



**Natural Resources  
Conservation Service**

**Water Resources  
Activities in Texas**

# Water Resources

- Staff
- Authorities
- Current Status
- Funding
- Aging Dams

# Water Resources Staff

- Interdisciplinary Team consisting of:
  - Staff Leader (Steven Bednarz)
  - Hydraulic Engineer (Ronnie Skala)
  - Civil Engineer (Lisa DeWeese)
  - Economist (James Featherston)
  - Cultural Resource Specialist (Calvin Sanders)
  - Resource Conservationist (Steve Uselton)
  - Wildlife Biologist (Jimmy Kelly)
  - Civil Engineering Technician (David Strakos)
  - Secretary (JoAnne Rezny)

# Water Resources Assessment Team

(WRAT Staff is located at Blackland Research Center)

- Team Leader/Civil Engineer (Tim Dybala)
- Soil Conservationist (Carl Amonett)
- Civil Engineer (Todd Marek)

# The Watershed Program



Elm Fork Site 19MP  
“Lake Muenster”



# Authorities

- Flood Control Act of 1944 (PL78-534)
  - Authorized work in 11 watersheds on a river basin basis.
    - 3 of these watersheds were in Texas.
      - Trinity River, Middle Colorado River, Washita River
- Pilot Watershed Program (1953)
  - Approved the study of 65 small watersheds
    - 4 of these were in Texas
      - Cow Bayou, Green Creek, Calaveras Creek, Escondido Creek

# Authorities (cont.)

- Watershed Protection and Flood Prevention Act of 1954 (PL83-566)
  - The “Small Watershed Program”
    - Authorized technical and financial assistance to local watershed organizations for planning and carrying out watershed projects.
    - Limited to 250,000 Acres
    - Included these potential practices:
      - Watershed Protection
      - Flood Prevention
      - Agricultural Water Management
      - Nonagricultural Water Management
      - Groundwater Recharge

# Rehabilitation

- Public Law 106-472 (Rehabilitation Amendment to PL-566)
  - Added the authority for rehabilitation
  - Includes dams built under PL-534, PL-566, Pilot, and RC&D
  - FRS have reached or are near reaching their evaluated life.
  - Allows rehabilitation to extend their useful life and benefits for an additional 50 to 100 years.
    - 208 FRS will meet or exceed evaluated life by 2007
    - Approx. 120 FRS in need of repair
    - Approx. 112 FRS need upgrade to meet current safety criteria

# Sponsoring Local Organizations

- Request initial assistance
- Provide local leadership
- Secure landrights
- Carry out O&M after construction is complete
- At least one must have the right of eminent domain

# Current Watershed Sponsors

- Soil and Water Conservation Districts ----- 106
- Counties ----- 86
- Cities ----- 50
- Water Control and  
Improvement Districts ----- 20
- Watershed Authorities and Associations ----- 6
- River Authorities ----- 1
- State Recreation Areas ----- 1
- Other Special Purpose Districts ----- 14

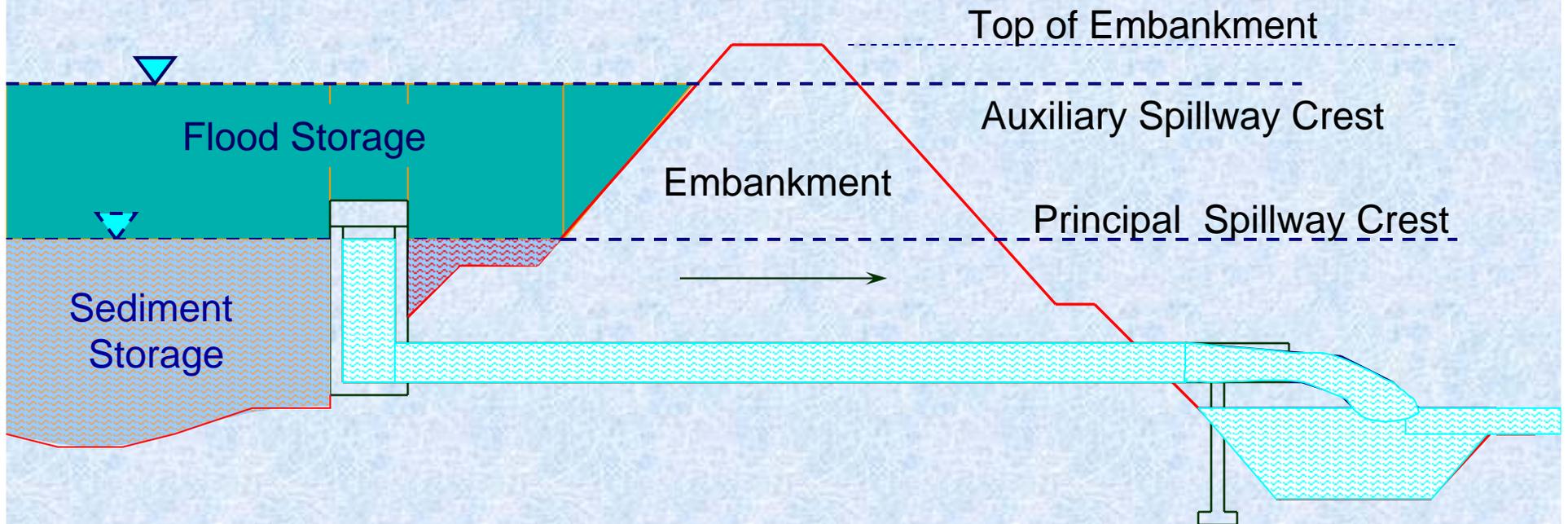
# Who owns the dams?

- In contrast to other federal water resource projects (USACE, Bureau of Reclamation), NRCS Watershed projects are “**Federally assisted**” not federally owned.
- **The sponsors own the dams.**

# Other Authorities

- Environmental Laws
  - National Environmental Policy Act of 1969
  - National Historical Preservation Act of 1966
  - Endangered Species Act of 1973
  - Related Public Laws and Executive Orders
- Other Laws
  - 1979 Executive Order on Dam Safety, FEMA
  - 1986 National Dam Safety Program

# Section of a Typical Floodwater Retarding Structure Storage in Pool



# Watershed “Firsts”

- First Floodwater Retarding Structure (FRS) in Texas
  - West Fork Above Bridgeport Site 6, Jack County, December 5, 1948, (Trinity R. PL-534)
- First FRS in Middle Colorado (PL-534) in Texas
  - Deep Creek Site 8, McCulloch Co., December 31, 1951

# Watershed “Firsts”

- First Pilot FRS in Texas
  - Calaveras Creek Site 5, Bexar County, September 9, 1954
- First PL-566 FRS in Texas
  - Johnsons Draw Site 1, Crockett County, December 16, 1957

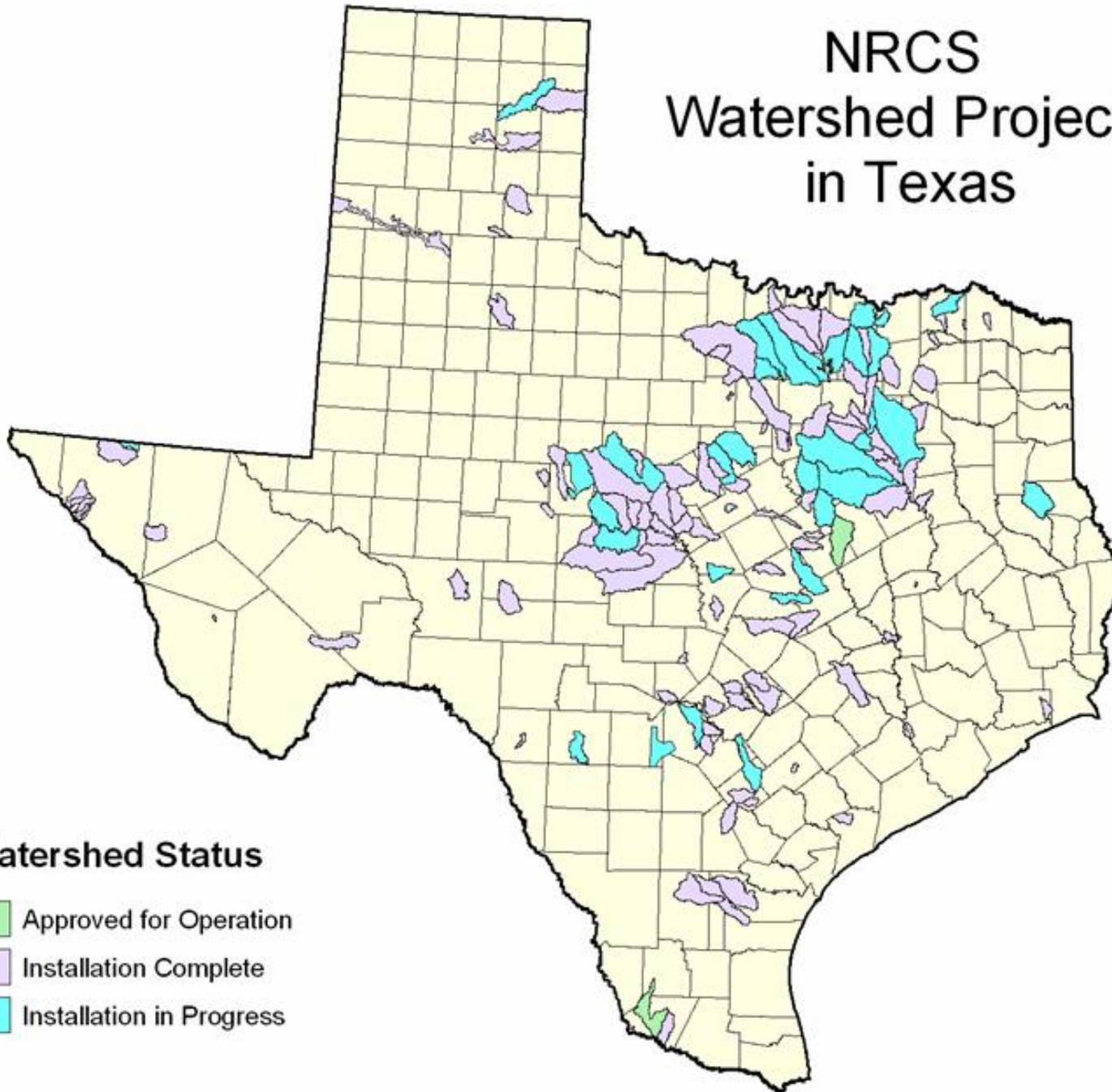
# Watershed Project Status

- Active or Inactive
- Complete
- De-authorized
- Closed

# Current Status (Texas)

- Projects Completed / Planned
  - 145 Watershed Projects
    - 109 Completed Watershed Projects
    - 36 Projects Remaining
    - Nearly 2100 dams constructed
    - 327 miles of channel improvement installed
    - Land treatment including critical areas, AWMS, etc.

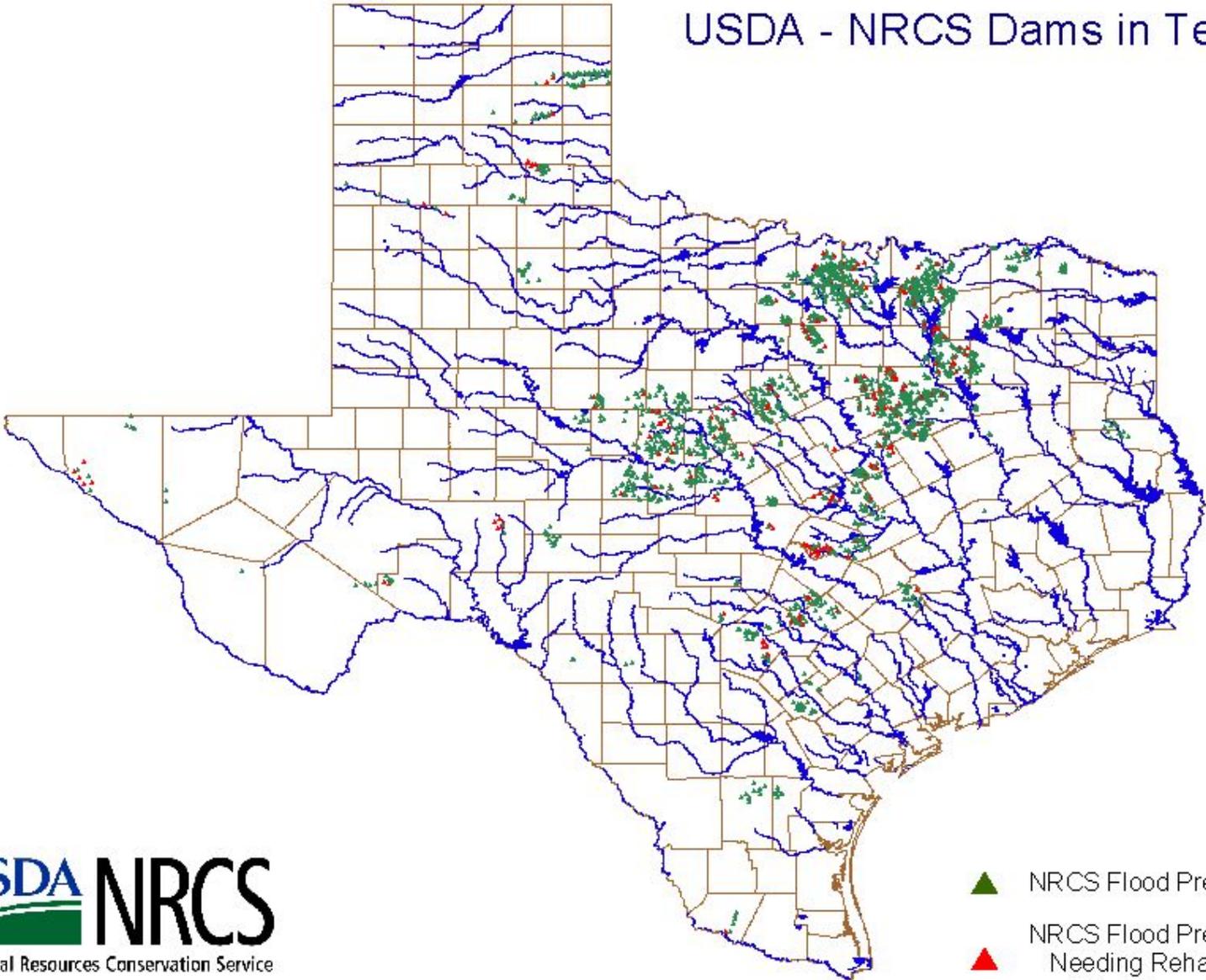
# NRCS Watershed Projects in Texas



## Watershed Status

-  Approved for Operation
-  Installation Complete
-  Installation in Progress

# USDA - NRCS Dams in Texas

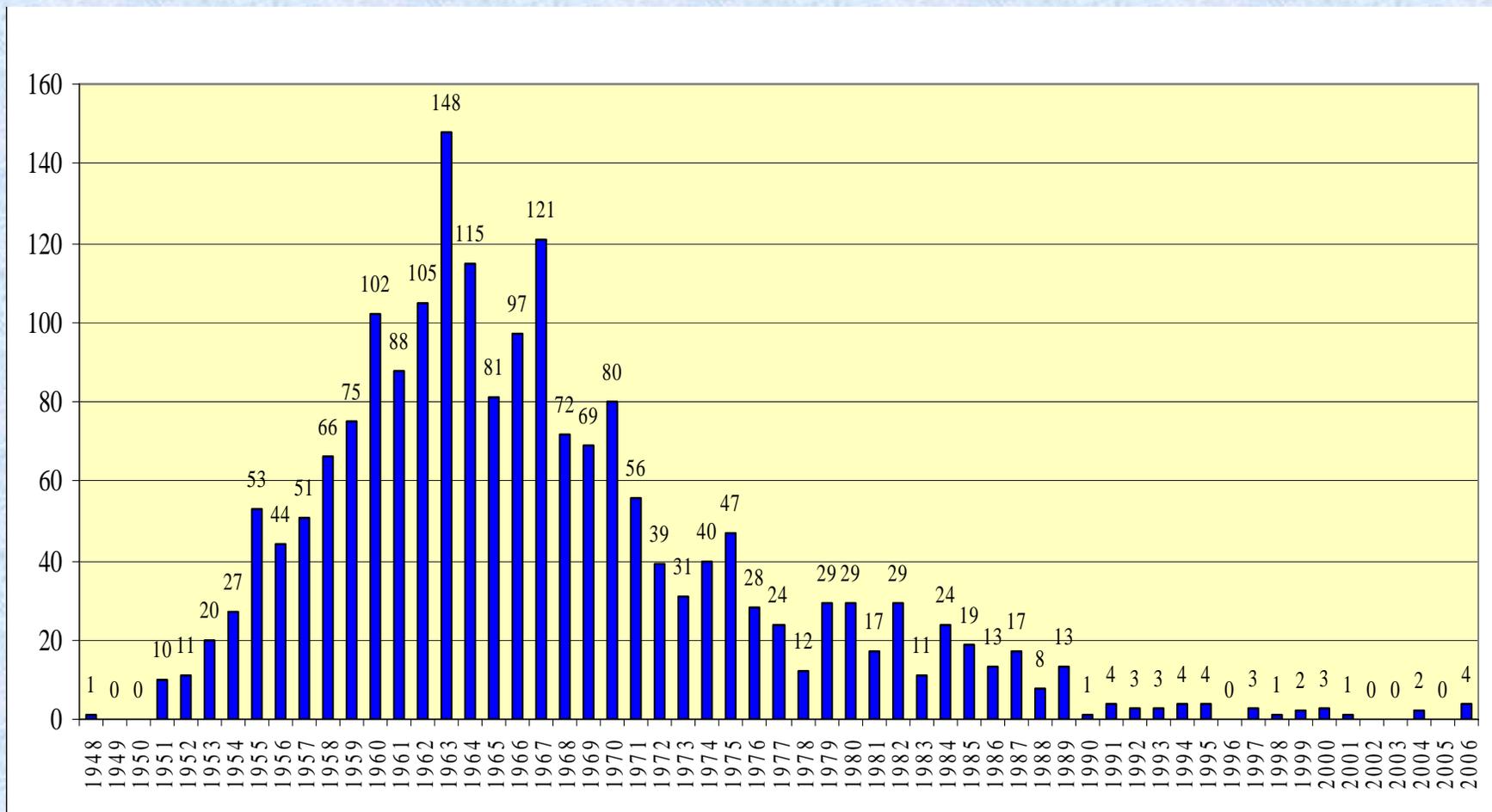


Natural Resources Conservation Service

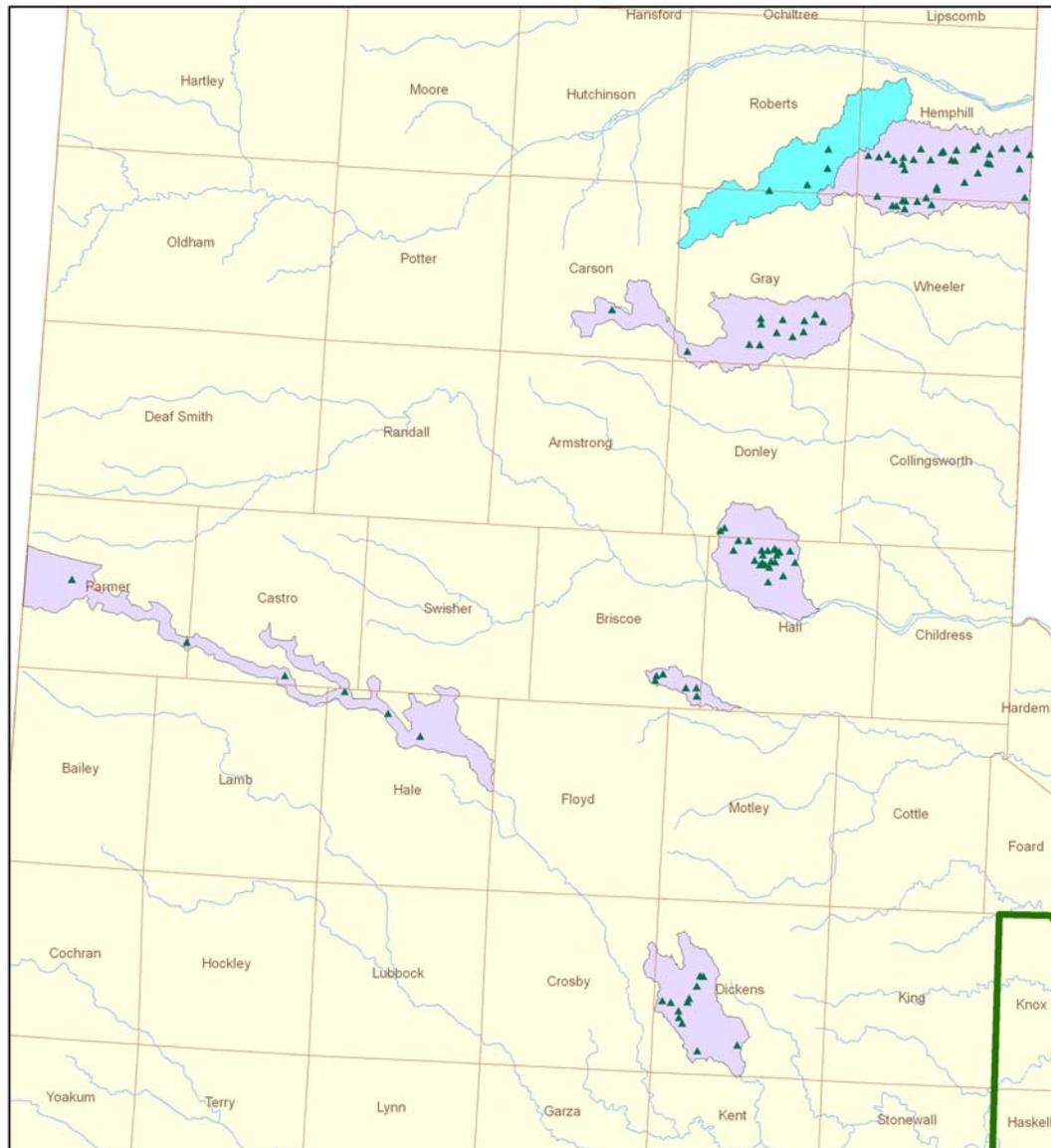
Planning Staff, Temple, TX April 2000

- ▲ NRCS Flood Prevention Dam
- ▲ NRCS Flood Prevention Dam  
Needing Rehabilitation  
(Preliminary Study)

# Floodwater Retarding Structures (FRS) Constructed by Year



# Watershed Projects: Zone 1 – Lubbock



## NRCS Watershed Projects Zone 1



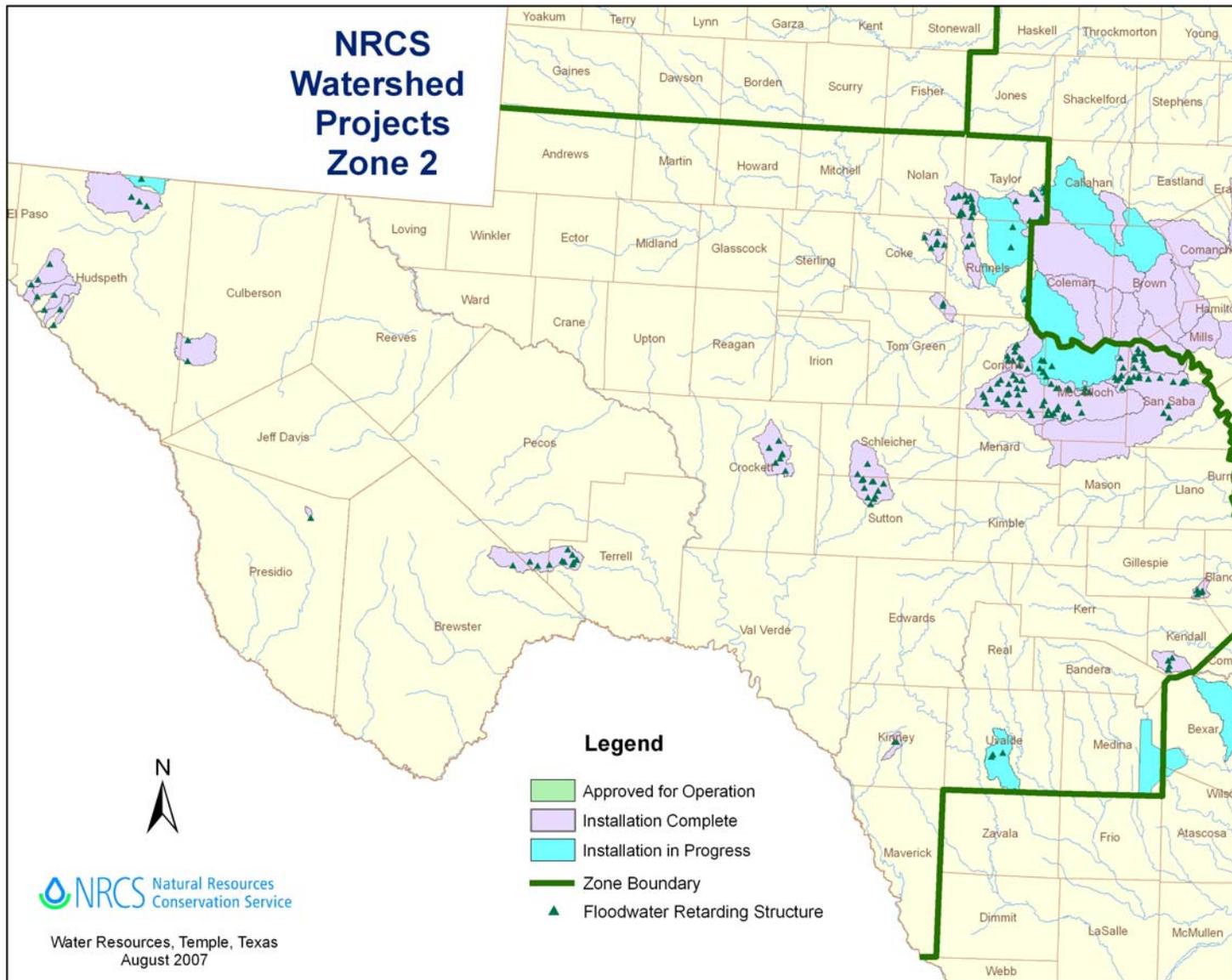
### Legend

- Approved for Operation
- Installation Complete
- Installation in Progress
- Zone Boundary
- Floodwater Retarding Structure

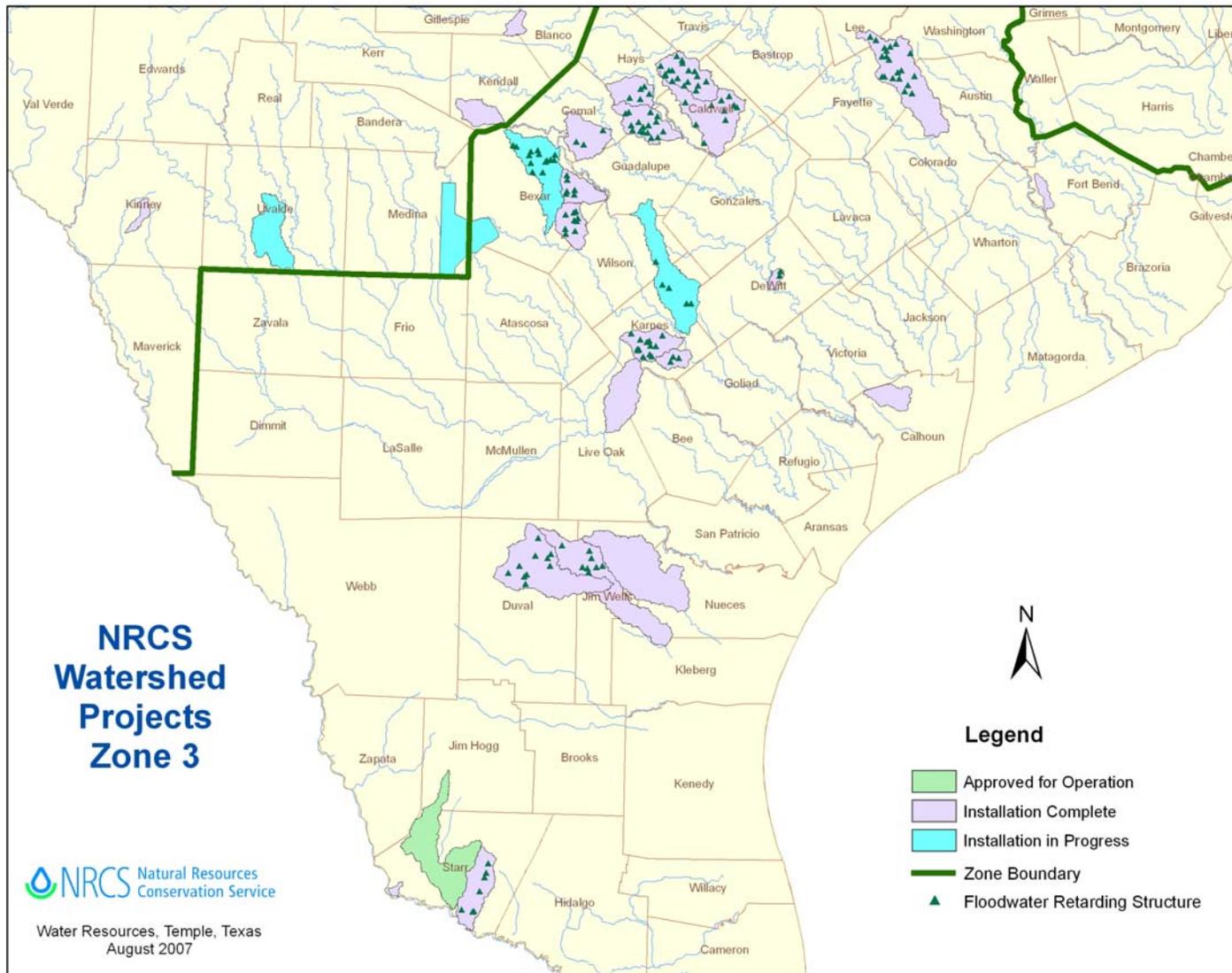


Water Resources, Temple, Texas  
August 2007

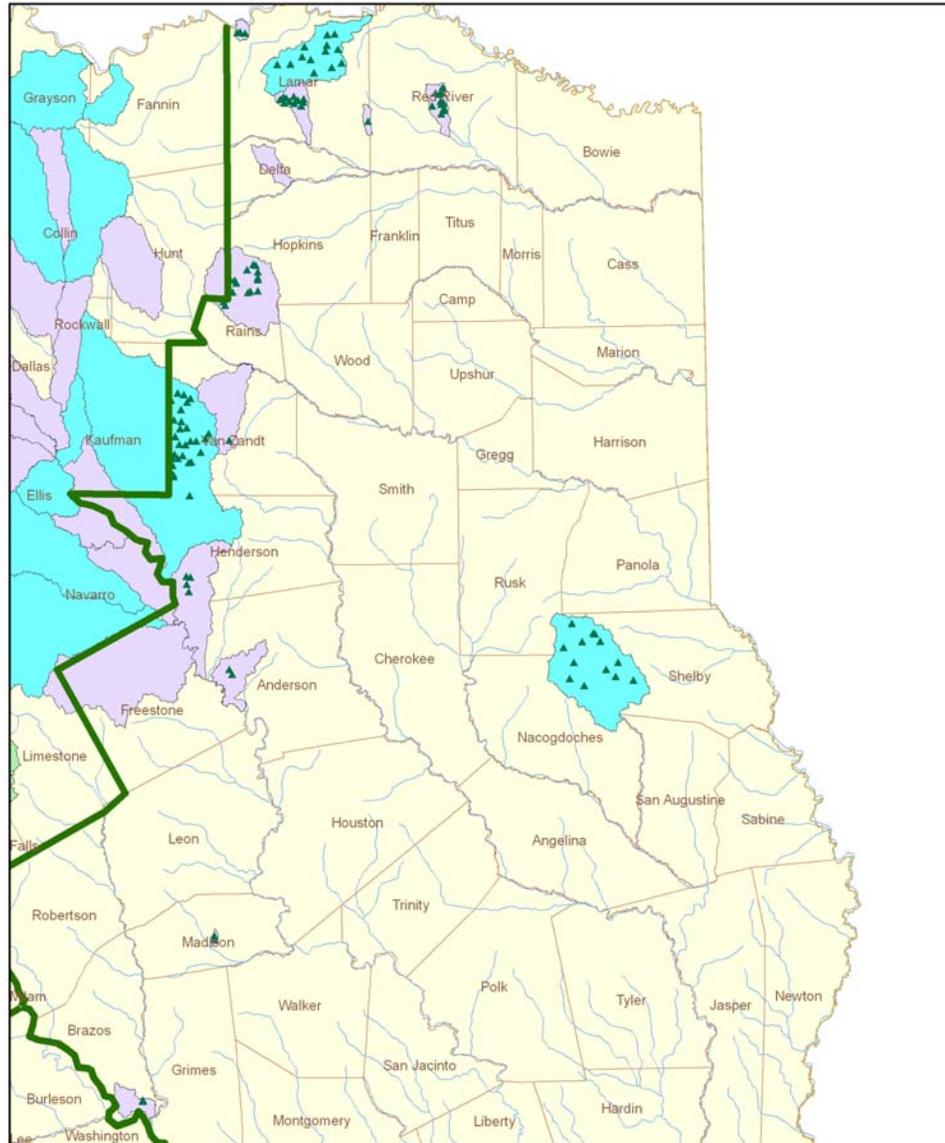
# Watershed Projects: Zone 2 – San Angelo



# Watershed Projects: Zone 3 – Corpus Christi



# Watershed Projects: Zone 4 – Bryan



## NRCS Watershed Projects Zone 4



### Legend

-  Approved for Operation
-  Installation Complete
-  Installation in Progress
-  Zone Boundary
-  Floodwater Retarding Structure

# Watershed Projects: Zone 5 – Weatherford

## NRCS Watershed Projects Zone 5

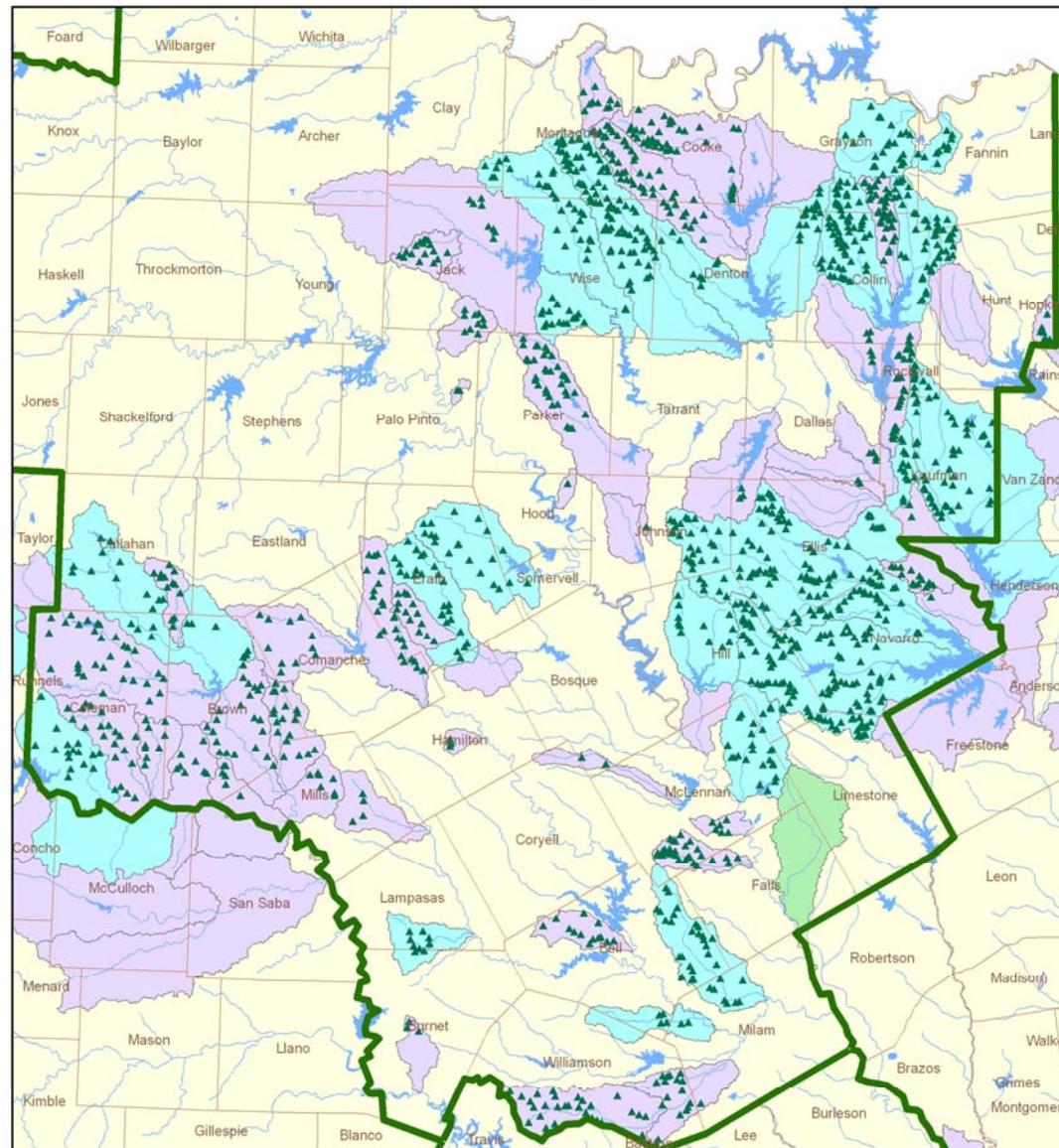


### Legend

-  Approved for Operation
-  Installation Complete
-  Installation in Progress
-  Zone Boundary
-  Floodwater Retarding Structure



Water Resources, Temple, Texas  
August 2007



# Project Funding

- PL-566 and PL-534
  - Sponsors obtain land rights and permits
  - NRCS pays 100% of planning, design, and construction
- Rehabilitation
  - Total project cost (includes land rights but excludes federal planning, design, and contract admin. TA) is shared 65% NRCS and 35% sponsors
  - NRCS responsible for 100% of planning and design TA
  - But, Sponsors may get in-kind credit for planning, design, contract admin., and land rights cost

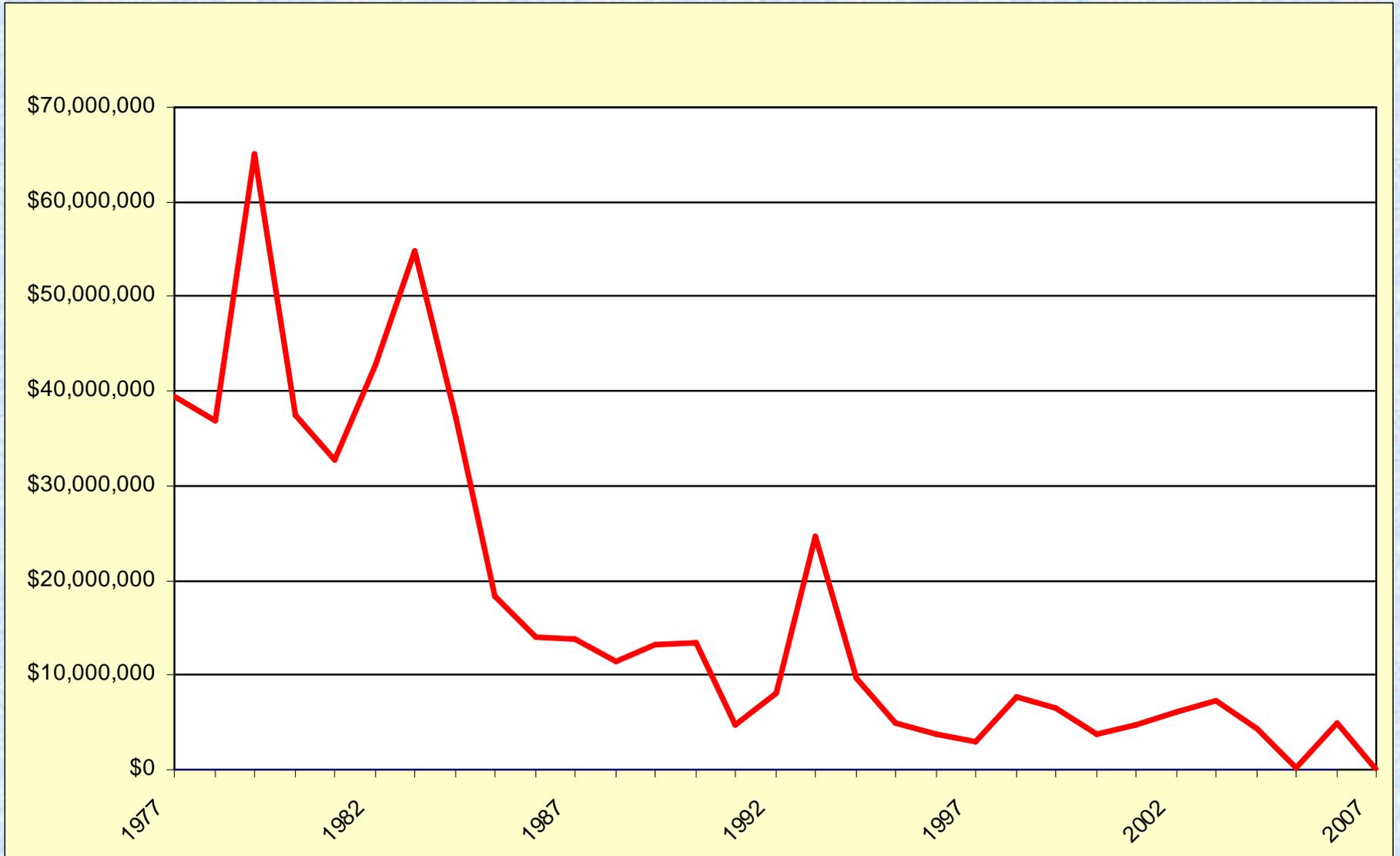
# Project Funding

- Maintenance
  - Sponsors are responsible for 100% of maintenance cost; NRCS can provide TA as resources permit
- Repairs
  - NRCS may fund 100% of remedial repairs if funding is available
  - Normal “wear and tear” is sponsor’s responsibility

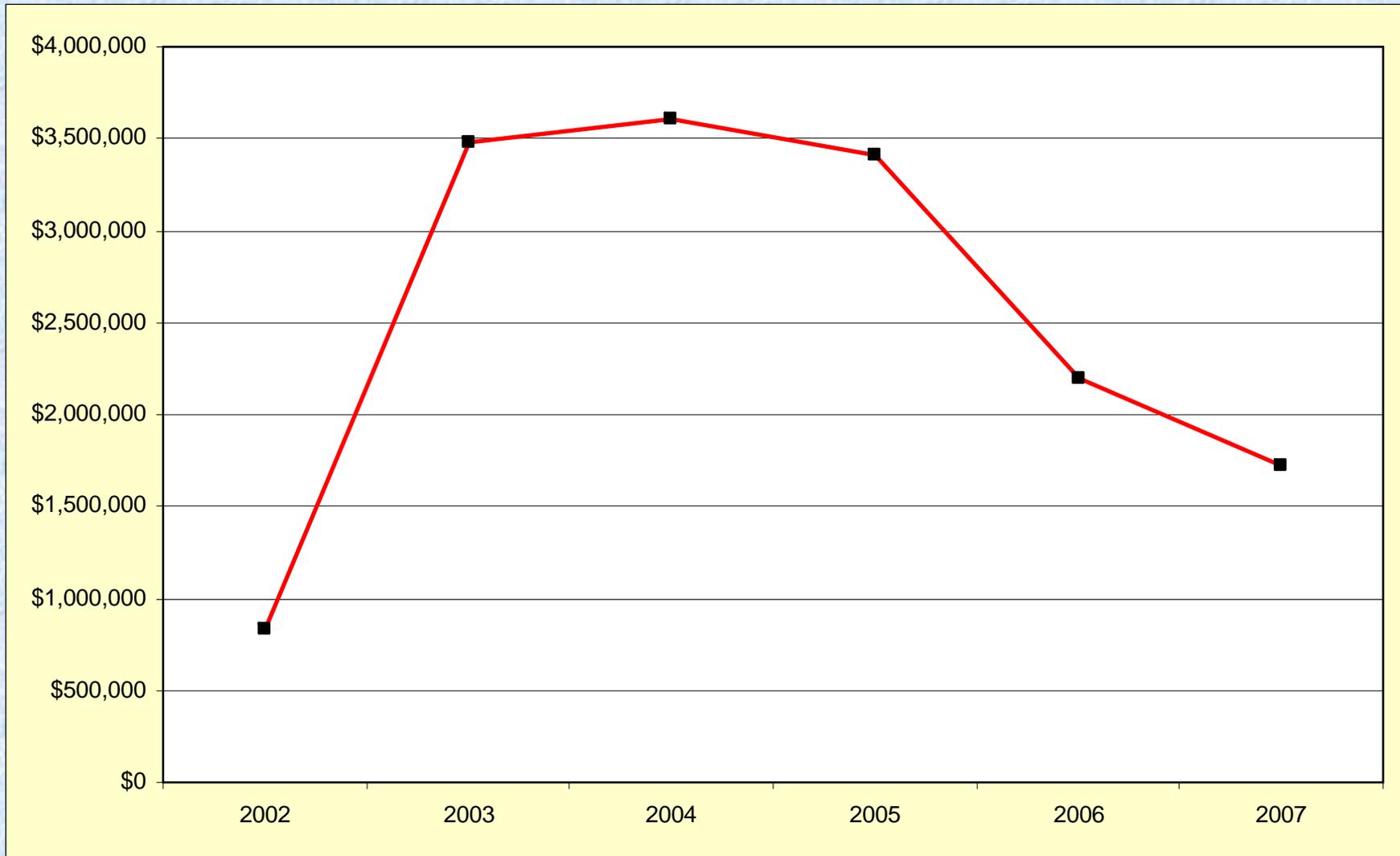
# Federal Funding

- 3 Sources:
  - Watershed Planning and Surveys (PL-06)
  - Watershed Operations and Flood Prevention
    - PL-534, WF-03
    - PL-566, WF-08
  - Watershed Rehabilitation (WF-07)

# PL-534 and PL-566 F.A. Funding (2006 \$) in Texas

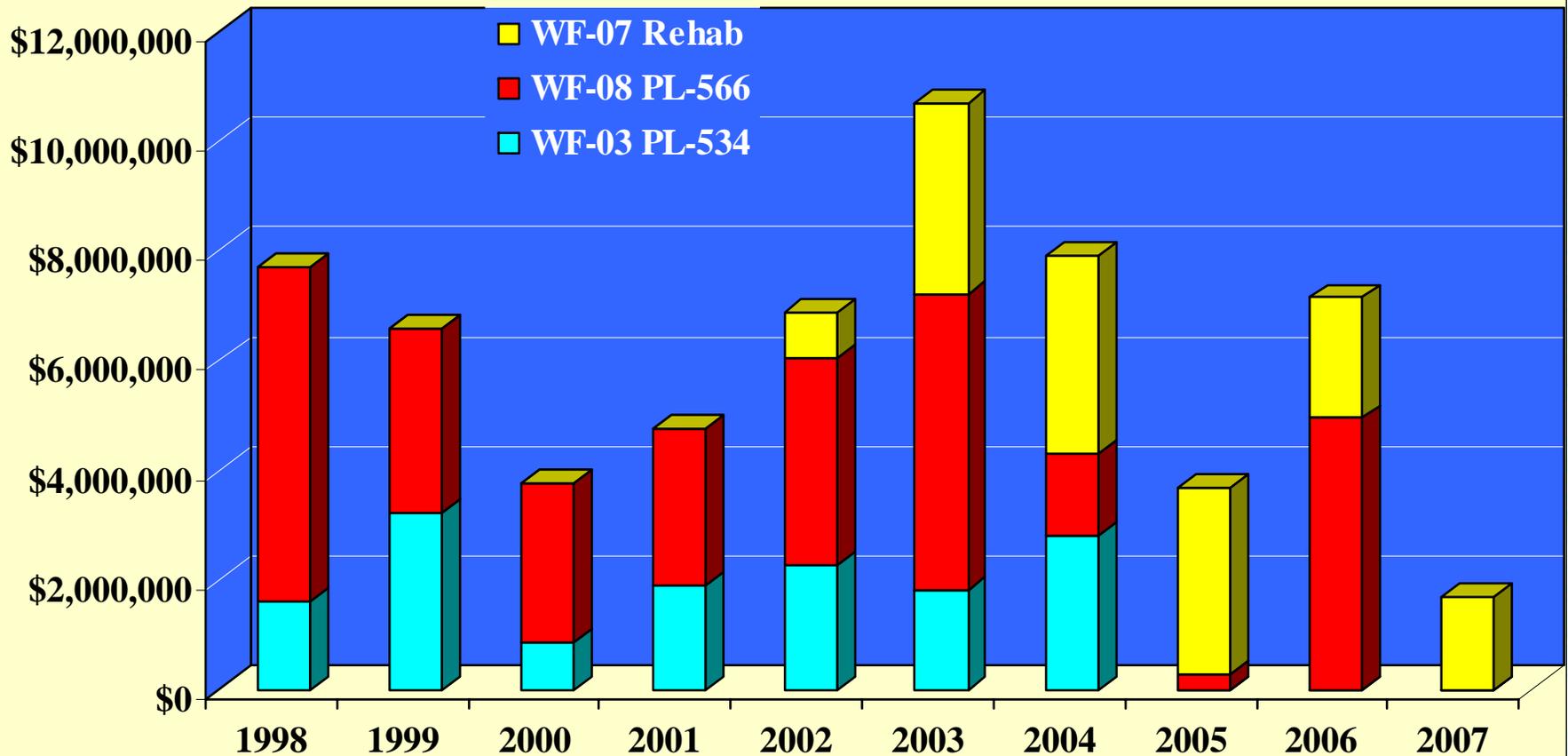


# Rehabilitation F.A. Funding (2006 \$) in Texas



# Texas Funding

Watershed Funding (FA) in Texas (2006 Dollars)



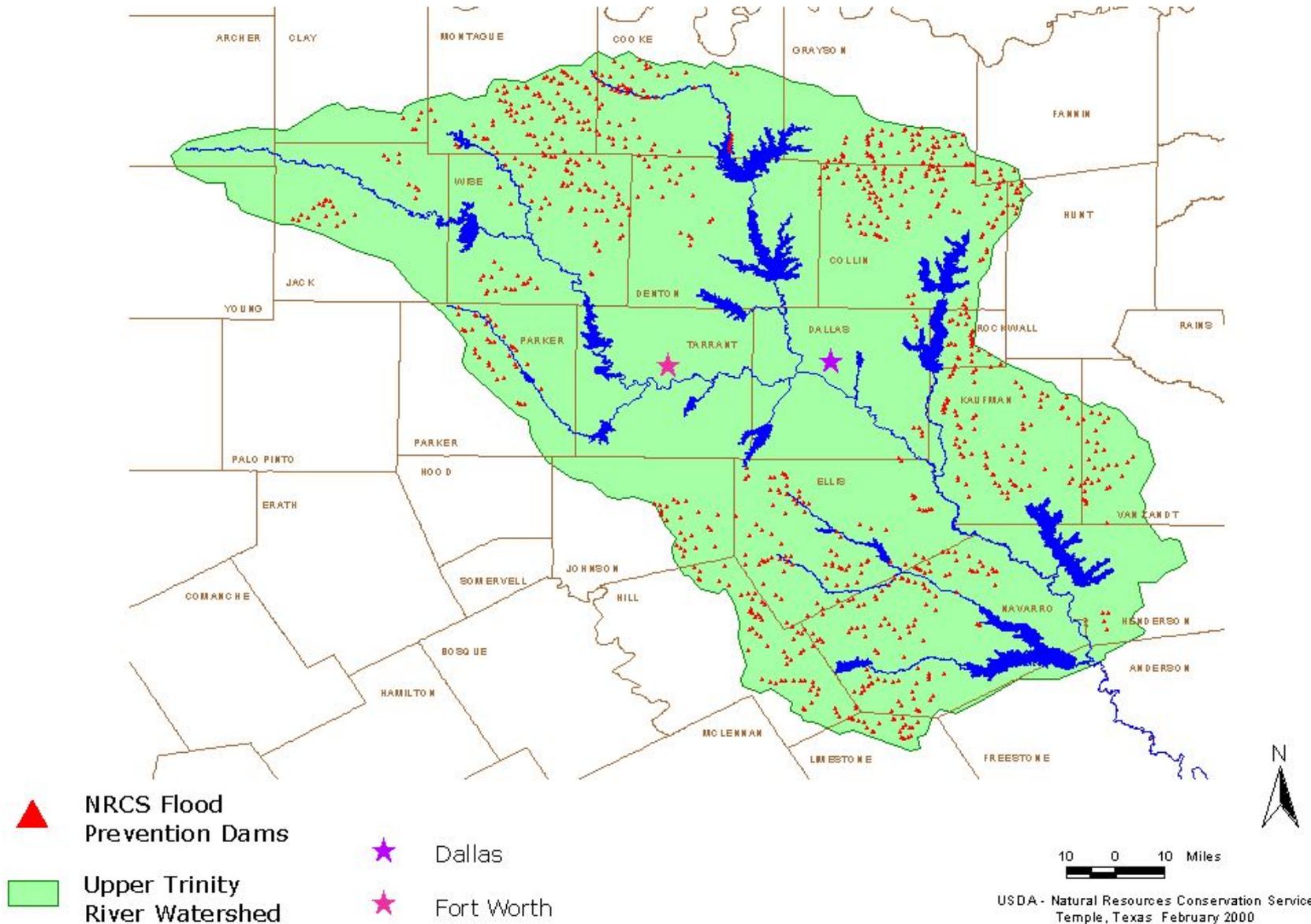
# Watershed Program Investments in Texas

- Local sponsors have invested \$870 million for land treatment, landrights, O&M, and construction.
- Federal Government Invested \$1.2 billion in financial assistance.
- Capitalized benefits have exceeded \$3.9 billion to date; average annual benefits exceed \$110 million.
- Return of \$3.17 for every \$1.00 invested

# Other Benefits

- Sediment Storage above 20 Major Reservoirs
- Example: Lake Lavon
  - Sediment Storage
    - Lake Lavon 82,600 ac-ft
    - Project Dams Above Lake Lavon 21,500 ac-ft
- Projects impacted 12.3 million people

# USDA - NRCS Dams in the Upper Trinity River Watershed



# Future Obligations in Texas

- 268 Floodwater Retarding Structures remain to be built.
- Bexar-Medina-Atascosa Irrigation Project
- Estimated Cost of Backlog: \$438,000,000
  - \$ 170,000,000 - PL-566
  - \$ 268,000,000 - PL-534

# Other Needs

- Repairs
  - 120 Sites (30 sites have medium to high failure potential)
  - Estimated Cost \$30 million

# AGING WATERSHED DAMS

# Aging Watershed Dams

## Slope Stability Problems



# Aging Watershed Dams

## Slope Stability Problems



# Aging Watershed Dams

## Principle Spillway Inlet Deterioration



# Aging Watershed Dams

## Principle Spillway Outlet Deterioration



# Aging Watershed Dams

## Sediment Accumulation



# Aging Watershed Dams

## Urban Encroachment on Flood Pools



# Aging Watershed Dams

## Hazard Class Changes



# Aging Watershed Dams

## Hazard Class Changes



# Aging Watershed Dams

Urban Development – Utility Installation Beneath Dams



# Evaluated Life of Dams

- Definition: The number of years used in the watershed plan for evaluating project costs and benefits.
- Number of watershed dams in Texas with 50-year evaluated life:
  - 1,505
- Number of watershed dams in Texas with 100-year evaluated life:
  - 467

# Aging Watershed Dams

## Number of Floodwater Retarding Structures Surpassing Evaluated Life in Texas



## What happens when a dam's age exceeds evaluated life? (NB.250.7.6)

- Letter to sponsors
- O&M agreement expires
- NRCS no longer obligated to Sponsors
- Sponsors no longer obligated to NRCS
- Sponsors still own a dam regulated by the State
- Sponsors must abide by Local/State/Federal laws, rules, regulations
- NRCS can provide TA upon request, if resources are available (FY 2007 CTA allocation includes funds for technical assistance on O&M)

# Future NRCS Initiatives

- NRCS policy (beginning 1967) that sponsors should perform routine annual maintenance inspections; request NRCS assistance when needed.
- Provide training to NRCS employees and sponsors.
- Public education: Fact Sheets, news releases, public meetings
  - Texas Watershed Web:  
<http://www.tx.nrcs.usda.gov/programs/watersheds/index.html>
  - Watershed projects are part of public infrastructure, just like roads and bridges.
  - Benefits: Flood damage reduction to infrastructure (roads, bridges) and urban development, sediment reduction, etc. Prepare storm reports, auxiliary spillway flow reports.
  - Public safety
  - Funding needs for maintenance, repair, rehabilitation



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**Questions?**

**Water Resources Program**