

# RECLAMATION

*Managing Water in the West*

## Federal Water Perspective

**Bureau of Reclamation  
Water 101**

**September 18, 2018**

**Ryan Christianson  
Water Management Group Chief**



**U.S. Department of the Interior  
Bureau of Reclamation**

# Bureau of Reclamation

- Reclamation History
- Reclamation Mission and Organization
- Reclamation Projects in Western Colorado Area Office



RECLAMATION

# Bureau of Reclamation History

- Settlers moving into the arid west needed water for family farms
- Local or state governments lacked resources or engineering skill for irrigation or “reclamation” projects
- In the 1800’s, Nonpartisan political pressures, private pressures, and USGS studies influenced public opinion, Congress and the President to support “reclamation”

RECLAMATION

# Bureau of Reclamation History

- Congress began passing favorable legislation that subsidized irrigation and settlement in the West beginning in 1866
  - 1866 Act (Right-of-Way for ditches/canals over public lands)
  - Desert Land Act (1877)
  - Carey Act (1894)
- 1888 Irrigation Study by USGS
- Pro “reclamation” support on both Democratic and Republican platforms in 1900
- Theodore Roosevelt was an aggressive supporter

RECLAMATION

# Bureau of Reclamation History

- Roosevelt signed the Reclamation Act in 1902
- Established the United States Reclamation Service within the USGS under the Department of Interior
- Original Mission: “Reclaim the Arid West”



RECLAMATION

A black and white photograph of a desert ranch. In the foreground, a large, rectangular sign is mounted on a post. The sign has four lines of text: "DESERT-RANCH", "H.J. MERSDORF PROP.", "HAVE FAITH IN GOD", and "AND U.S. RECLAMATION". The sign is slightly weathered and has a small number "18" on its left edge. Behind the sign, two people are standing on a dirt path. To the left, there is a large, open-sided wooden structure, possibly a corral or a barn under construction. In the background, a horse is visible near this structure. To the right, there is a smaller, closed wooden building. A white dog is running on the dirt path to the right of the people. The landscape is flat and arid, with a cloudy sky in the background.

DESERT-RANCH  
H.J. MERSDORF PROP.  
HAVE FAITH IN GOD  
AND U.S. RECLAMATION



# Reclamation – General Principals

- Federal monies used on Reclamation projects would be repaid by water users
- Project works remain as federal property even when the share of Federal costs have been repaid
- Reclamation generally contracts with the private sector for construction work
- Reclamation administers contracts and inspects construction
- Hydroelectric power revenues could be used to repay construction costs

RECLAMATION

# To avoid any conflicts with State laws, the Reclamation Act states:

*Nothing in this act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water . . . or any vested right acquired thereunder, and the Secretary of the Interior . . . shall proceed in conformity with such laws . . .*

RECLAMATION



# Significant Milestones

- **1922 – Colorado River Compact**
- **1939 – Water Conservation and Utilization Act**
- **1948 – Upper Colo. River Basin Compact**
- **1956 – Colorado River Storage Project Act**
- **1968 – Colorado River Basin Project Act**
- **1969 – NEPA**
- **1973 – Endangered Species Act**

RECLAMATION

# Notable Reclamation Projects



Boulder Canyon Project-Hoover Dam



Colorado River Storage Project–  
Morrow Point Dam (Aspinall Unit)



Colorado River Storage Project–  
Glen Canyon Dam



Columbia Basin Project – Grand Coulee Dam



Colorado River Storage Project–  
Navajo Dam



Colorado River Storage Project–  
Flaming Gorge Dam

# RECLAMATION

# Bureau of Reclamation Statistics

- 337 storage reservoirs
- Deliver 10 trillion gallons of water to more than 31 million people each year
- Provide 1 out of 5 Western farmers w/ irrigation water for 10 million acres of land
- Project lands produce 60% of the nation's vegetables and 15% of fruits and nuts
- Largest wholesale water supplier
- Second largest producer of hydroelectric power

RECLAMATION

# Changing & Growing Needs

- New and/or Increasing Demands on Projects
  - Municipal
  - Industrial
  - Recreational
  - Hydropower
  - Environmental



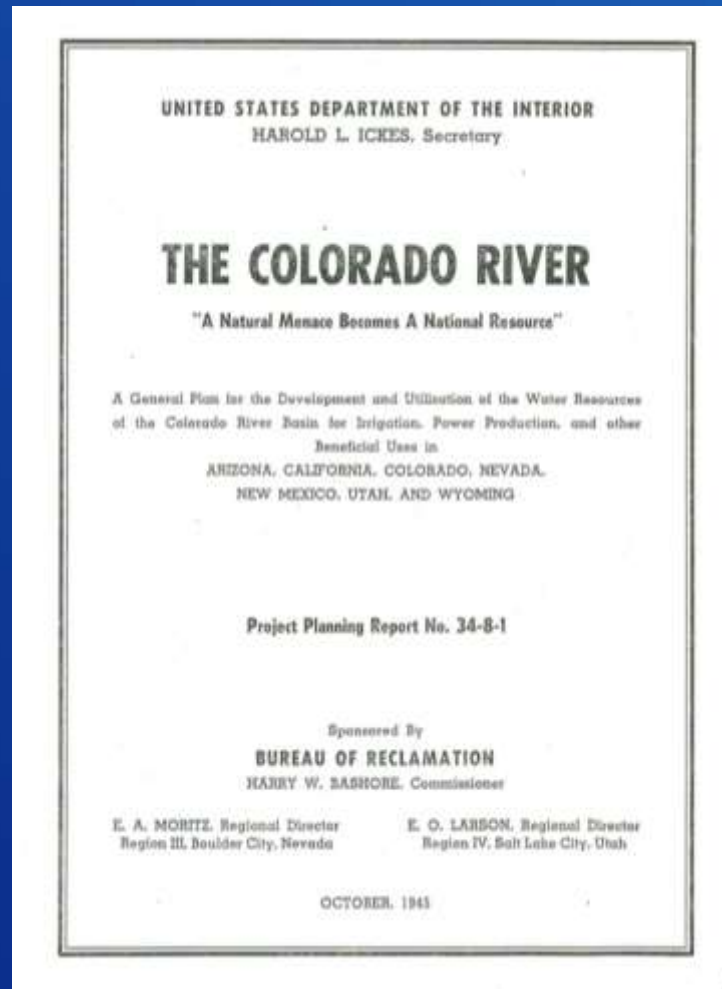
**RAZORBACK  
SUCKER**



# RECLAMATION



# 1945 Plan for Colorado River



# RECLAMATION

UNITED STATES DEPARTMENT OF THE INTERIOR

# THE COLORADO RIVER

"A Natural Menace Becomes A National Resource"

A General Plan for the Development and Utilization of the Water Resources  
of the Colorado River Basin for Irrigation, Power Production, and other

Beneficial Uses in

ARIZONA, CALIFORNIA, COLORADO, NEVADA,

NEW MEXICO, UTAH, AND WYOMING

Region III, Boulder City, Nevada

Region IV, Salt Lake City, Utah

OCTOBER, 1945

RECLAMATION



# Current Mission

- **Manage**
- **Develop**
- **Protect ...**



**....water and related resources in an environmentally and economically sound manner in the interest of the American public.**

# RECLAMATION

## Upper Colorado Region

PACIFIC  
NORTHWEST

Billings

Boise

GREAT PLAINS

MID-PACIFIC  
Sacramento

Salt Lake City  
Regional Office  
Power Office

Provo

Provo  
Area

Western  
Colorado

Grand  
Junction

Durango

DENVER

Boulder  
City  
LOWER COLORADO

Area

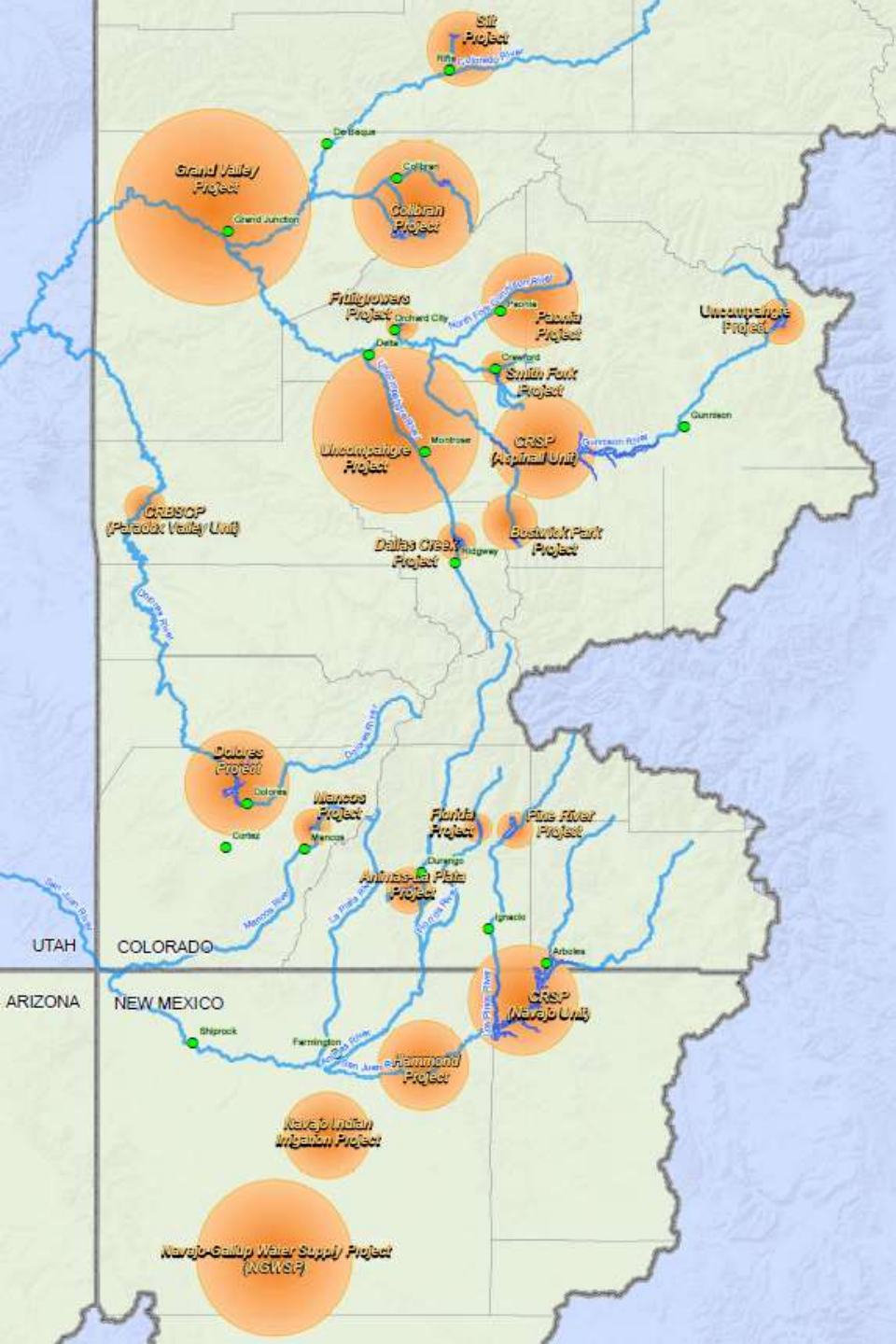
Albuquerque  
Area

El Paso

# Bureau of Reclamation Organization

5 Regions  
Denver Office  
Washington D.C.

# RECLAMATION



## Western Colorado Area Office

- Two Primary Office Locations
  - Grand Junction
  - Durango
- 17 Projects
- 3 States
- 4 Tribes

RECLAMATION



# Bureau of Reclamation Projects administered out of the Western Colorado Area Office



# Uncompahgre Project

- Operated By: Uncompahgre Valley Water Users Association
- Constructed: 1904 - 1937
- Storage: Taylor Park Dam
- Live Capacity: 106,200 acre-feet
- Water Source: Gunnison/Uncompahgre Rivers
- Project Benefits:
  - Irrigation
  - Flood Control
  - Recreation
- Acres Irrigated: 76,297 (full supply);
- Population Served: 38,935
- Other Assets:
  - Gunnison Tunnel (5.8 miles long, 1300 cfs capacity)
  - 7 diversion dams
  - 128 miles of canals
  - 438 miles of laterals



RECLAMATION



# Grand Valley Project

- Operated By: Grand Valley Water Users Association & Orchard Mesa Irrigation Dist.
- Constructed: 1915 - 1919
- Storage: None
- Water Source: Colorado River
- Project Benefits:
  - Irrigation
  - Hydroelectric Power
- Acres Irrigated: 33,368 (full supply); 8,600 (supplemental supply)
- Population Served: 26,869
- Other Assets:
  - Grand Valley Diversion Dam
  - Government Highline Canal (55 miles, 1675 cfs capacity)
  - Orchard Mesa Canal System (35.1 miles total, 800 cfs capacity)
  - Grand Valley Powerplant (3000 kW capacity)
  - 166 miles of laterals



RECLAMATION



# Pine River Project

- Operated By: Pine River Irrigation District
- Constructed: 1938-1941
- Storage: Vallecito Reservoir
- Live Capacity: 125,400 acre-feet
- Water Source: Rio Los Pinos/Vallecito Creek
- Project Benefits:
  - Irrigation
  - Flood Control
  - Municipal & Industrial
  - Recreation, Fish & Wildlife
  - Power (owned by Ptarmigan Resources— 5844 kW)
- Acres Irrigated: 45,395 (supplemental); 18,478 (Southern Ute)
- Population Served: 5,608; (627 - Southern Ute)
- Other Assets:
  - 196 miles of canals
  - 148 miles of laterals
  - 5 diversion dams



RECLAMATION

# Fruitgrowers Project

- Operated By: Orchard City Irrigation District
- Constructed: 1939
- Storage: Fruitgrowers Reservoir
- Live Capacity: 4,540 acre-feet
- Water Source: Alfalfa Run, Surface Creek, Dry Creek
- Project Benefits:
  - Irrigation
  - Recreation/Wildlife
  - Flood Control
- Acres Irrigated: 2,690 (supplemental supply)
- Population Served: 1,100
- Other Assets:
  - Dry Creek Diversion Dam
  - Dry Creek Canal (3 miles, 100 cfs capacity)



RECLAMATION

# Mancos Project

- Operated By: Mancos WCD
- Constructed: 1944-1949
- Storage: Jackson Gulch Reservoir
- Live Capacity: 9,948 acre-feet
- Water Source: West Mancos River  
(off-stream facility)
- Project Benefits:
  - Irrigation
  - Municipal & Industrial
  - Recreation, Fish & Wildlife
  - Power (MWCD owned – 25 kW)
- Acres Irrigated: 13,746 (supplemental)
- Population Served: 4,130
- Other Assets:
  - 97 miles of canals
  - 40 miles of laterals



RECLAMATION



# Colorado River Storage Project (Navajo Unit)



- Operated By: Reclamation
- Constructed: 1957-1963
- Storage: Navajo Reservoir
- Live Capacity: 1,701,300 acre-ft
- Water Source: San Juan River
- Project Benefits:
  - Irrigation
  - Flood Control
  - Municipal & Industrial (Jicarilla & Navajo Settlements)
  - Recreation
  - Fish & Wildlife
  - Power (City of Farmington owned – 30,000 kW)
- Operated to comply with ESA requirements – San Juan River Basin Recovery Implementation Program's Flow Recommendations

RECLAMATION

# Collbran Project

- Operated By: Reclamation and Collbran Conservancy District
- Constructed: 1957 - 1962
- Storage: Vega Reservoir (primary)
- Live Capacity: 33,800 acre-feet
- Water Source: Leon and Park Creeks
- Project Benefits:
  - Irrigation
  - Recreation/Wildlife
  - Hydroelectric Power
  - Flood Control
- Acres Irrigated: 22,210 (supplemental supply)
- Population Served: 1,428
- Other Assets:
  - Leon-Park Feeder Canal, Southside Canal, Bonham Dam & Reservoir, East Fork Diversion Dam and Feeder Canal, Bonham–Cottonwood Pipeline, various other collection system features



RECLAMATION

# Bostwick Park Project

- Operated By: Bostwick Park Conservancy Dist.
- Constructed: 1966 - 1971
- Storage: Silver Jack Reservoir
- Live Capacity: 12,820 acre-feet
- Water Source: Cimmaron Creek
- Project Benefits:
  - Irrigation
  - Recreation
  - Flood Control
- Acres Irrigated: 6,100 (full and supplemental supply)
- Population Served: 113
- Other Assets:
  - Bostwick Lateral and Drains (3.6 miles)



RECLAMATION



# Paonia Project

- Operated By: Fire Mtn Canal & Reservoir Co.
- Constructed: 1959 - 1962
- Storage: Paonia Reservoir
- Live Capacity: 18,150 acre-feet
- Water Source: North Fork of Gunnison River
- Project Benefits:
  - Irrigation
  - Recreation/Wildlife
  - Flood Control
- Acres Irrigated: 15,007 (supplemental supply)
- Population Served: 3,708
- Other Assets:
  - Fire Mountain Diversion Dam
  - Fire Mountain Canal (34.7 miles, 200 cfs capacity)



RECLAMATION

# Smith Fork Project

- Operated By: Crawford Water Conservancy District
- Constructed: 1960 - 1962
- Storage: Crawford Reservoir
- Live Capacity: 14,064 acre-feet
- Water Source: Smith Fork of Gunnison River
- Project Benefits:
  - Irrigation
  - Recreation
  - Flood Control
- Acres Irrigated: 9,479 (supplemental supply)
- Population Served: 744
- Other Assets:
  - Smith Fork Diversion Dam
  - Smith Fork Feeder Canal (2.4 miles, 80 cfs capacity)
  - Aspen Canal (5.8 miles, 125 cfs capacity)
  - Clipper Canal (0.5 miles, 60 cfs capacity)



RECLAMATION

# Hammond Project



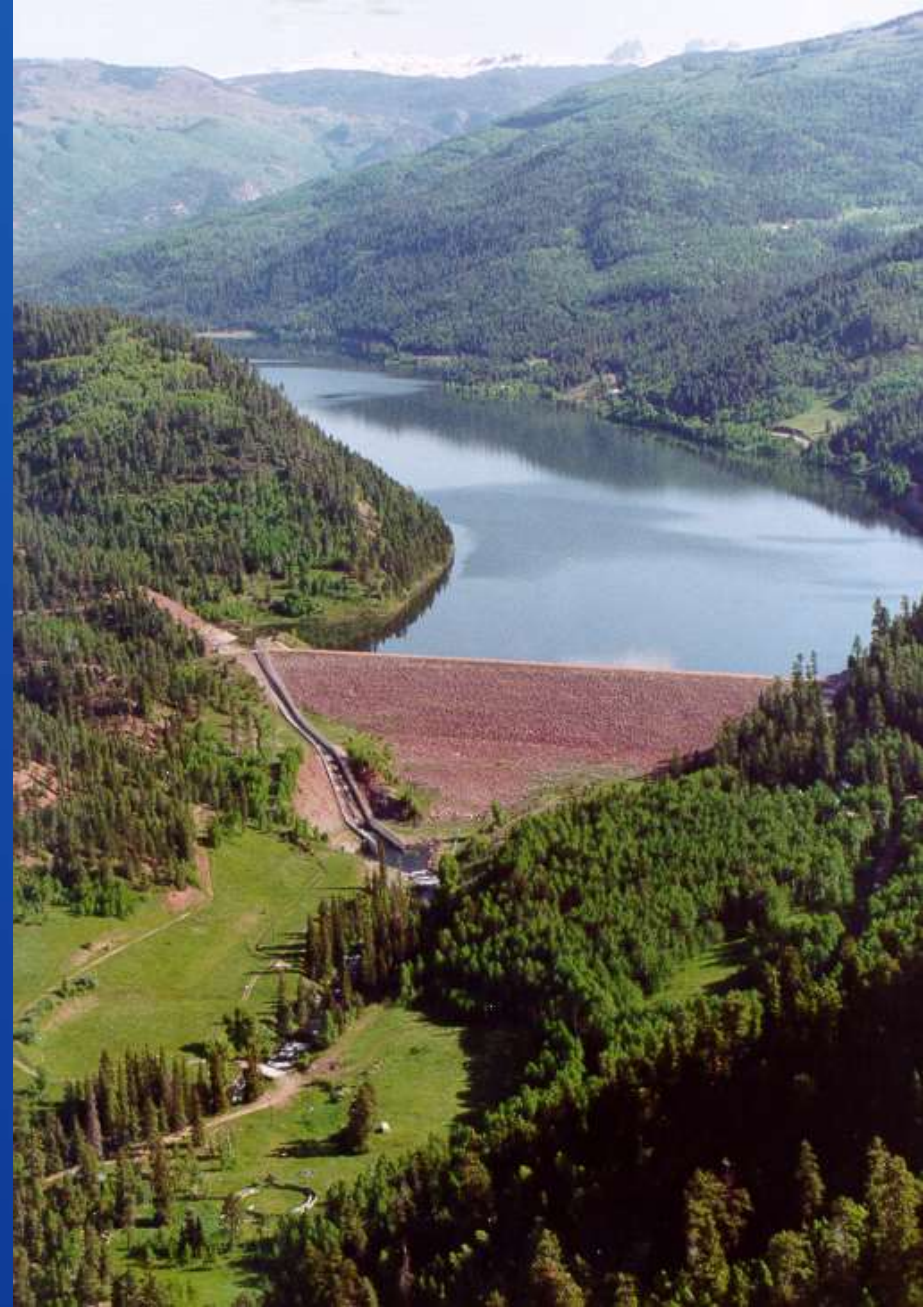
- Operated By: Hammond Conservancy District
- Constructed: 1960-1962
- Storage: None – Diversion Dam on San Juan River
- Diversion Capacity: 90 cfs
- Water Source: San Juan River
- Project Benefits: Irrigation
  - Acres Irrigated: 3,933 (full irrigation service)
- Other Assets:
  - 27 miles of canals
  - 13 miles of laterals
  - 2 pumping plants (Hammond Pumping Plant, Auxiliary Pumping Plant)

RECLAMATION



# Florida Project

- Operated By: Florida WCD
- Constructed: 1961-1963
- Storage: Lemon Reservoir
- Live Capacity: 39,790 acre-feet
- Water Source: Florida River
- Project Benefits:
  - Irrigation
  - Flood Control
  - Municipal & Industrial
  - Recreation, Fish & Wildlife
  - Power (FWCD owned – 120 kW)
- Acres Irrigated: 19,450 (supplemental)
- Population Served: 2,058
- Other Assets:
  - 5.7 miles of canals
  - 14.1 miles of laterals



RECLAMATION

# Silt Project

- Operated By: Silt Water Conservancy Dist.
- Constructed: 1964 - 1967
- Storage: Rifle Gap Reservoir
- Live Capacity: 12,168 acre-feet
- Water Source: Colorado River/Rifle Creek
- Project Benefits:
  - Irrigation
  - Recreation/Wildlife
  - Flood Control
- Acres Irrigated: 7,044 (supplemental supply)
- Population Served: 1,250
- Other Assets:
  - Silt Pumping Plant
  - Silt Pump Canal (7.6 miles)



RECLAMATION

# Navajo Indian Irrigation Project



- Operated By: NAPI (Navajo Nation)
- Constructed: 1964-1977 (ongoing expansion to full buildout)
- Storage: Navajo Reservoir & Cutter Reservoir
- Water Source: San Juan River
- Project Benefits:
  - Irrigation
  - Recreation (Navajo and Cutter Reservoirs)
- Acres Irrigated: NIIP - 70,000 (developed), 40,000 (undeveloped)
- Other Assets:
  - 72 miles of canals
  - 381 miles of laterals (8 blocks)
  - 2 main pumping plants (Gallegos & Kutz), 79 booster pumping plants
  - 162 miles of transmission lines (2 substations)

RECLAMATION

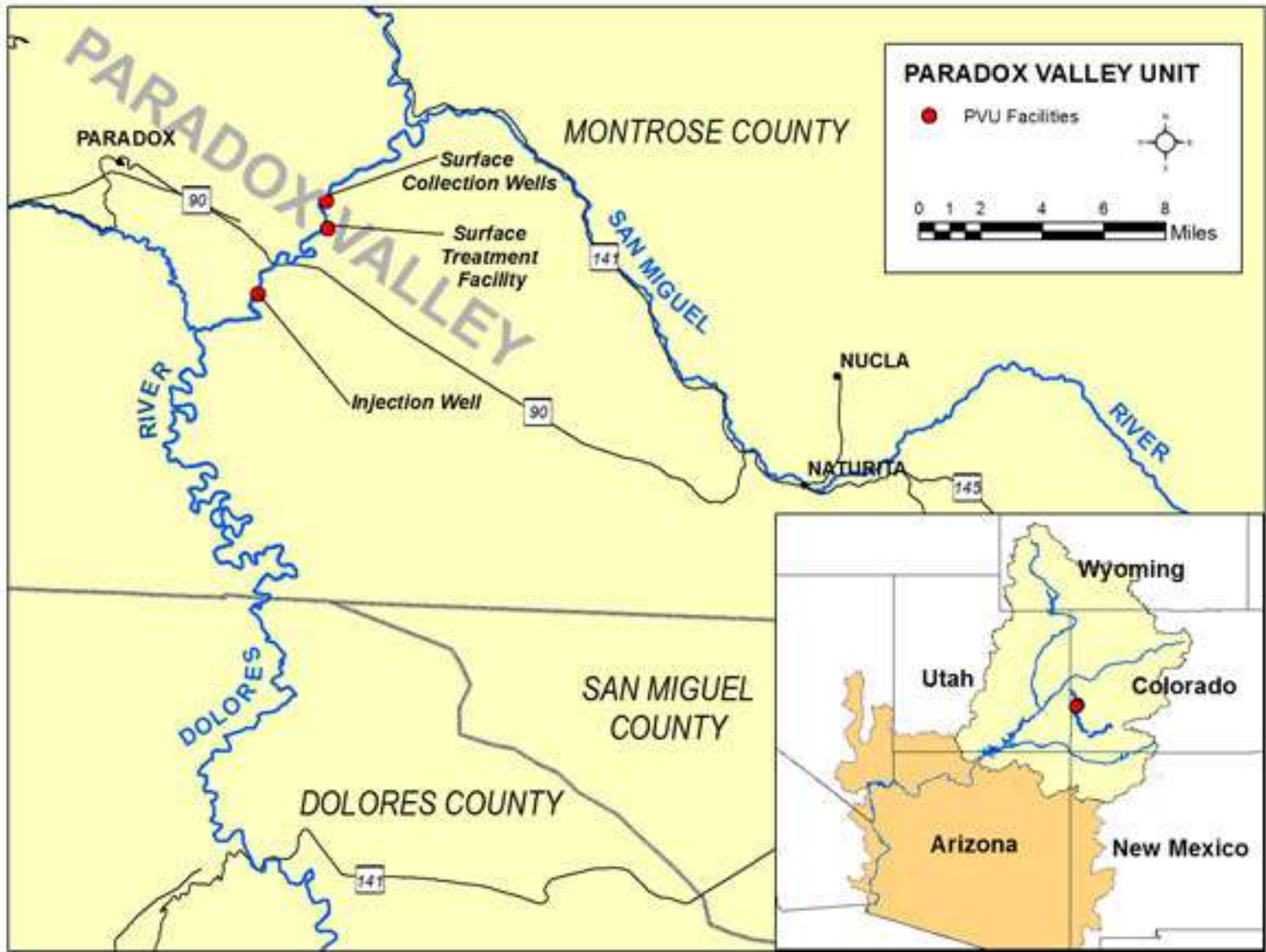


# Paradox Unit

- Operated By: Bureau of Reclamation
- Studies from 1975, operational from 1996
- Project Benefits:
  - Salinity Control
  - Protects Water Quality in the Dolores River
- Authorization: Federal Water Pollution Control Act (1948),  
Colorado River Basin Salinity Control Act (1974)
- Operations
  - Currently injecting 176 gallons per minute of naturally occurring brine through the existing deep injection well
  - Removing ~95,000 tons of salt per year from the Colorado River system
  - PVU Operations Manager - Andy Nicholas (970) 859-7214



RECLAMATION



# PVU EIS Alternatives Being Evaluated

- Alternative A – No Action
- Alternative B1 – BIF Injection Well Location
- Alternative B2 – Monogram Mesa Injection Well Location
- Alternative C – Evaporation Ponds
- Alternative D – Zero-Liquid Discharge Technology
- Website:

<https://www.usbr.gov/uc/wcao/progact/paradox/>



# Dolores Project

- Operated By: Dolores WCD
- Constructed: 1977-1998
- Storage: McPhee Reservoir
- Live Capacity: 381,051 acre-feet
- Water Source: Dolores River
- Project Benefits:
  - Irrigation
  - Municipal & Industrial
  - Flood Control
  - Recreation, Fish & Wildlife
  - Power (McPhee - 1,282 kW & Towaoc Canal – 11,494 kW)
- Acres Irrigated: 61,660 (35,360 full, 26,300 supplemental)
- Population Served: 3,393 (1131 farms)
- Other Assets:
  - 94 miles of canals
  - 85 miles of laterals
  - 7 pumping plants
  - 2 power plants
  - 4.5 miles of transmission lines



RECLAMATION



# Dallas Creek Project

- Operated By: Tri-County Water Conservancy District
- Constructed: 1978 - 1987
- Storage: Ridgway Reservoir
- Live Capacity: 82,980 acre-feet
- Water Source: Uncompahgre River
- Project Benefits:
  - Irrigation
  - Domestic, Municipal & Industrial Water Supply
  - Recreation/Fish & Wildlife
  - Flood Control
  - Reduction of Groundwater Overdraft
- Acres Irrigated: 73,982 (supplemental supply)
- M&I Service: 7000 meters



RECLAMATION

# Animas-La Plata Project

- Operated By: ALP OM&R Association
- Constructed: 2001-2013
- Storage: Lake Nighthorse
- Live Capacity: 115,075 acre-feet
- Water Source: Animas River  
(off-stream facility)
- Project Benefits:
  - Municipal & Industrial (Colorado Ute Water Right Settlement)
  - Recreation, Fish & Wildlife
- Population Served: ~150,000
- Project Sponsors: Ute Mountain Ute Tribe, Southern Ute Indian Tribe, San Juan Water Commission, Navajo Nation, CWRPDA (City of Durango, ALPWCD), La Plata Conservancy District (NM), State of Colorado
- Other Assets:
  - Durango Pumping Plant (315 cfs capacity)
  - Ridges Basin Inlet Conduit
  - Basin Creek Energy Dissipation Structures



RECLAMATION

# Navajo-Gallup Water Supply Project

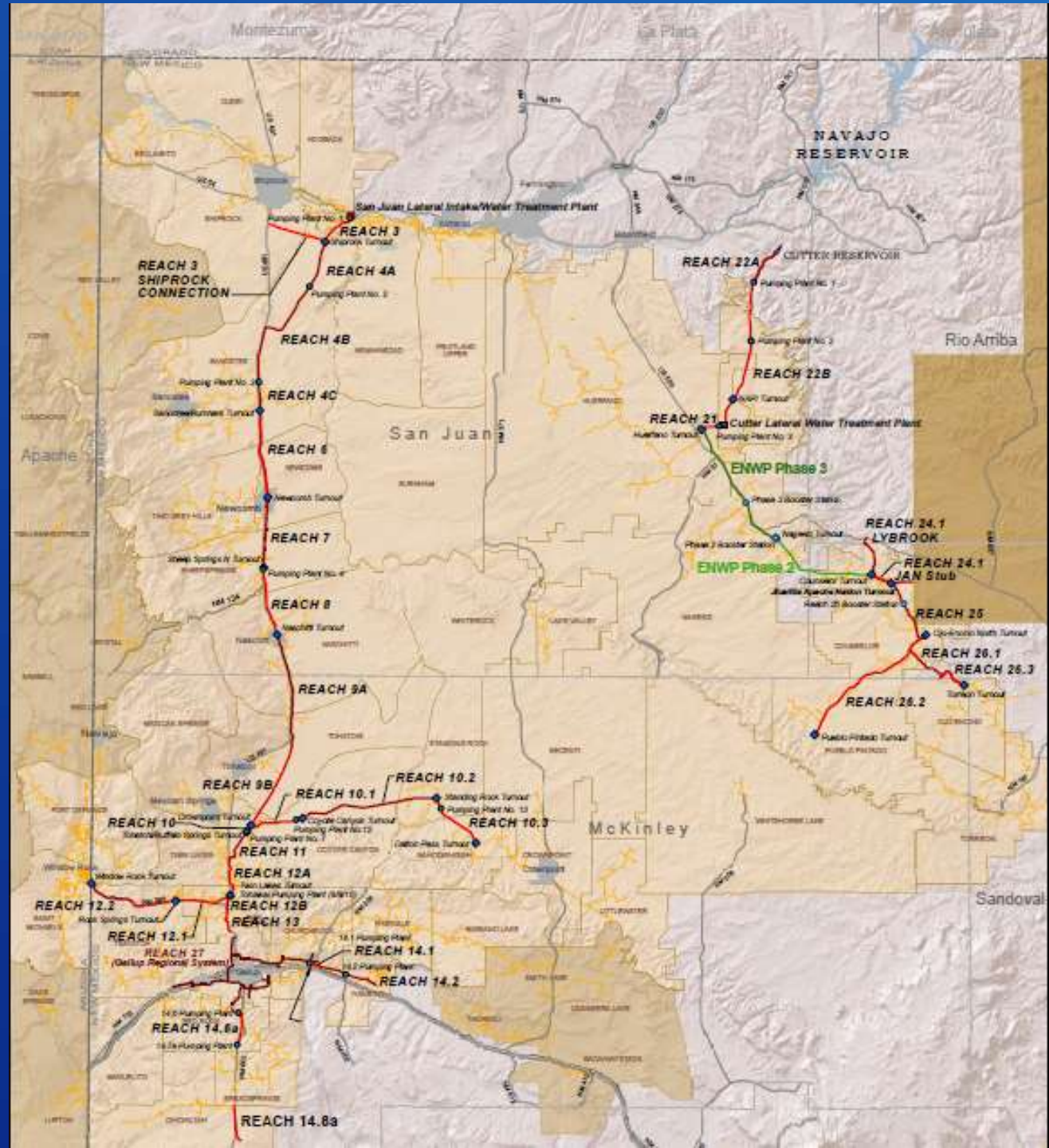


- Likely Operated By: Navajo Tribal Utilities Authority
- Constructed: 2012-2024
- Storage: Navajo Reservoir
- Annual Delivery: 37,764 acre-feet
- Water Source: San Juan River
- Project Benefits:
  - Municipal & Industrial (Navajo New Mexico Water Right Settlement)
- Population Served: 43 Navajo Chapters, City of Gallup, Teepee Jct. of the Jicarilla Apache Nation (250,000 people)
- Project Participants: Navajo Nation, City of Gallup, Jicarilla Apache Nation
- Assets:
  - 280 miles of pipeline (2 main laterals – Cutter Lateral & San Juan Lateral)
  - Several pumping plants
  - 2 water treatment plants

RECLAMATION



# Navajo-Gallup Water Supply Project





# **Current and Future Water Management Issues & Challenges**

- **Conversion to M&I**
- **Maintenance and Replacement of Facilities**
- **Endangered Species**
- **Recreation**
- **Water Conservation**
- **Indian Water Rights Settlements**
  - **A-LP**
  - **Navajo-Gallup Water Supply Project (NM)**

**RECLAMATION**

# How to Access Information

- Water Conservation Initiative Website:  
<http://www.usbr.gov>
- WaterSMART & Field Services Program  
[www.usbr.gov/watersmart](http://www.usbr.gov/watersmart)
- Grants and Cooperative Agreement Funding  
Opportunity Announcements (FOA)  
[www.grants.gov](http://www.grants.gov)
- Western Colorado Area Office  
[www.usbr.gov/uc/wcao](http://www.usbr.gov/uc/wcao)
- Ryan Christianson: (970) 248-0652  
[rchristianson@usbr.gov](mailto:rchristianson@usbr.gov)

RECLAMATION



# Questions from the Audience