Northeastern New Mexico Dams: Current Projects and Statewide Priorities

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Presentation Outline

- An overview of state jurisdictional dams
  - Where information can be found online
  - Hazard Classification
  - Condition Rating
  - Current state of jurisdictional dams
  - Dam Safety Risks and Incidents
  - Current Rehab Projects in the State
- Dams in Northeast New Mexico
  - Current state funded projects and their status
  - Recently completed state funded projects
  - High priority needs for publicly owned dams

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OSE Dam Safety Bureau

Vision Statement

A future where all dams are safe

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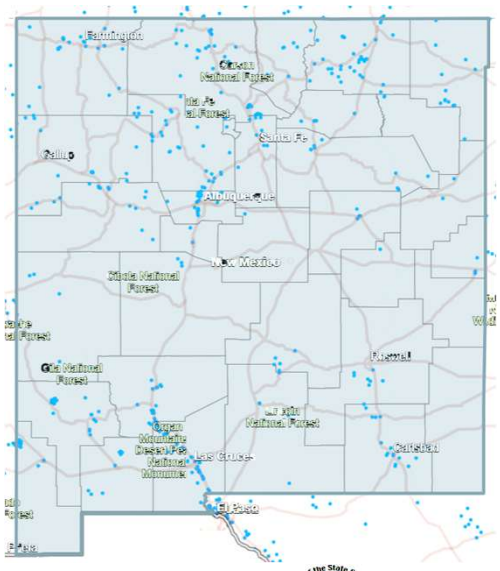
Dams in New Mexico

- Where do you find information?
  - ✓National Inventory of Dams (NID)
    https://nid.sec.usace.army.mil/#/

403 dams in NID
72% State Regulated (291)
Average Age – 64 years



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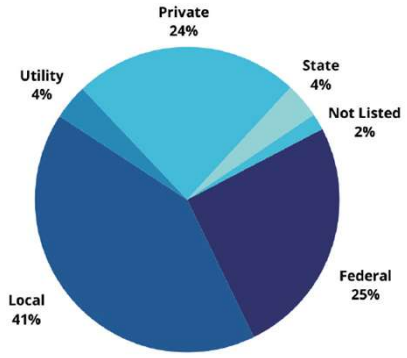
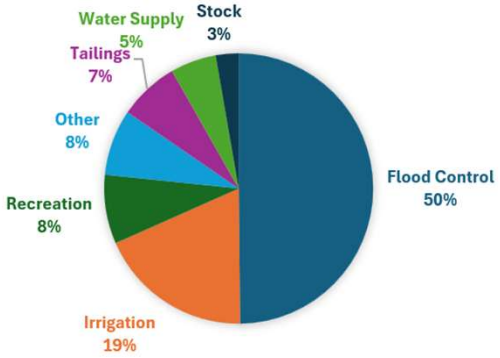
Dams in New Mexico

Dam Ownership in New Mexico



Dams in State Jurisdiction by Purpose



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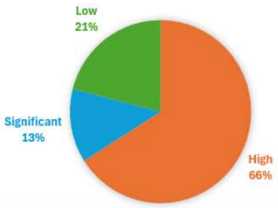
State of Dams (State Jurisdiction)

- Dams by Hazard Classification

Hazard Potential Classification	Loss of Human Life	Economic Loss, Environmental Loss, and/or Disruption of Lifeline Facilities
High	Probable (one or more expected)	Yes (but not necessary for this classification)
Significant	None expected	Yes
Low	None expected	Low and generally limited to owner



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State of Dams (State Jurisdiction)

Dams by Condition Ratings

Satisfactory - No existing or potential dam safety deficiencies are recognized

Fair - No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency.

Poor - A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Poor condition may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency.

Unsatisfactory - A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

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State of Dams (State Jurisdiction)

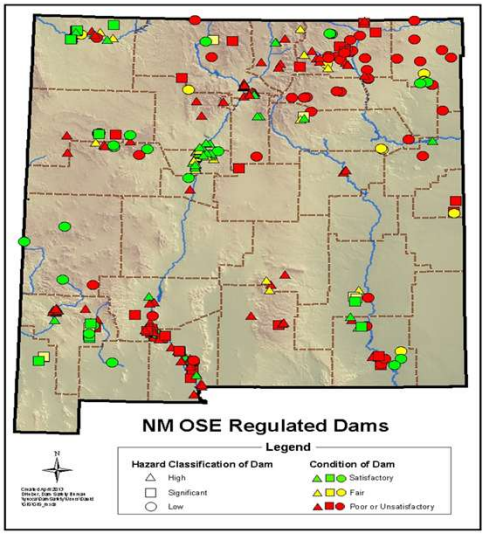

	Table 3 – FY25 Condition Rating Summary for NM Jurisdictional Dams				
	Hazard Potential Classification	Condition Rating and Percentage w/Rating			
		Satisfactory	Fair	Poor*	Unsatisfactory
66%	High	40	28	116	3
	187dams	21%	15%	62%	2%
13%	Significant	8	4	24	1
	37 dams	22%	11%	65%	3%
21%	Low	13	8	38	2
	61 dams	21%	13%	62%	3%

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Why do we have so many deficient dams?

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Factors contributing to Deficiencies

1. Age of dams –
   - Average age of 64 years exceeds original design life of 50 years
   - Deterioration with age is expected
2. Change in Engineering & Construction Technology –
   - Hydrologic Understanding and Methodology has evolved
   - Geotechnical exploration, material characterization, behavior characterization, and the approach to analyses have evolved
   - Filter Design criteria has changed
   - Seismic understanding, characterization, analyses, and design have evolved
   - Structural Analyses and Design Approach has evolved

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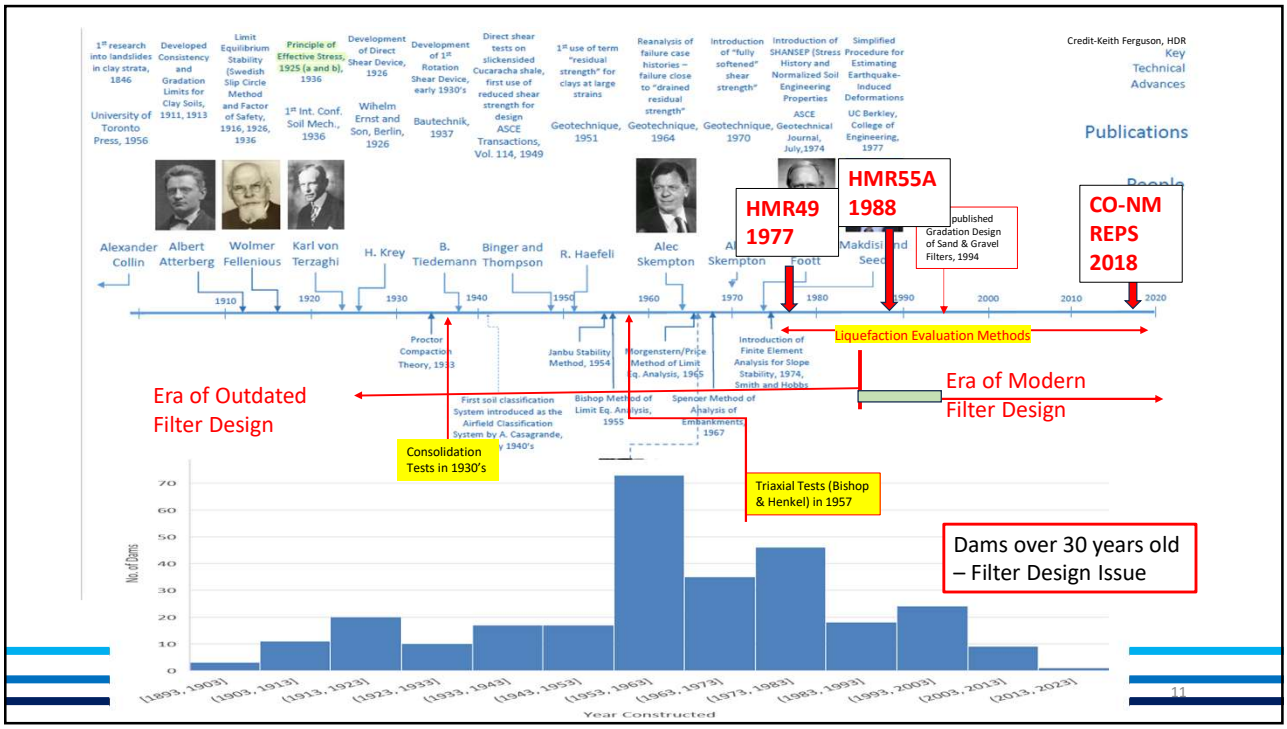

Factors contributing to Deficiencies

3. Lack of Design Documents –
   - A lot of older dams have little to no design documents on file
   - A lot of data gaps based on current state of practice.
4. Hazard Creep –
   - Dams originally designed as LOW hazard have become HIGH hazard
   - Design/construction requirements most rigorous for HIGH hazard dams
   - EAP and O&M Manuals required for HIGH and SIGNIFICANT hazard dams
5. Lack of Routine Maintenance and Repair
   - Common issues such as woody vegetation, rodent burrows, erosion, concrete repair, etc. turn into major deficiencies requiring repairs or rehabilitation
   - No requirement for dam owners to show Financial, Management, and O&M Capacities

While these deficiencies are recognized, how common are dam incidents/failures?

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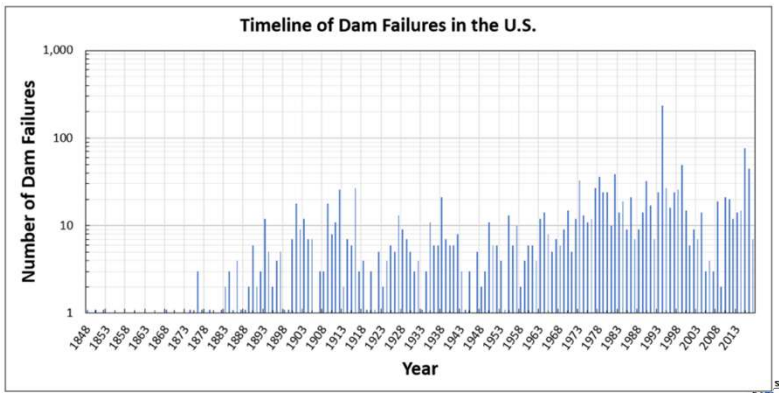
Dam Failures in the US

National Performance of Dams Program at Stanford University
https://npdp.stanford.edu/dam_failures_us



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Dam Failures or Incidents in New Mexico

- Many dams have failed (various levels of failure) in New Mexico
  - New Mexico has not maintained a good record of these failures/incidents
- Recent Failures/Incidents in NM –
  1. Cabresto Dam, Taos County – May 2005 – Piping on downstream slope near outlet conduit
  2. Intrepid Potash West Plant Dam, Eddy County – October 17, 2015 – Piping failure initiated by subsidence related cracking due to subsurface mining
  3. Intrepid Potash South Perimeter Dam, Eddy County – January 2020 – Partial failure of downstream slope due to seepage
  4. Cantrell Dam (non-jurisdictional) near Williamsburg, Sierra County – July 26, 2020 – spillway eroded and failed
  5. Two non-jurisdictional dams on Apache Creek, Catron County – July 23, 2021 – overtopping failure, cascading failures (domino effect)

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Dam Failures or Incidents in New Mexico

- Recent Failures/Incidents in NM – (continued…)
  6. McLead Dam, Dona Ana County – August 21, 2022 – partial overtopping causing severe erosion of downstream slope
  7. Intrepid Potash South Perimeter Dam, Eddy County – January 19, 2023 – Partial failure due to high seepage/piping
  8. Alto Lake Dam, Lincoln County – June 17, 2024 – Diversion channel overtopped contaminating reservoir [South Fork & Salt fires 2024]
  9. Peterson Dam, San Miguel County – June 21, 2024 – overtopping by 2 ft; diversion dam and channel breached [Hermits Peak-Calf Canyon fire, 2022]
  10. Zuber Draw Sites 1 & 2 Dams, Chaves County – Oct. 19, 2024 – Spillways compromised by extensive erosion, Site 2 partially overtopped

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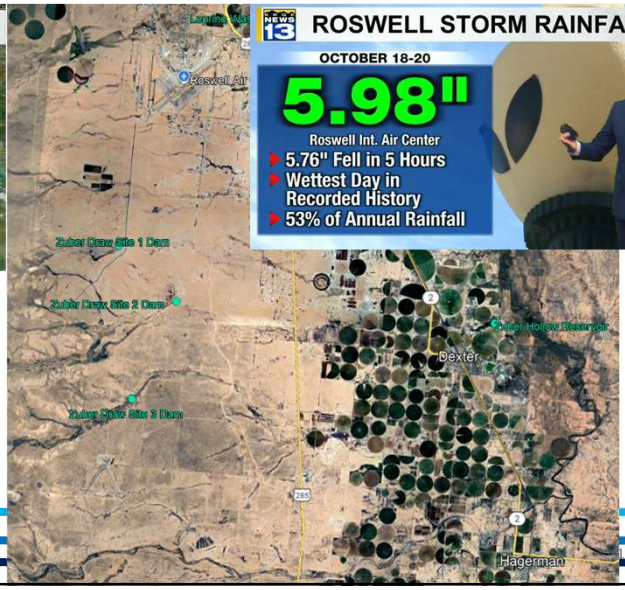
Roswell Rainfall Event – Oct. 19, 2024



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Zuber Draw Site 1 (13 Mile Draw) Dam

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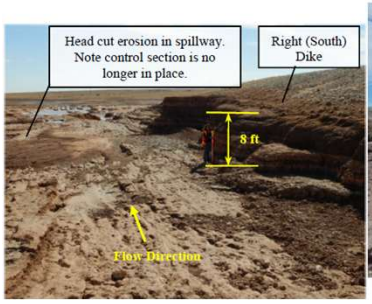
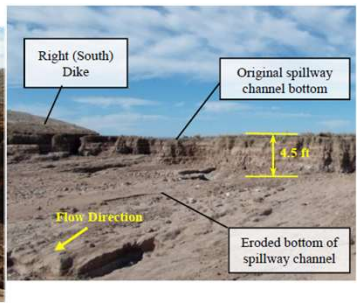
Zuber Draw Site 1 (13 Mile Draw) Dam





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Zuber Draw Site 2 (Peters Lake) Dam

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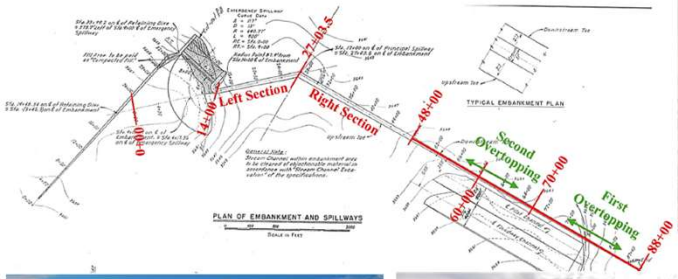
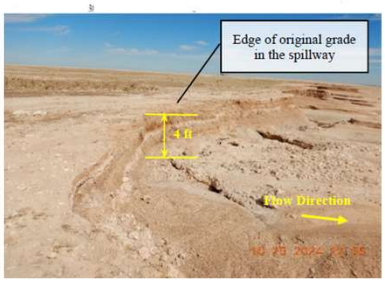
Zuber Draw Site 2 (Peters Lake) Dam





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Are these deficient dams being repaired/rehabilitated?

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Some of the Current Rehab Projects in Work

- Nichols Dam, Santa Fe County – In construction
- McClure Dam, Santa Fe County – Under investigation and design
- Santa Cruz Site 1 Dam, Rio Arriba County – Under design (NRCS)
- Power Lake Dam, Guadalupe County – In construction
- Bear Canyon Dam, Grant County – (Construction on Hold due to high bid)
- Peterson Dam, San Miguel County – In detailed investigation/design
- Cimarroncito Dam, Colfax County – Prelim. Design complete
- Alto Lake Dam, Lincoln County – In planning stage
- Zuber Draw Sites 1 & 2 Dams, Chaves County – In design (NRCS)

(Several other dams are in various stages of planning, design, construction, closure)

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Dams in Northeast New Mexico

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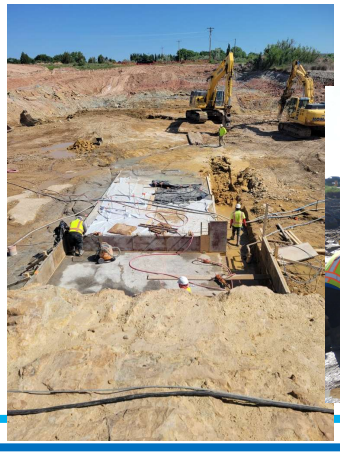
Current Projects in Northeast NM

- **Power Lake Dam**, Guadalupe County – in construction



Owner – City of Santa Rosa
Contractor – Moltz Constructors
Engineer – Wilson & Company

Moltz Contract: $7.89M
Wilson & Co – $1.2M

Funds Committed in grant agreements:
ARPA (ZG1040, ZH5103) - $9.8M
A20E2096 - $66,547.54
A21F2295 - $2,333,452.46

Construction completion – by Nov. 2026

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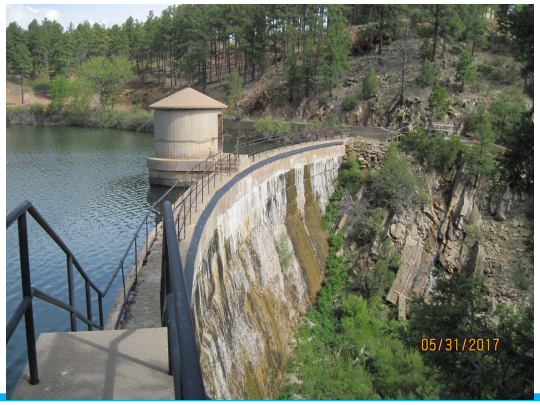
Current Projects in Northeast NM

- **Peterson Dam**, San Miguel County – in Final Design Phase



Owner – City of Las Vegas
Engineer – AECOM

Final Design & Bid Services: $2.6M
Constr. Cost Estimate – Prelim. $19.5M
(to be updated with Final Design)

Funds:
A23H2369 - $8M ($2.7M obligated)
A25J2347 - $50K

Design to be completed by Feb. 2026
(appears to be running late for this deadline)

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Current Projects in Northeast NM

- **Cimarroncito Dam**, Colfax County – in Final Design Phase/Urgent Repairs

Owner – Village of Cimarron
Engineer – CDM-Smith
Design Alternatives Report complete.
Final Design & Bid Services: $1.7M; 2-year process
Constr. Cost Estimate – Prelim. $17.6M
(to be updated with Final Design)
Urgent Situation – voids discovered in spillway on 5/1/2025. Investigation is underway to produce repair design. Will require immediate repair.
Funds: Various statewide rehab funds being applied for design work. No fund for construction.
A21F2291 - $50K (already spent)
A24I2343 - $50K (being used for urgent repair)

Recently Completed Projects in Northeast NM

- **Bradner Dam**, San Miguel County – Rehabilitation completed in 2019

Owner – City of Las Vegas
Engineer – AECOM
Contractor – Moltz Constructors

Funds:
13-1424 (STB) - $1.8M
14-1587 STB) - $6M
14-2158 (STB) - $4M

Dam is in satisfactory condition. No additional work is needed at this time.

Recently Completed Projects in Northeast NM

- **Morphy Lake Dam**, Mora County – Rehabilitation completed in 2020

Owner – Acequia De La Isla, Acequia De La San Jose
Engineer – AECOM - $770K (approx.)
Contractor – Moltz Constructors - $2.53M (approx.)
Total Cost of Rehab - $3.3M (approx.)

Funds:
Z40557 - $250K (year 2014)
A18C2721 - $2.0M
WaterTrustBoard-3542 - $1.2M
(Several other small appropriations)

Dams Needing Work in Northeast NM

- **Eagle Nest Dam**, Colfax County – Rehabilitation is Needed

Owner – Department of Game & Fish

Major Concerns –
- Scour Potential at the downstream toe area
- At least 2 of 6 gates inoperable
- Deteriorating concrete and joints
- Current Condition Rating - Poor

Recent Engineering Studies –
2006 – Prelim Scour Analysis by E&H Inc.
2020 – Preliminary Stability Evaluation
[Further studies and assessments are needed]
[Rehabilitation of the gate system and Repair of Joints and Concrete are needed]

Dams Needing Work in Northeast NM

- **Lake Maloya Dam**, Colfax County – Rehabilitation is Needed

Owner – City of Raton
Main Concerns –
- Inadequate Spillway Capacity – dam can get overtopped at higher than 1 in 500 chances (not acceptable for a High Hazard Dam)
- Poor condition of Service Spillway – Void under crest structure/integrity questionable

Recent Work –
2011 – Updated hydrologic analysis
2013 - 2023 – Preliminary Engineering Study; Geotechnical Investigation; Alternatives study
Fund – 14-1594 - $300K (all spent)
Prelim. Cost Estimate – Upwards of $25M

Dams Needing Work in Northeast NM

- **Storrie Dam**, San Miguel County

Owner – Storrie Project Water Users Association

Main Concerns –
- Slope Stability of Embankment – elevated piezometer readings need to be resolved. Slope stability analysis needs to be performed for assessment.
- Repair of Downstream Slope – Erosion caused by surface runoff from the highway pavement
- Lack of Routine Maintenance

Other Dams in Northeast NM

- **Ute Dam**, Quay County
  - Owner – Interstate Stream Commission (ISC)
  - Dam is in satisfactory condition. Items needing attention are –concrete repair in spillway, outlet works repairs, and routine maintenance
  - ISC has retained engineering firms to address these issues.
- **Conchas Dam**, San Miguel County
  - This is a federal dam owned and operated by US Army Corps of Engineers, and therefore, not in state jurisdiction. OSE Dam Safety Bureau does not track this dam.

Funding Opportunities

- Federal Funds –
  - USACE – Corps Water Infrastructure Financing Program (CWIFP), various Continuing Authorities Program (CAP), Acequia Program
  - NRCS – Watershed Rehab Program, Emergency Watershed Protection (EWP)
  - FEMA – High Hazard Potential Dam (HHPD) Rehab Program
    - 2024 – NM received $3,035,886 requiring 35% local match => $4,670,593.85
    - Future HHPD funding is uncertain
- State Funds
  - Water Trust Board – only for urgent dam repair/rehab projects
  - Capital Outlay grants
  - There is NO Statewide Dam Rehab Funding Program in New Mexico

Available Statewide Dam Rehab Funds

- ARPA (ZG 1040, ZH5103) – $10M – expires 12/31/2026
  - $9.8M obligated to Power Lake Dam Improvements
  - $200K being used for grant administration
- A21F2295 – $5M – expires 6/30/2027 (originally 6/30/2025)
  - $2.3M obligated to Power Lake Dam
- A23H2371 – $5M – expires 6/30/2027
- Special ZH5102 – $10M – expires 6/30/2026
  - $98K – obligated for Cimarroncito Dam urgent repair investigation
  - $3.5M – for water shortage & water treatment plant in Las Vegas
  - $2.5M – for wastewater infrastructure improvement in Santa Rosa

❖Projects at hand/pipeline (yet to be obligated) –

- Local Match for FEMA HHPD Grant - $1.64M
- Chaves County Flood Commission (Zuber Dams) - $4M
- Cimarroncito Dam Repair/Rehab – ongoing
- Remaining funds can be made available for local match, shortfalls, new requests

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Questions?

Smithson Reservoir Dam, Union County

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