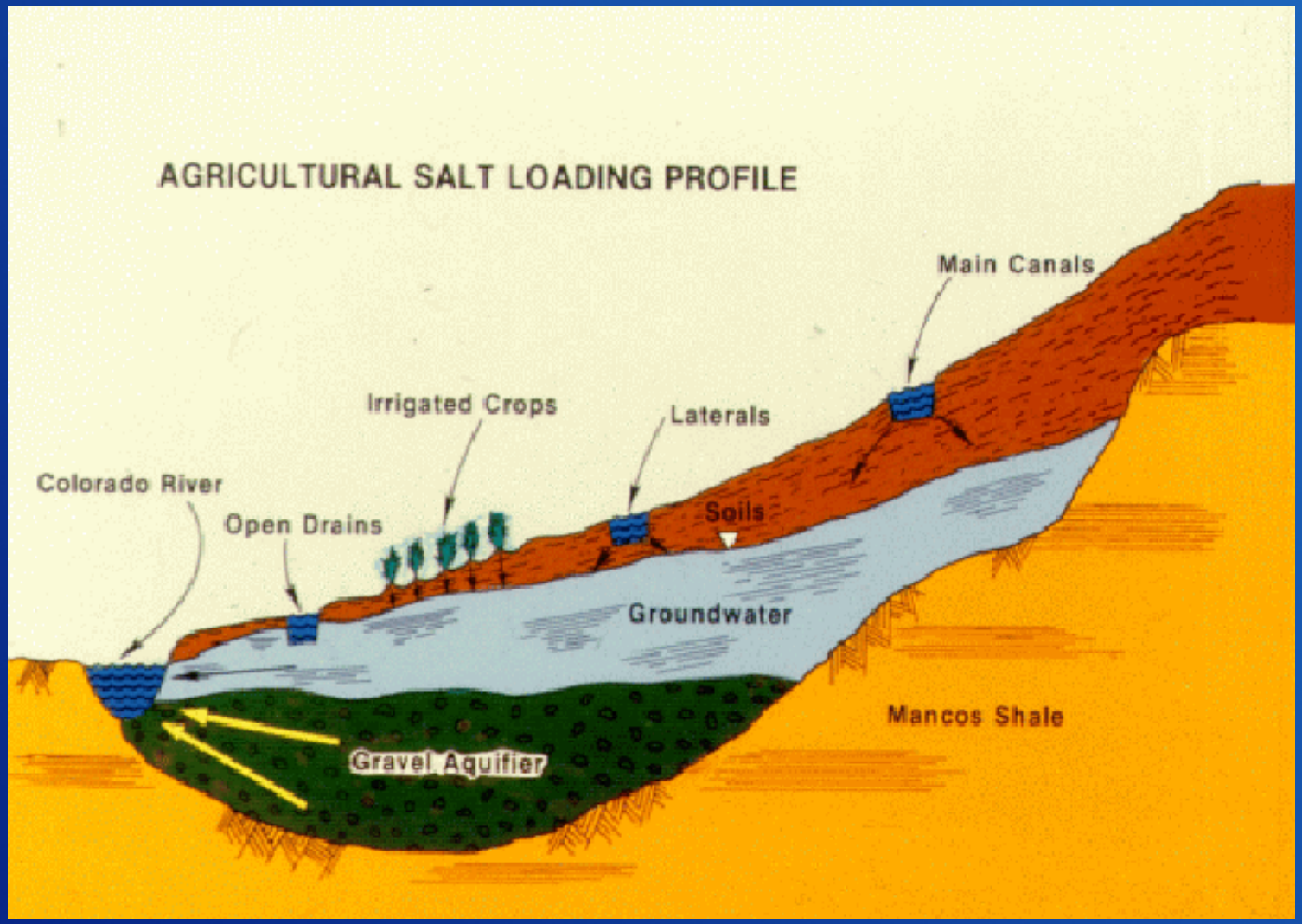
Irrigation Sources



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Human-Caused Salt-Loading

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Human-Caused Salt-Loading

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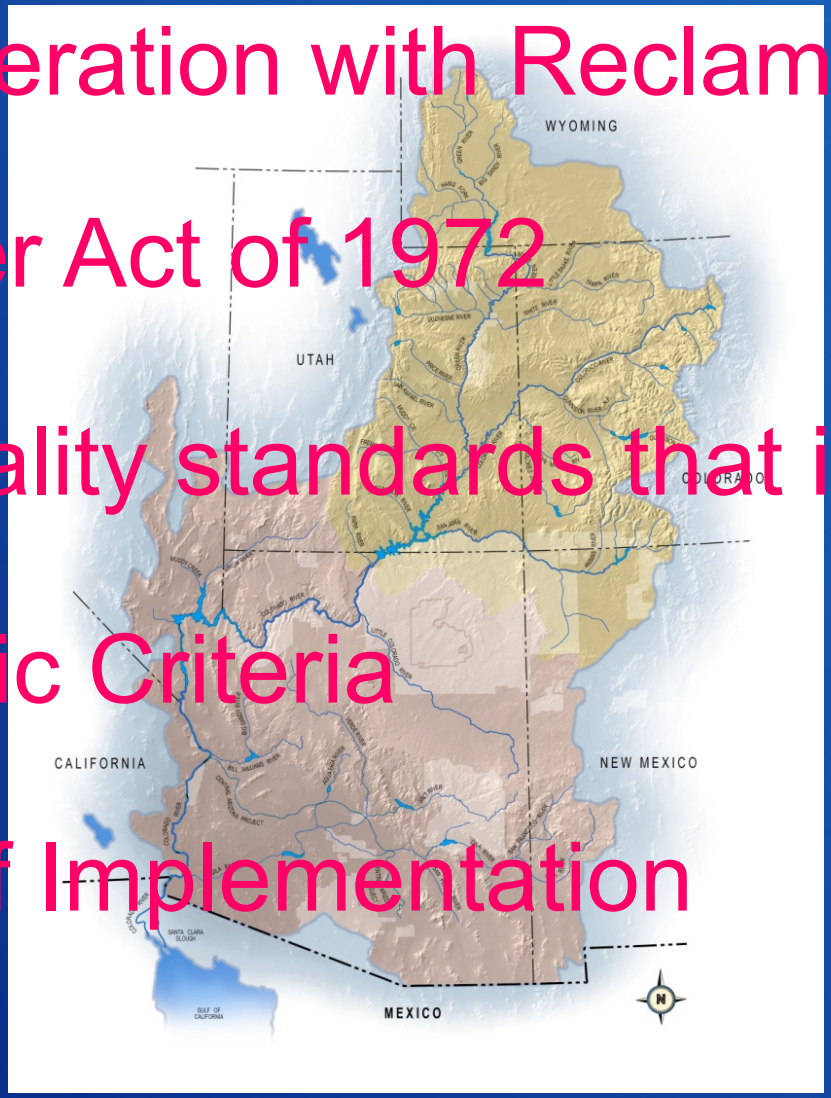
Colorado River Basin States

In cooperation with Reclamation

- Clean Water Act of 1972
  - Water quality standards that include:
    - Numeric Criteria
    - Plan of Implementation



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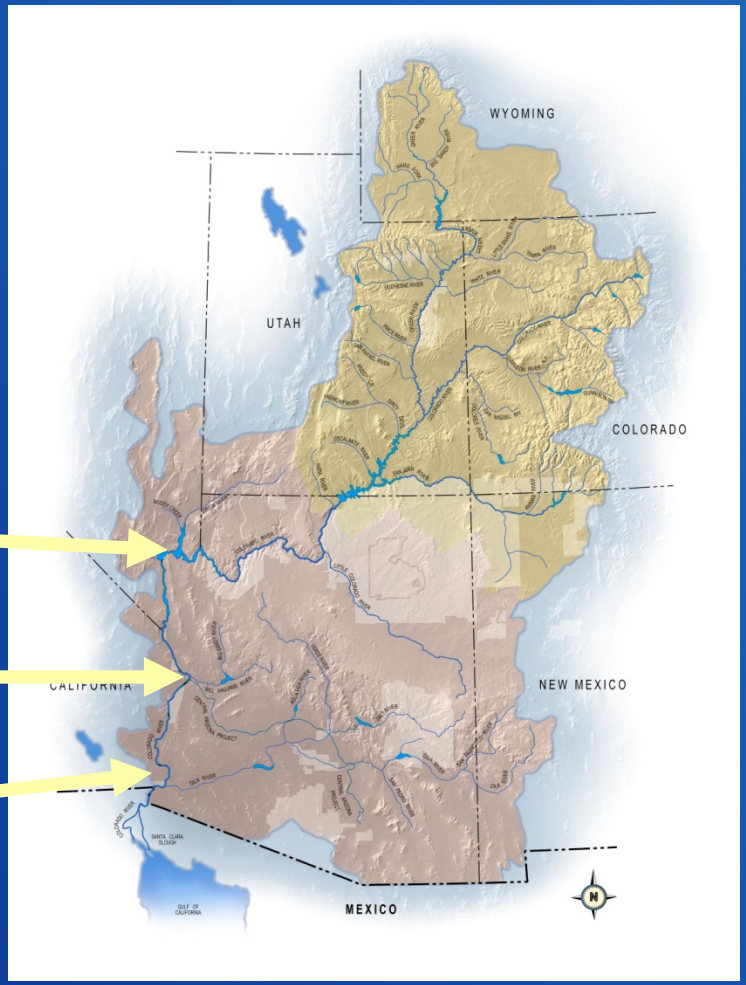
Numeric Criteria

Hoover - 723 mg/L

Parker - 747 mg/L

Imperial - 879 mg/L



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The Plan of Implementation

- Offset the effects of human-caused activities in the Upper Basin
- Maintain the numeric criteria thru 2035
  - Reduce the economic damages
  - Target objective – control 1.68 M tons/year
- Enactment of the Colorado River Basin Salinity Control Act (Public Law 93-320)

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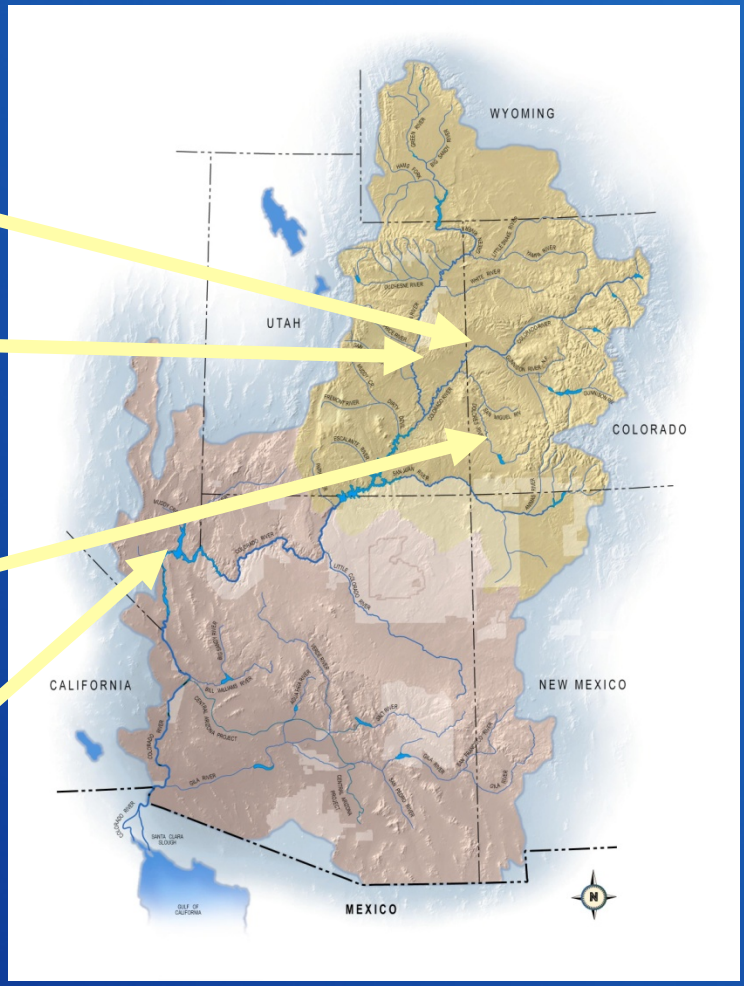
Salinity Control Act

- 1974 – PL 93-320 enacted
  - Title I – Addresses US commitment to Mexico – Yuma Desalting Plant
  - Title II – Salinity Control Measures Upstream of Imperial Dam
    - Authorized 4 units
    - Required cost share of 25%

Title II Salinity Control Program Administered by Reclamation

- Grand Valley
- Crystal Geyser
  (deauthorized 1984)
- Paradox Valley
- Las Vegas Wash



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Grand Valley Unit

Paradox Valley Unit

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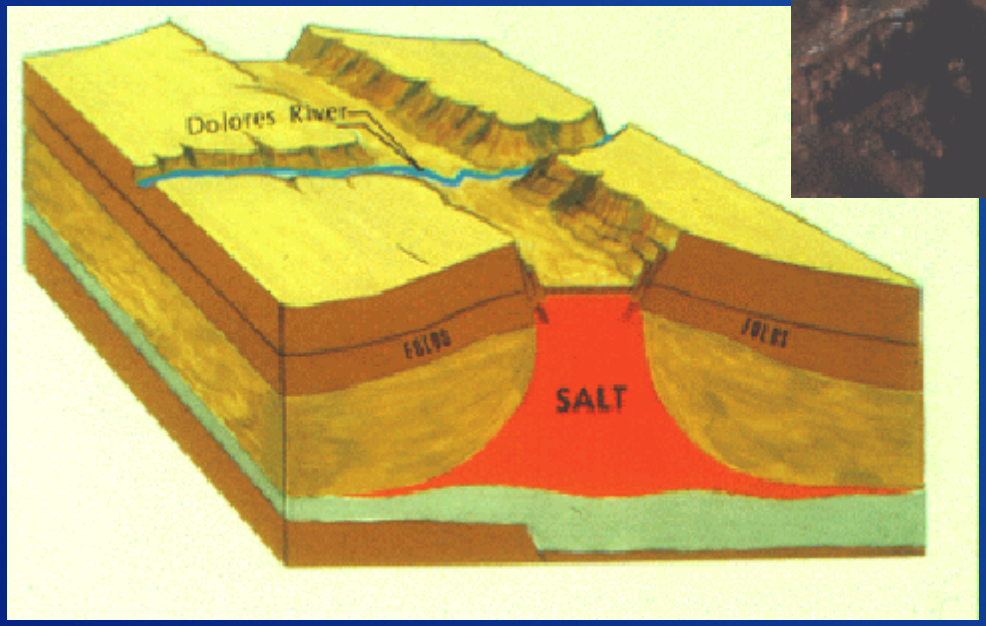
Paradox Valley Unit

Brine Disposal



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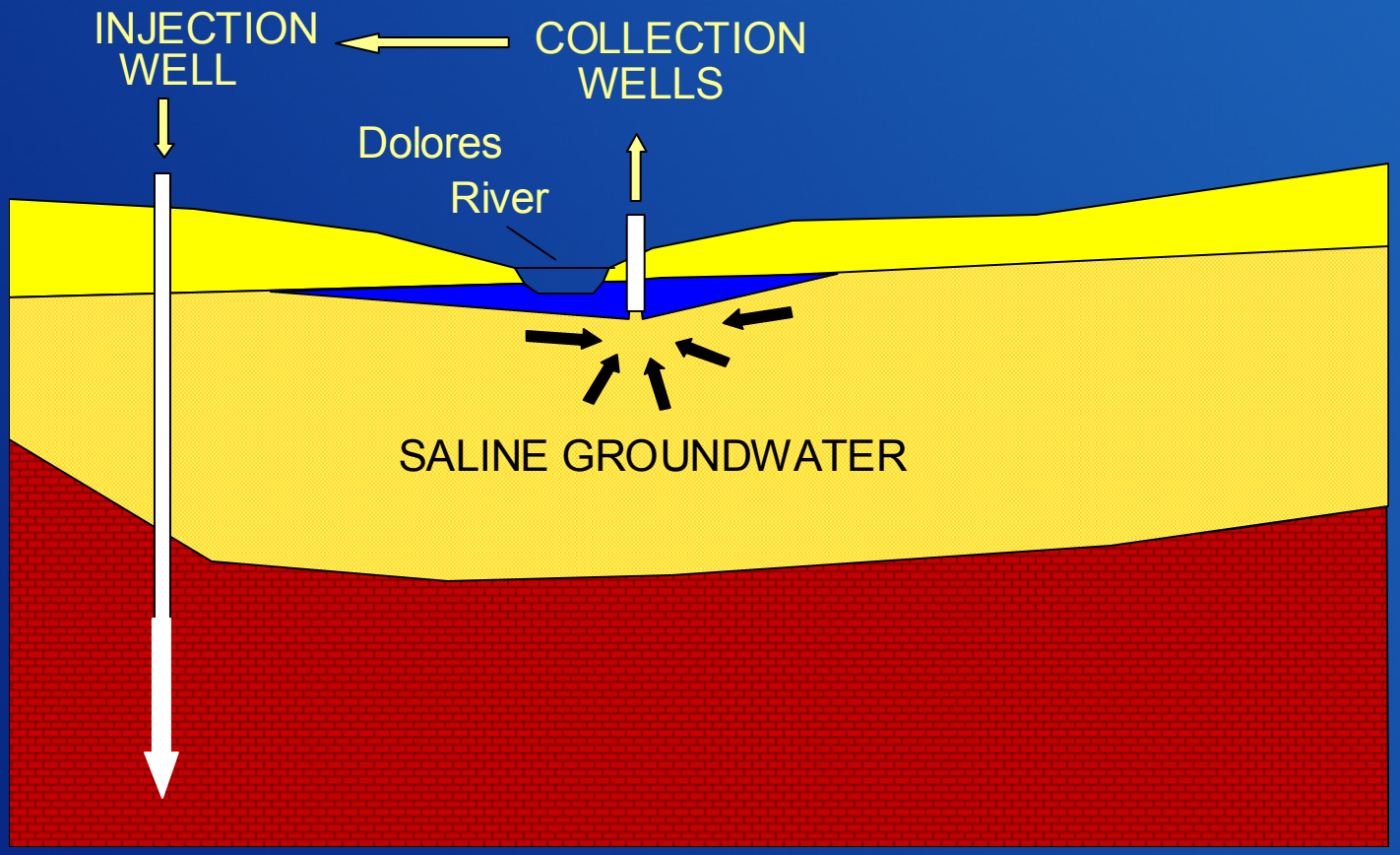
Paradox Valley Unit

Interception/Injection



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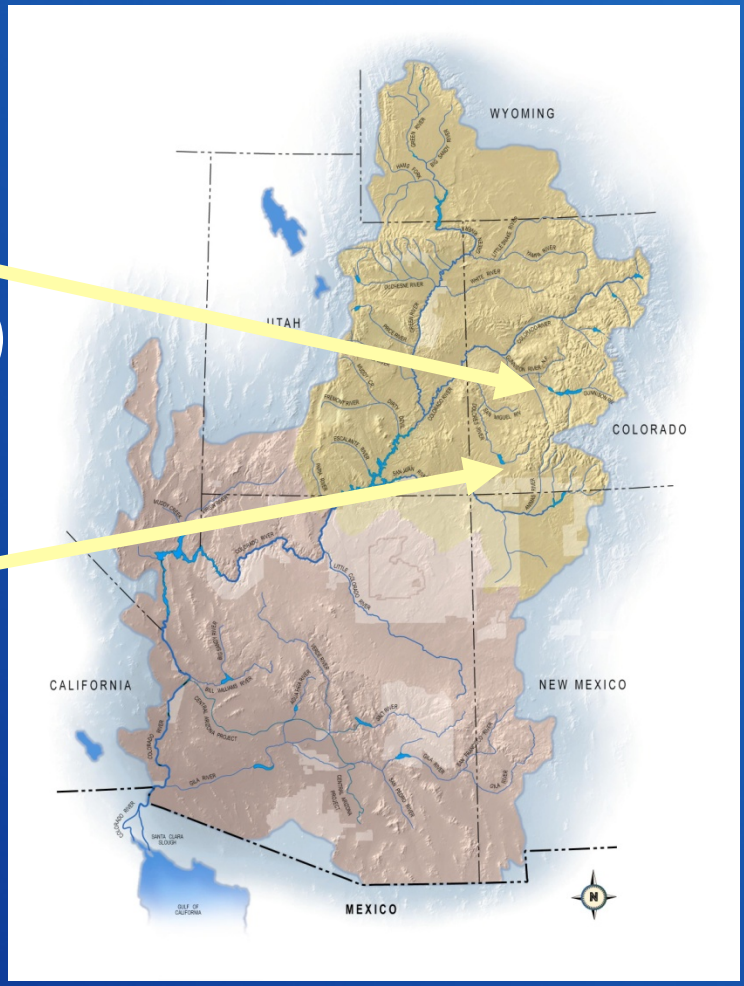
Title II Salinity Control Program

- 1984 Amendment-
  - Authorized 2 units, de-authorized 1
  - Authorized USDA's on-farm salinity control program
  - Required a cost share of 30%
  - BLM directed to develop a program for minimizing salt contributions from lands it administers.

Title II Salinity Control Program Administered by Reclamation

- **Lower Gunnison**
  (Winter Water Replacement)
- **McElmo Creek**
  (Dolores Project)



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The USDA Program

Natural Resources Conservation Service

- **Environmental Quality Incentives Program (EQIP)**
  - Technical Assistance to improve irrigation efficiency
  - Financial assistance –
    - Provides financial incentives of 75 to 90% of the cost of the irrigation improvements
    - Remaining costs paid by the producers

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The BLM Program

Nearly 40% of Basin area is public lands administered by the BLM

Salinity Control on public lands administered by the BLM

Point source control (well-plugging)

Nonpoint source control (rangeland management)

Resources Management Plans

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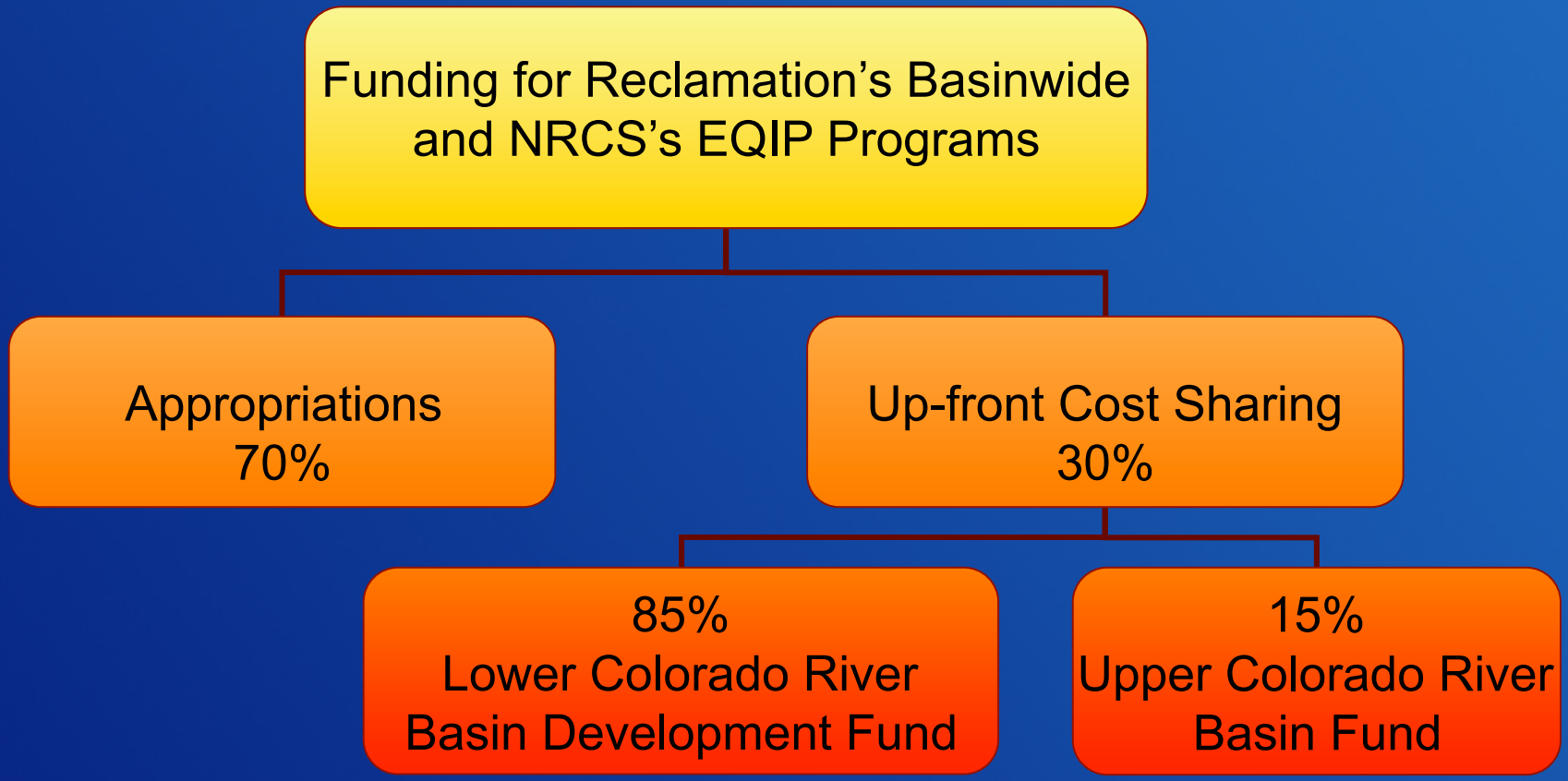
Title II Salinity Control Program

- 1995 Amendment
  - Created Reclamation's Basinwide Salinity Control Program
    - Cost share of 30%
- 1996 Amendment
  - Authorized Up-front Cost Sharing

Title II Salinity Control Program

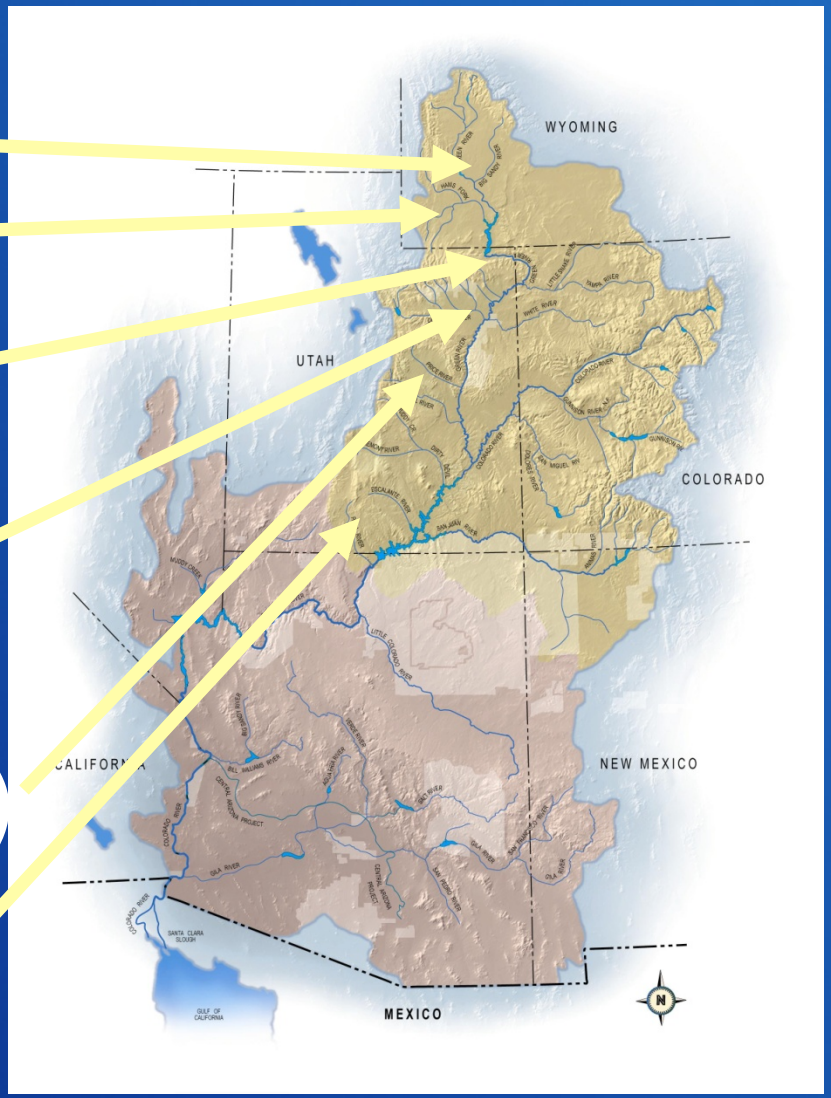


Reclamation's Basinwide Salinity Control Program

- Reclamation solicits new projects based on a competitive process open to the public
  - Funding Opportunity Announcement (FOA)
  - Applications ranked on cost effectiveness ($/ton) and risk factors
  - Highest ranking applications receive grants for construction of salinity control measures
- Most projects have been improving irrigation delivery systems

Basinwide Program Projects

- Big Sandy (3)
- Blacks Fork (1)
- Manila (2)
- Uinta Basin (21)
- Price-San Rafael (18)
- Paria (1)



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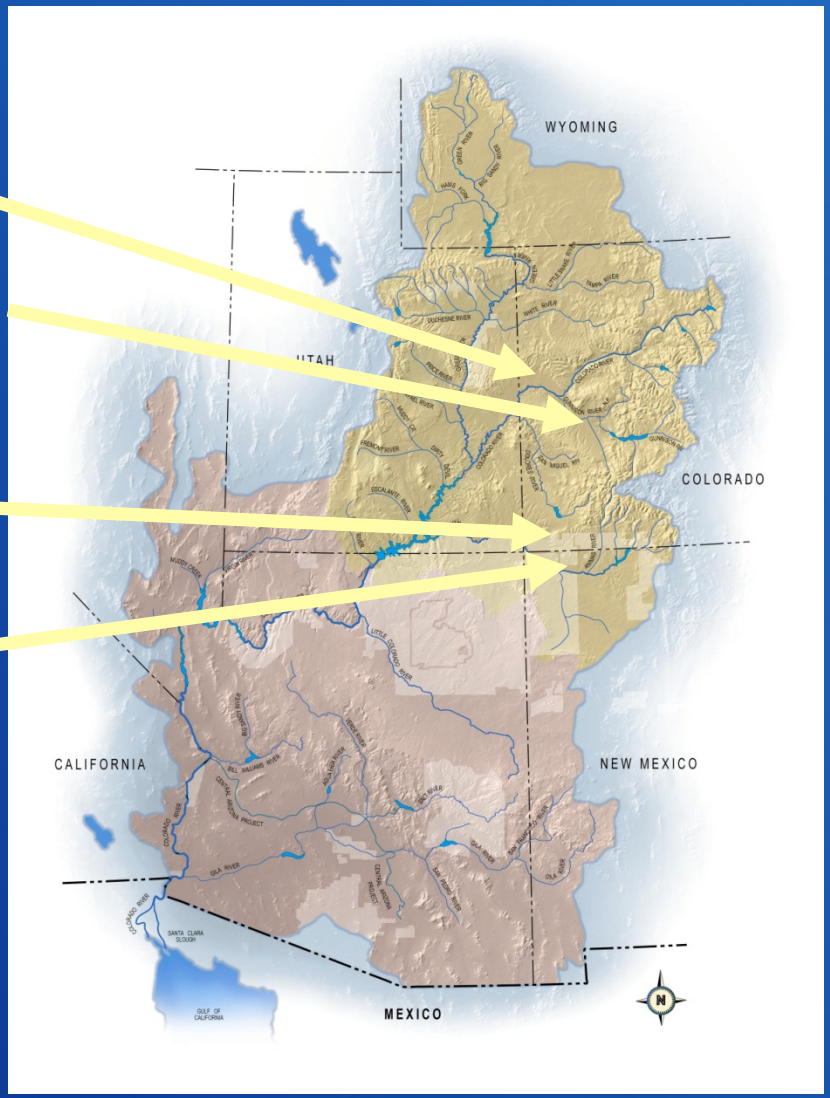
Basinwide Program Projects continued

- Grand Valley (3)
- Lower Gunnison (15)
- McElmo Creek (1)
- San Juan (2)



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Title II Salinity Control Program

- **2008 Amendment**
  - Created the Basin States Program
- **Basin States Program (BSP)**
  - Reclamation administers the BSP in consultation with the Colorado River Basin Salinity Control Advisory Council
  - Amounts from the Basin Funds used for up-front cost sharing are administered through the BSP.

Basin States Program (BSP)

Reclamation administers the BSP with assistance from state agriculture agencies (SAG) and NRCS thru agreements

- **Projects are selected thru a competitive process, i.e. Funding Opportunity Announcement (FOA) or NRCS batching process.**
- **Ranked on cost effectiveness ($/ton) and other factors.**


Lone Pine Canal, Cortez CO

Title II Salinity Control Program

Federal Agency	Tons of Salt per Year		
	Target Control by 2035	Controlled as of 2016	Remaining to Control
Reclamation	761,000	570,000	191,000
USDA-NRCS	793,000	610,000	183,000
BLM	126,000	126,000	Unknown
Total	1,680,000	1,306,000	374,000

Impacts to Upper Basin Irrigated Agriculture

Impacts to Lower Basin Irrigated Agriculture

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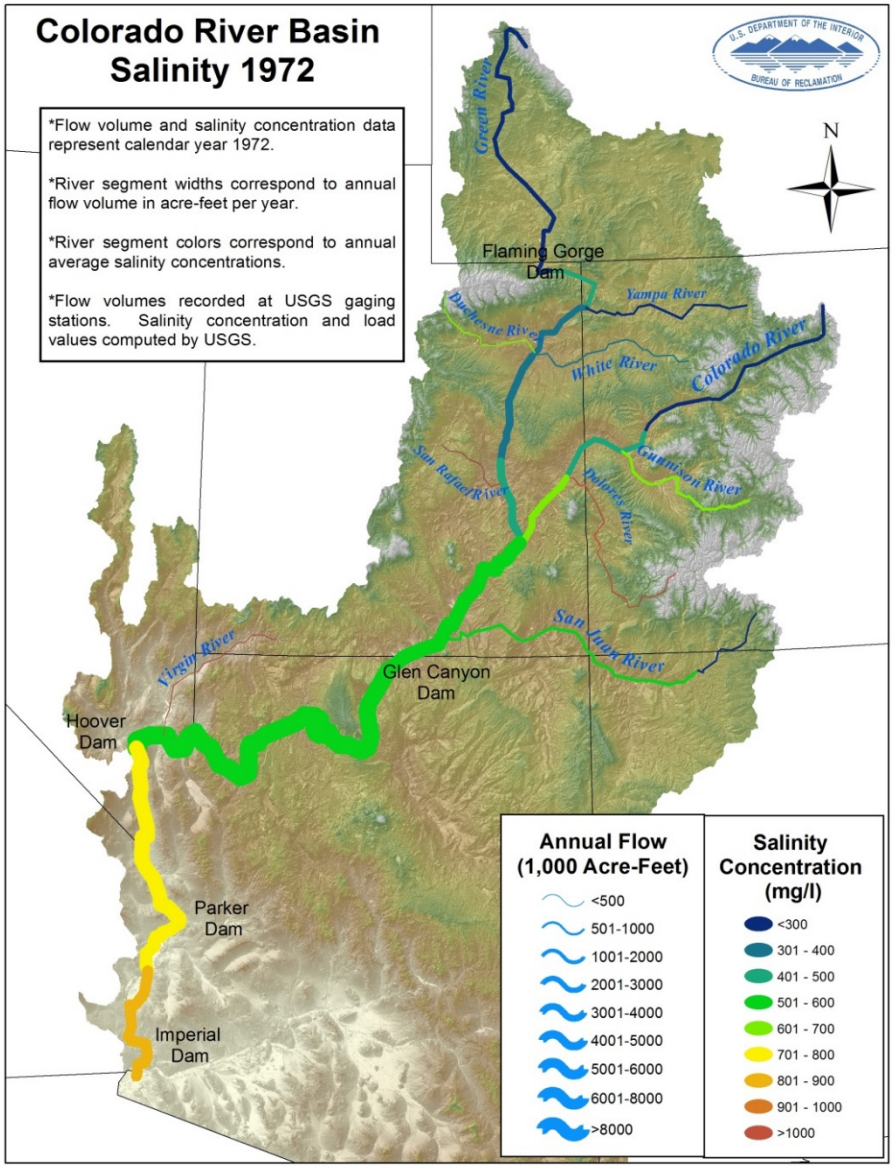

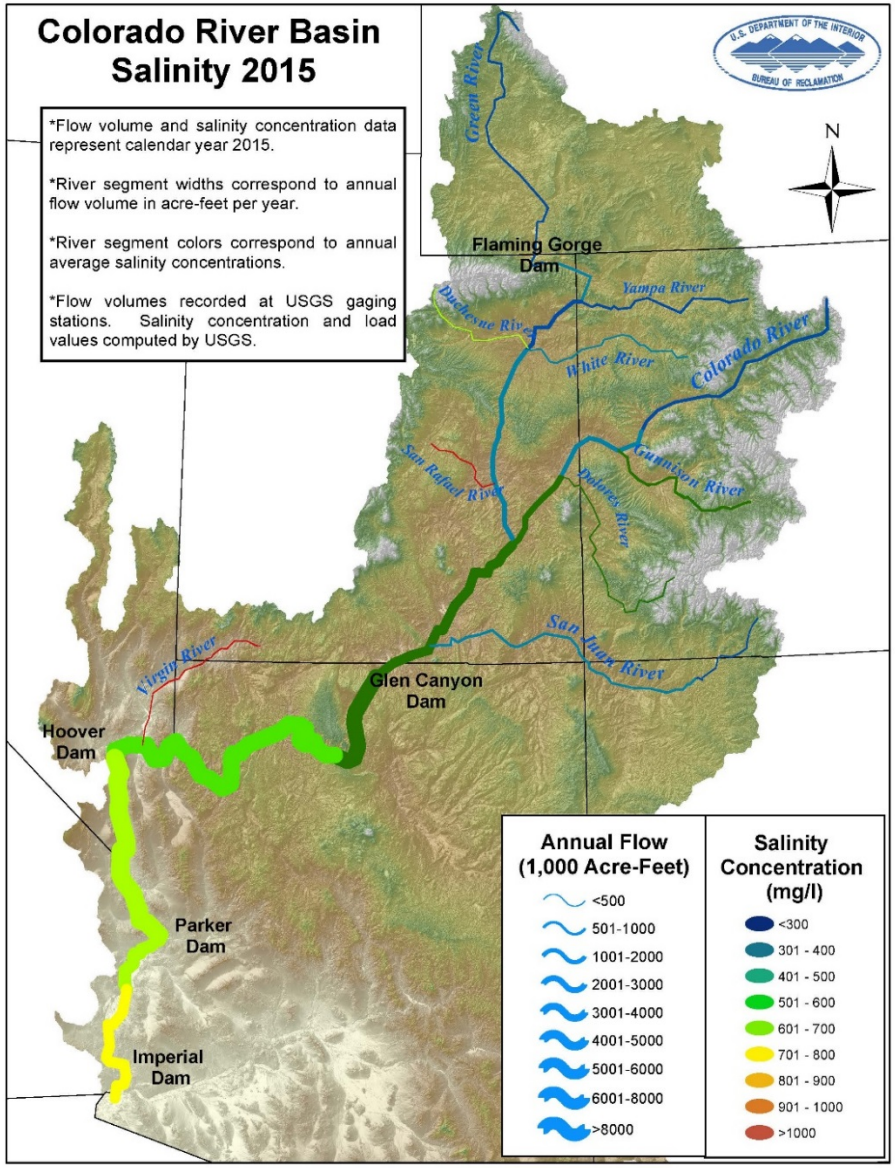

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Lower Basin Agricultural Damages

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Salinity Economic Impact Model (SEIM)

Purpose of the SEIM:

- Provide a means to estimate economic damages in the Lower Basin caused by salinity in the Colorado River water.

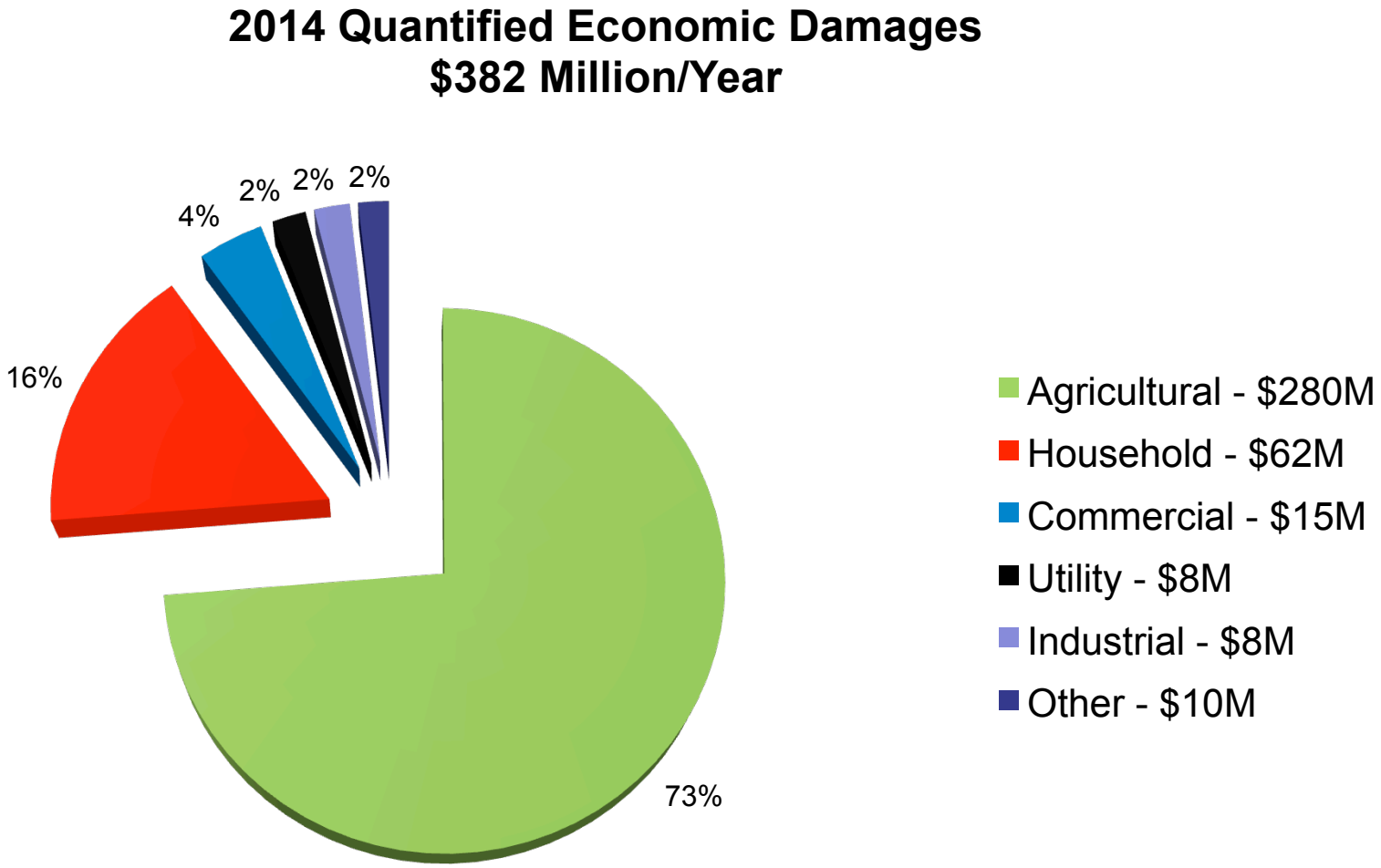
- Provide a means to estimate the benefits of salinity control through the Colorado River Basin Salinity Control Program (SCP).

Salinity Economic Impact Model (SEIM)

Calculating the Benefits of the SCP:

- Identify “With” and “Without” SCP conditions in terms of salinity concentration levels.
- “With” SCP = “With Plan of Implementation”
- “Without” SCP = “Without control measures”

Damages Sectors



Economic Benefits of SCP to Lower Basin Irrigated Agriculture

- "Without" the SCP $451 million in economic damages would occur each year.
- "With" the SCP $280 million in economic damages occurs each year.
- SCP measures prevent $171 million in economic damages each year from occurring to Lower Basin irrigated agriculture
  - 40% reduction in economic damages

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