DamWatch!

The Oklahoma
National Pilot Project

Larry Caldwell P.E.
OCC Watershed Specialist
Stillwater, OK

“DamWatch”

- Why do we need it?
- What does it do?
- Who can use it?
- When will it be ready to use?
- How can you see a demo?

The Facts……

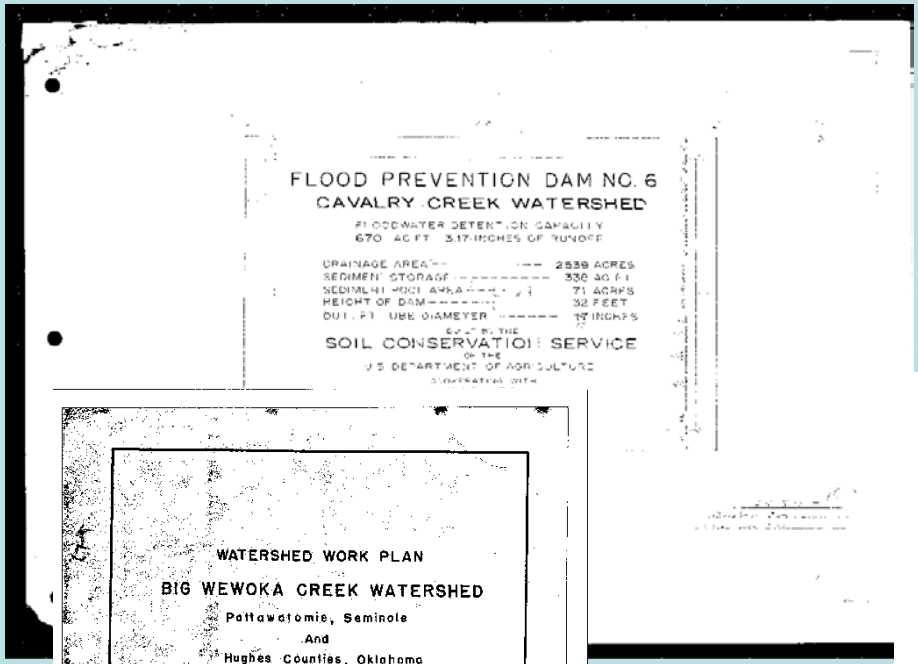
There are more than 11,000 Watershed Dams in 47 states (2,107 in Oklahoma)

The Facts……

Over 2,000 of the Watershed Dams dams are classified as High Hazard (229)

Over 900 of the High Hazard dams were not originally designed to High Hazard criteria (199)

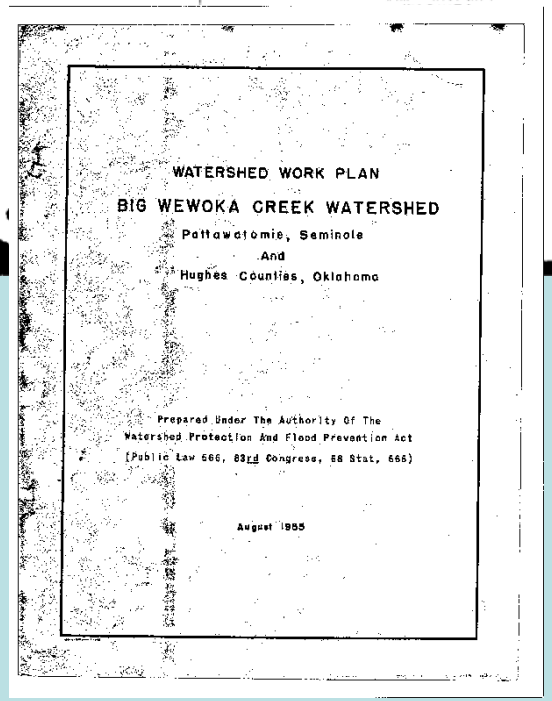
The Facts……



FLOOD PREVENTION DAM NO. 6
CAVALRY CREEK WATERSHED
FLOODWATER DETENTION CAPACITY
670 AC FT 3.17 INCHES OF RUNOFF

DRAINAGE AREA ---------- 2539 ACRES
SEDIMENT STORAGE ---------- 338 AC FT
SEDIMENT POOL AREA ---------- 71 ACRES
HEIGHT OF DAM ---------- 32 FEET
OUTLET PIPE DIAMETER ---------- 18 INCHES

BY THE
SOIL CONSERVATION SERVICE
OF THE
U.S. DEPARTMENT OF AGRICULTURE
COOPERATING WITH



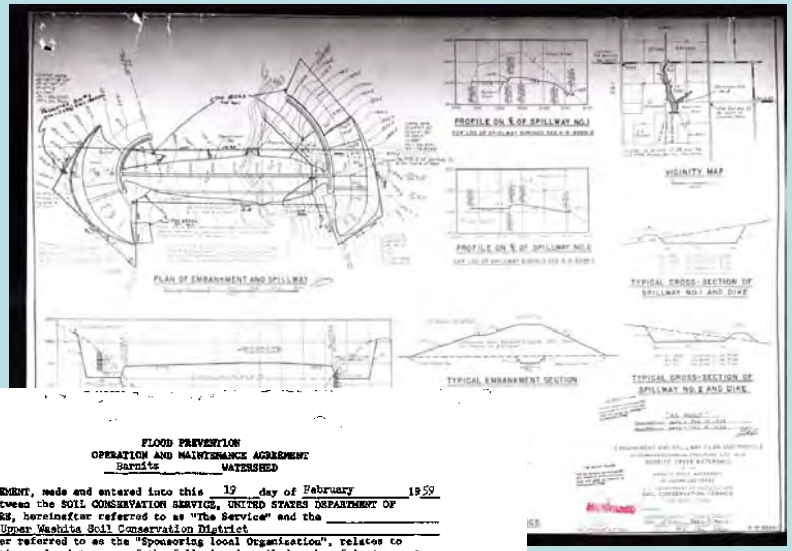
WATERSHED WORK PLAN

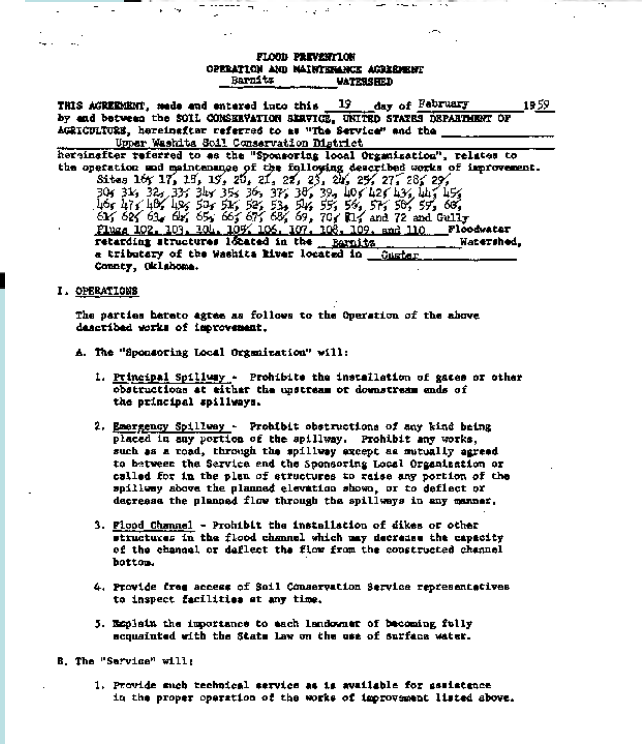
BIG WEWOKA CREEK WATERSHED

Pottawatomie, Seminole
And
Hughes Counties, Oklahoma

Prepared Under The Authority Of The
Watershed Protection And Flood Prevention Act
(Public Law 566, 83rd Congress, 68 Stat. 666)

August 1955





FLOOD PREVENTION
OPERATION AND MAINTENANCE AGREEMENT
Barnitz WATERSHED

THIS AGREEMENT, made and entered into this 19 day of February 1959 by and between the SOIL CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, hereinafter referred to as "The Service" and the Upper Washita Soil Conservation District hereinafter referred to as the "Sponsoring local Organization", relates to the operation and maintenance of the following described works of improvement.

Sites 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71 and 72 and Gully Plugs 102, 103, 104, 105, 106, 107, 108, 109, and 110 Floodwater retarding structures located in the Barnitz Watershed, a tributary of the Washita River located in Custer County, Oklahoma.

I. OPERATIONS

The parties hereto agree as follows to the Operation of the above described works of improvement.

A. The "Sponsoring Local Organization" will:

1. Principal Spillway - Prohibit the installation of gates or other obstructions at either the upstream or downstream ends of the principal spillways.

2. Emergency Spillway - Prohibit obstructions of any kind being placed in any portion of the spillway. Prohibit any works, such as a road, through the spillway except as mutually agreed to between the Service and the Sponsoring Local Organization or called for in the plan of structures to raise any portion of the spillway above the planned elevation shown, or to deflect or decrease the planned flow through the spillways in any manner.

3. Flood Channel - Prohibit the installation of dikes or other structures in the flood channel which may decrease the capacity of the channel or deflect the flow from the constructed channel bottom.

4. Provide free access of Soil Conservation Service representatives to inspect facilities at any time.

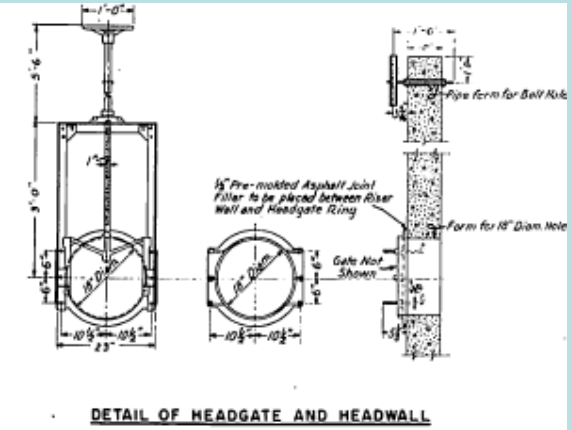
5. Explain the importance to each landowner of becoming fully acquainted with the State Law on the use of surface water.

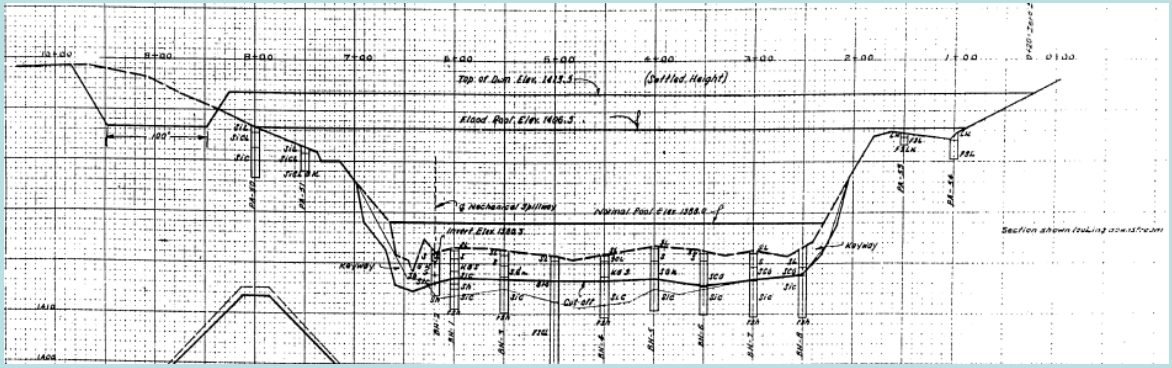
B. The "Service" will:

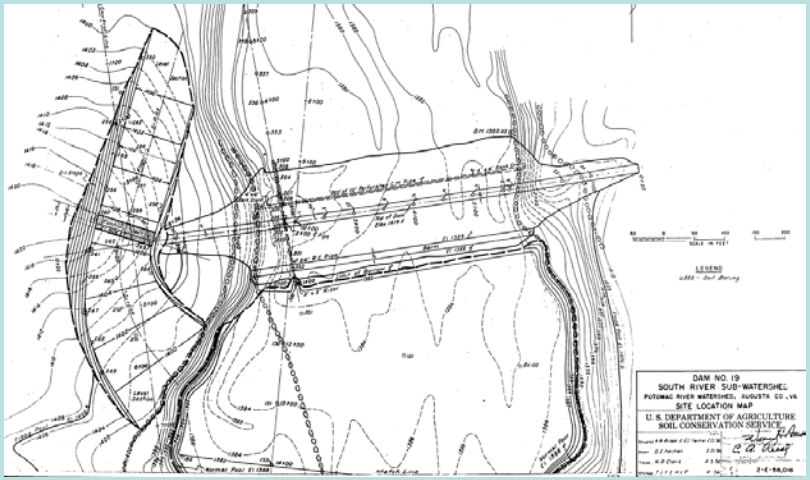
1. Provide such technical service as is available for assistance in the proper operation of the works of improvement listed above.

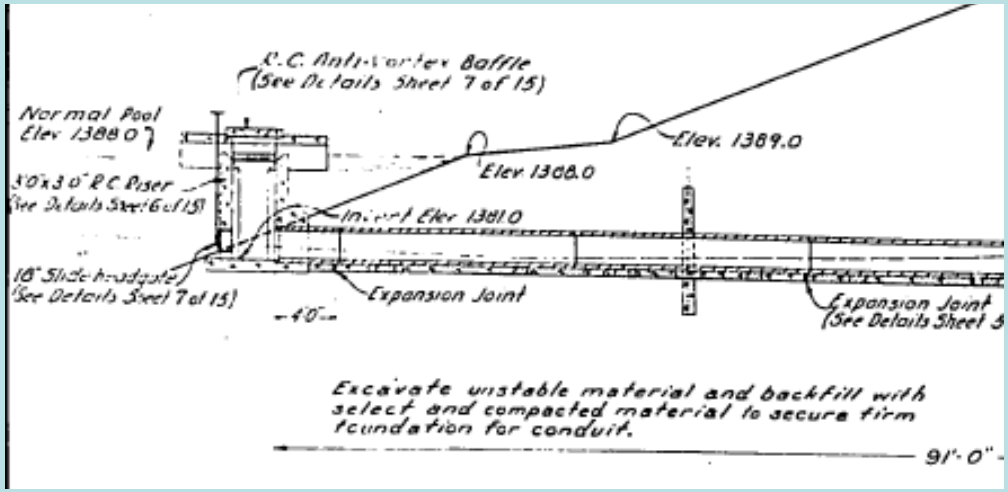
Many of the original design records and agreements are over 50 years old

As-builts contain valuable information



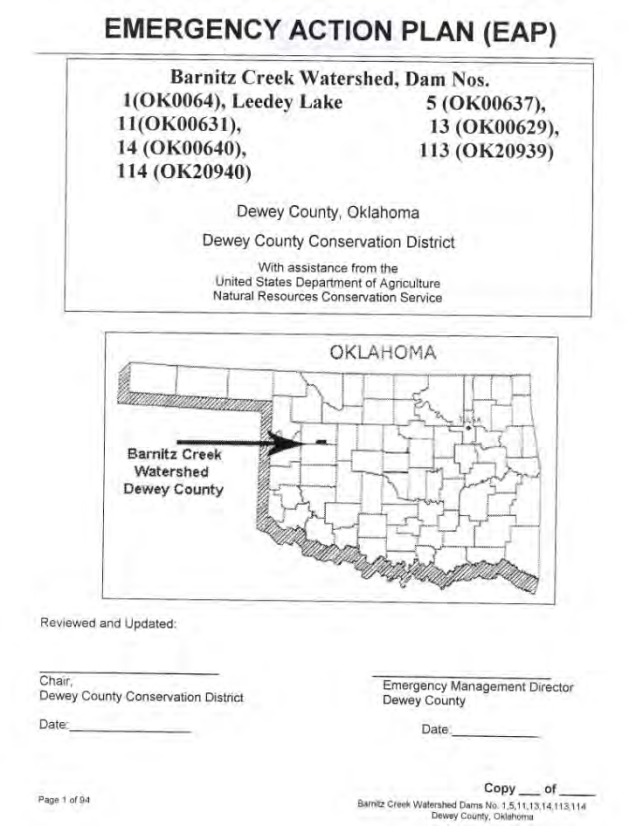






Some critical records are no longer available due to actions of employees (change of personnel, lack of training and inexperience)

The Facts……



EMERGENCY ACTION PLAN (EAP)

Barnitz Creek Watershed, Dam Nos.
1(OK0064), Leedey Lake
5 (OK00637),
11(OK00631),
13 (OK00629),
14 (OK00640),
113 (OK20939)
114 (OK20940)

Dewey County, Oklahoma

Dewey County Conservation District

With assistance from the
United States Department of Agriculture
Natural Resources Conservation Service

OKLAHOMA

Barnitz Creek
Watershed
Dewey County

Reviewed and Updated:

Chair,
Dewey County Conservation District

Date:

Emergency Management Director
Dewey County

Date:

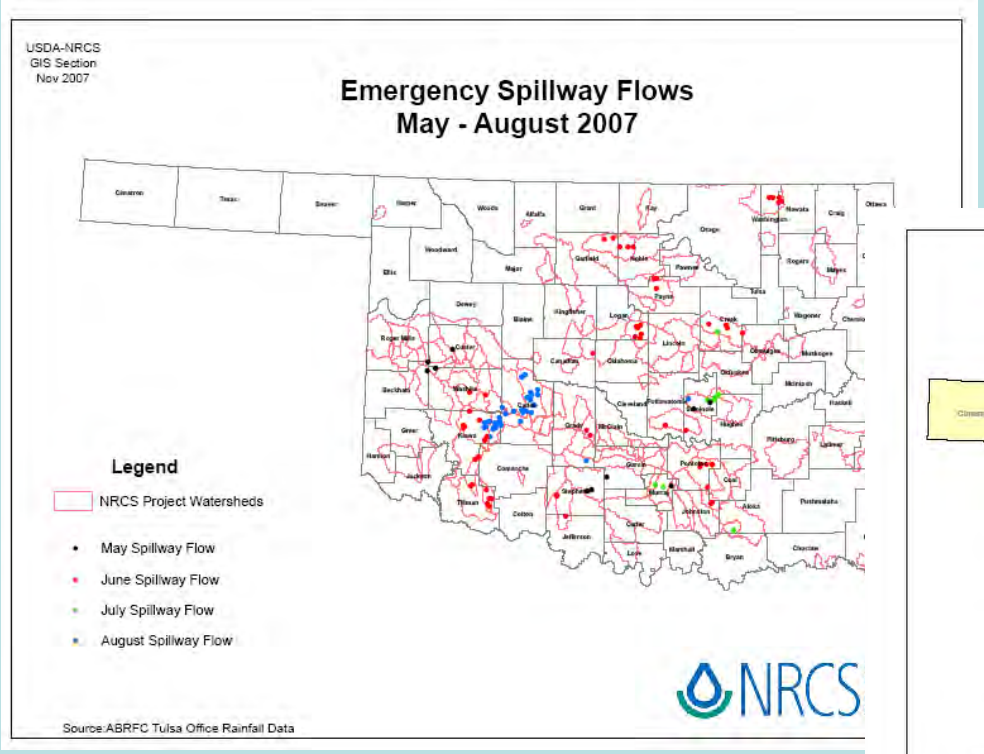
Page 1 of 94

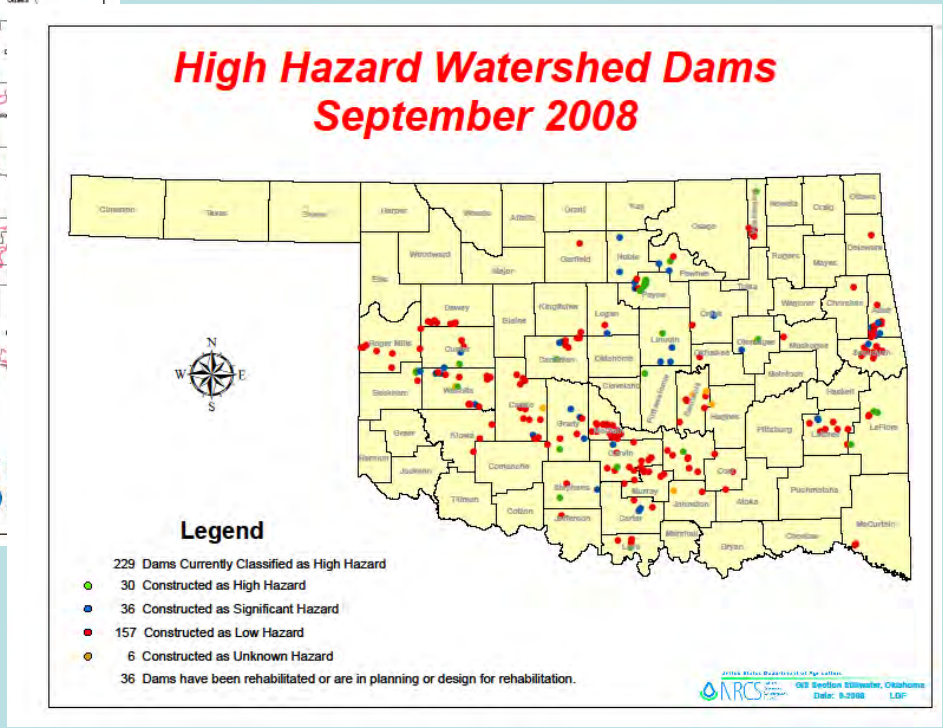
Copy ___ of ____

Barnitz Creek Watershed Dams No. 1,5,11,13,14,113,114
Dewey County, Oklahoma

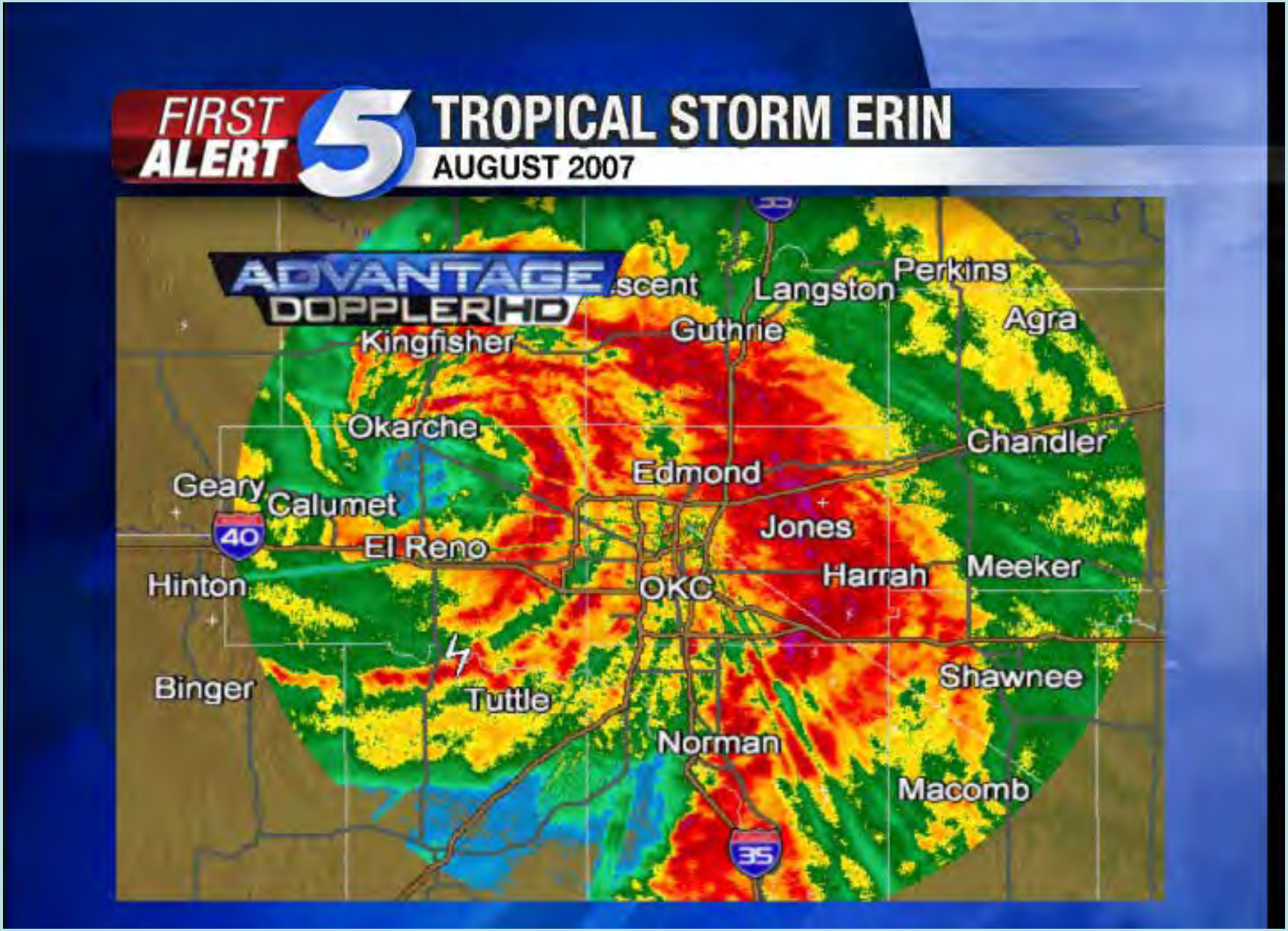
- Records (as-built drawings, EAPs, etc.) are critical during emergencies
- Assuring that everyone has the most current EAPs is difficult

The Facts……





When large storms hit, multiple number of dams are usually impacted


FIRST ALERT 5
TROPICAL STORM ERIN
AUGUST 2007
ADVANTAGE DOPPLER HD
scent
Langston
Perkins
Agra
Guthrie
Kingfisher
Okarche
Chandler
Edmond
Geary
Calumet
40
El Reno
Jones
Hinton
OKC
Harrah
Meeker
Binger
Tuttle
Shawnee
Norman
Macomb
35

FIRST ALERT 5

HEAVY RAIN EVENTS

OKLAHOMA SINCE 1934

April 1934: Hammon 24.00"
(In 24 Hours)

October 1942: Hallet 22.00"
(In 24 Hours)

1949: Kiowa County 13.00"
(In 6 Hours)

1959: Stillwater 12.00"
(In 6 Hours)

October 1973: Enid 15.60"
(2 Miles Away: Only 2.00")

Knowing which dams to check out first can be a problem

The challenge becomes identifying those that need immediate attention first

Traveling can be a problem in itself….
and even dangerous!

When people are at-risk, timing is critical

Getting prepared prior to storms occurring is important

“DamWatch”

- Proprietary software; web-based system
- Engineering Solutions Corporation
  Hartford, Connecticut
- Started as “BridgeWatch” to identify potential issues with bridge pier scour during storm events
- Converted to “DamWatch” with a trial of 130 dams in Connecticut

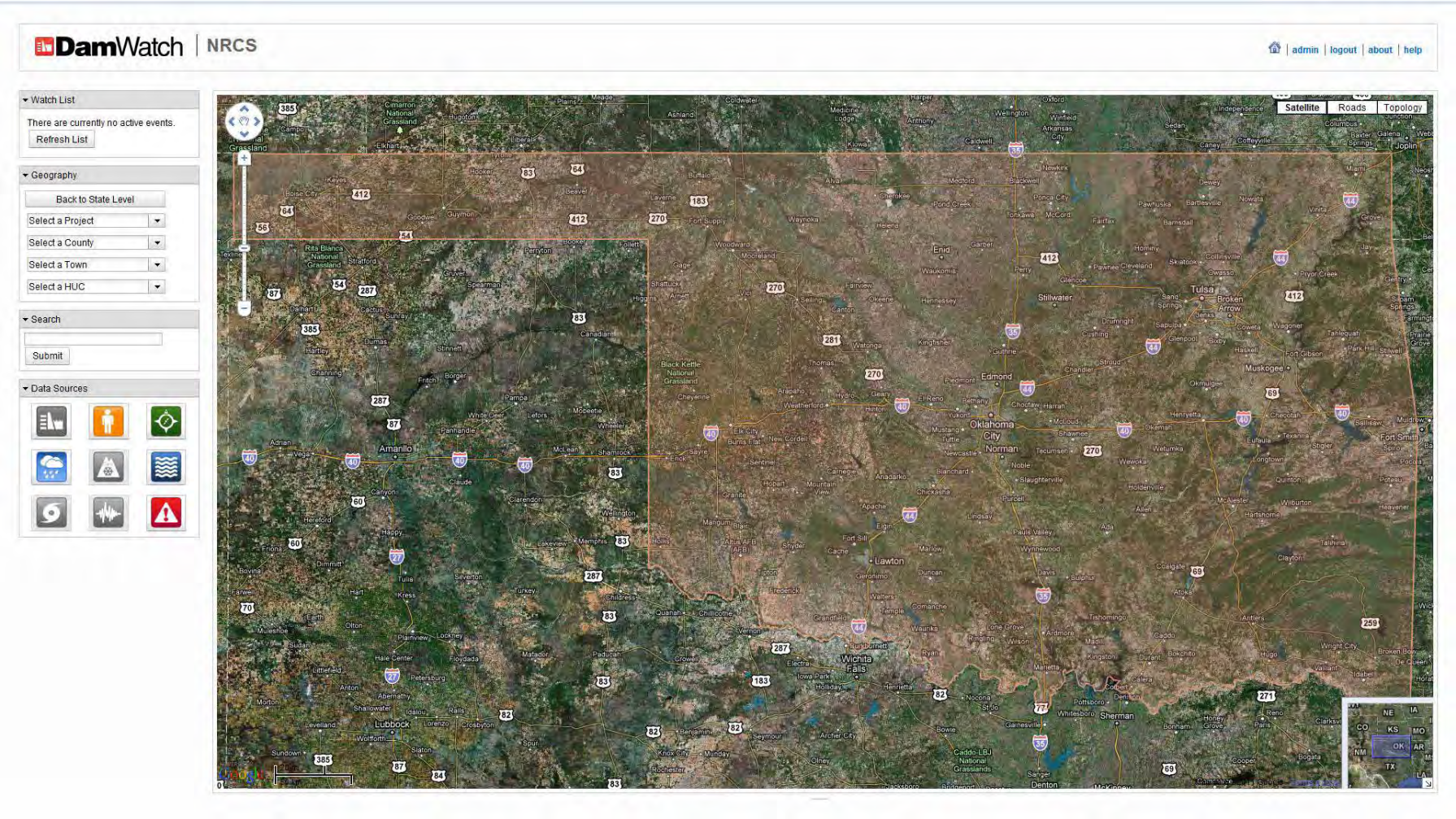
Oklahoma “DamWatch”

- National Pilot of using “DamWatch” for NRCS-assisted Watershed dams
- NRCS funded – special NHQ allocation
- Why Oklahoma?
  2,107 dams; lots of electronic data
- Contract signed in December 2010
- 2 year duration (developing screens, loading data, testing)

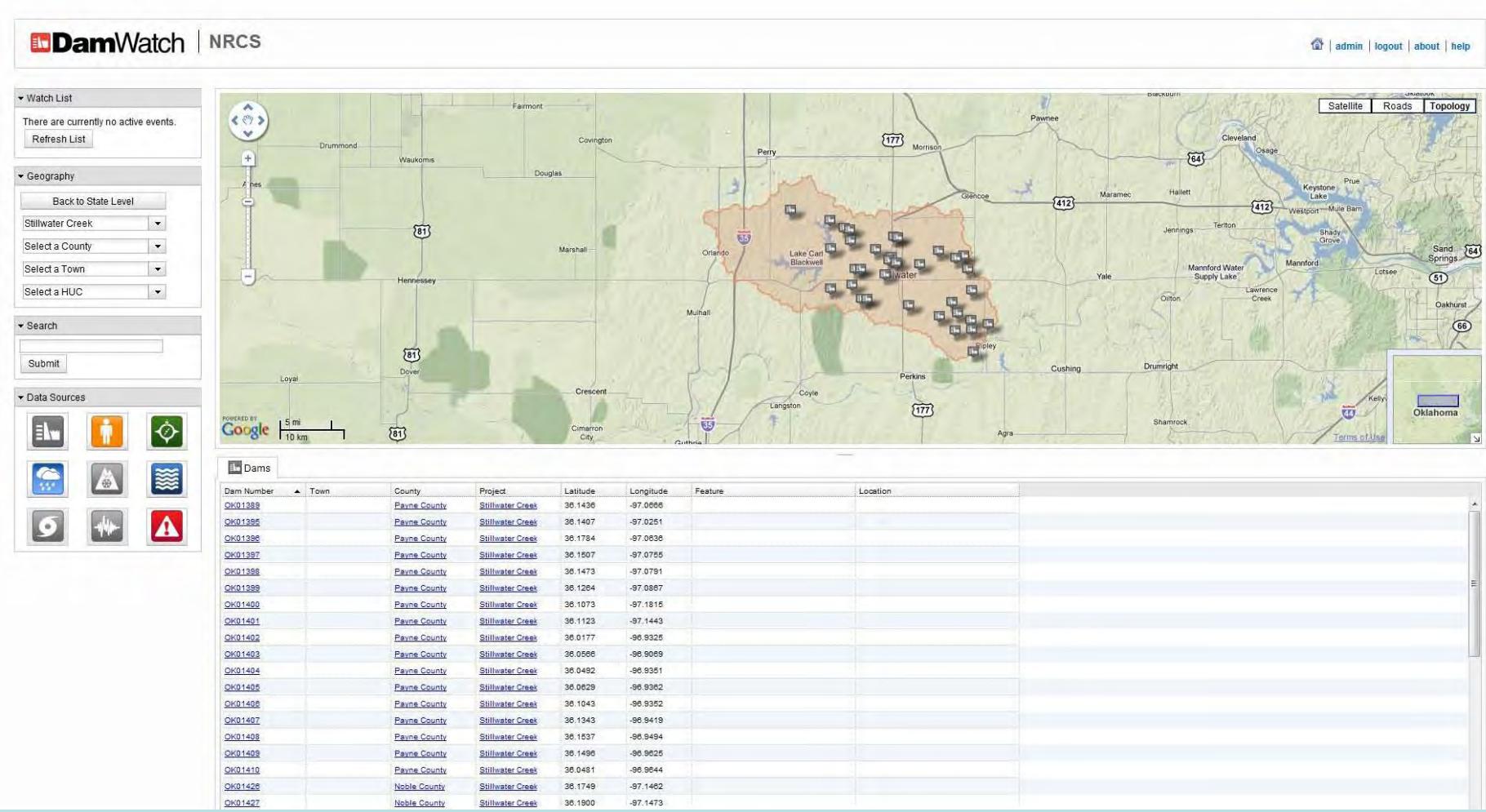
What does DamWatch do?

- Stores and retrieves data
- Tracks real-time precipitation events and sends “alerts” to predetermined people
- Maintains “tickets” of actions needed to be addressed

DamWatch Entry Screen

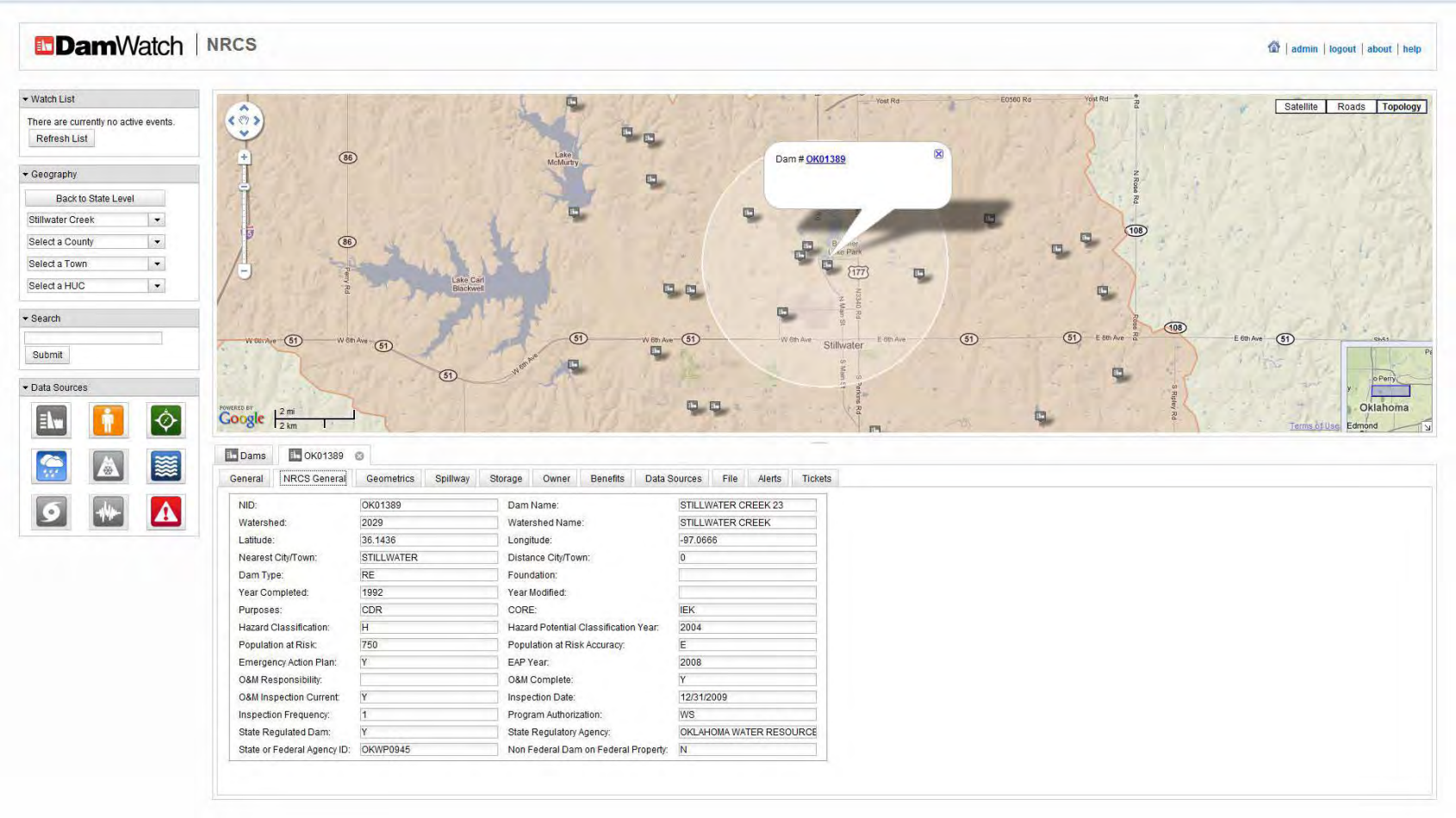


Watershed Project Screen



Dam Number	Town	County	Project	Latitude	Longitude	Feature	Location
OK01389		Payne County	Stillwater Creek	36.1436	-97.0666		
OK01395		Payne County	Stillwater Creek	36.1407	-97.0251		
OK01396		Payne County	Stillwater Creek	36.1784	-97.0636		
OK01397		Payne County	Stillwater Creek	36.1507	-97.0755		
OK01398		Payne County	Stillwater Creek	36.1473	-97.0791		
OK01399		Payne County	Stillwater Creek	36.1264	-97.0867		
OK01400		Payne County	Stillwater Creek	36.1073	-97.1815		
OK01401		Payne County	Stillwater Creek	36.1123	-97.1443		
OK01402		Payne County	Stillwater Creek	36.0177	-96.9325		
OK01403		Payne County	Stillwater Creek	36.0566	-96.9069		
OK01404		Payne County	Stillwater Creek	36.0492	-96.9351		
OK01405		Payne County	Stillwater Creek	36.0629	-96.9362		
OK01406		Payne County	Stillwater Creek	36.1043	-96.9352		
OK01407		Payne County	Stillwater Creek	36.1343	-96.9419		
OK01408		Payne County	Stillwater Creek	36.1537	-96.9494		
OK01409		Payne County	Stillwater Creek	36.1496	-96.9625		
OK01410		Payne County	Stillwater Creek	36.0481	-96.9644		
OK01426		Noble County	Stillwater Creek	36.1749	-97.1462		
OK01427		Noble County	Stillwater Creek	36.1900	-97.1473		

Dam Info


DamWatch | NRCS
admin | logout | about | help
Watch List
There are currently no active events.
Refresh List
Geography
Back to State Level
Stillwater Creek
Select a County
Select a Town
Select a HUC
Search
Submit
Data Sources
Satellite
Roads
Topology
Dam # OK01389
Lake McMurtry
Lake Carl Blackwell
Stillwater
Oklahoma
Edmond
Dams
OK01389
General
NRCS General
Geometrics
Spillway
Storage
Owner
Benefits
Data Sources
File
Alerts
Tickets
NID: OK01389
Dam Name: STILLWATER CREEK 23
Watershed: 2029
Watershed Name: STILLWATER CREEK
Latitude: 36.1436
Longitude: -97.0666
Nearest City/Town: STILLWATER
Distance City/Town: 0
Dam Type: RE
Foundation:
Year Completed: 1992
Year Modified:
Purposes: CDR
CORE: IEK
Hazard Classification: H
Hazard Potential Classification Year: 2004
Population at Risk: 750
Population at Risk Accuracy: E
Emergency Action Plan: Y
EAP Year: 2008
O&M Responsibility:
O&M Complete: Y
O&M Inspection Current: Y
Inspection Date: 12/31/2009
Inspection Frequency: 1
Program Authorization: WS
State Regulated Dam: Y
State Regulatory Agency: OKLAHOMA WATER RESOURCE
State or Federal Agency ID: OKWP0945
Non Federal Dam on Federal Property: N

1. Store and Retrieve Data

- 30,000 files of data are being loaded
- As-builts
- O&M agreements
- National Inventory of Dams (NID) data
- Inspection reports (PDM-3s)
- Watershed maps
- Watershed workplans
- Emergency Action Plans (EAPs)
- Photos / videos

1. Store and Retrieve Data

Data can be down-loaded and up-loaded remotely (on-site) with use of computer tablets so others can see what is occurring during events

- As-builts (add notes)
- Inspection reports
- Photos
- Videos

Navigate web-page thru use of aerial based Google Maps

State of Oklahoma map

Options:

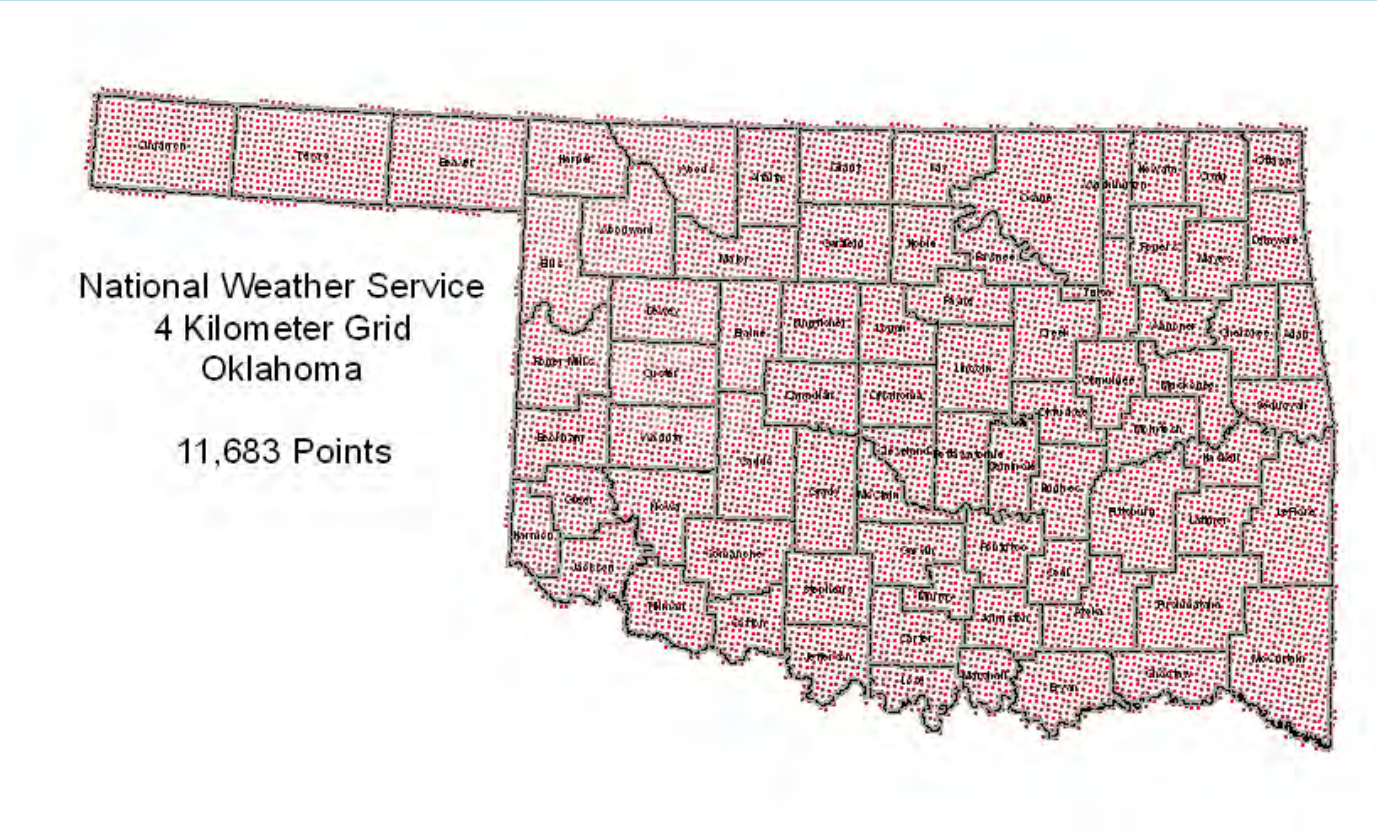
- Watershed project
- County
- Congressional district
- Specific dam

2. Track real-time precipitation events and sends “alerts” to predetermined people

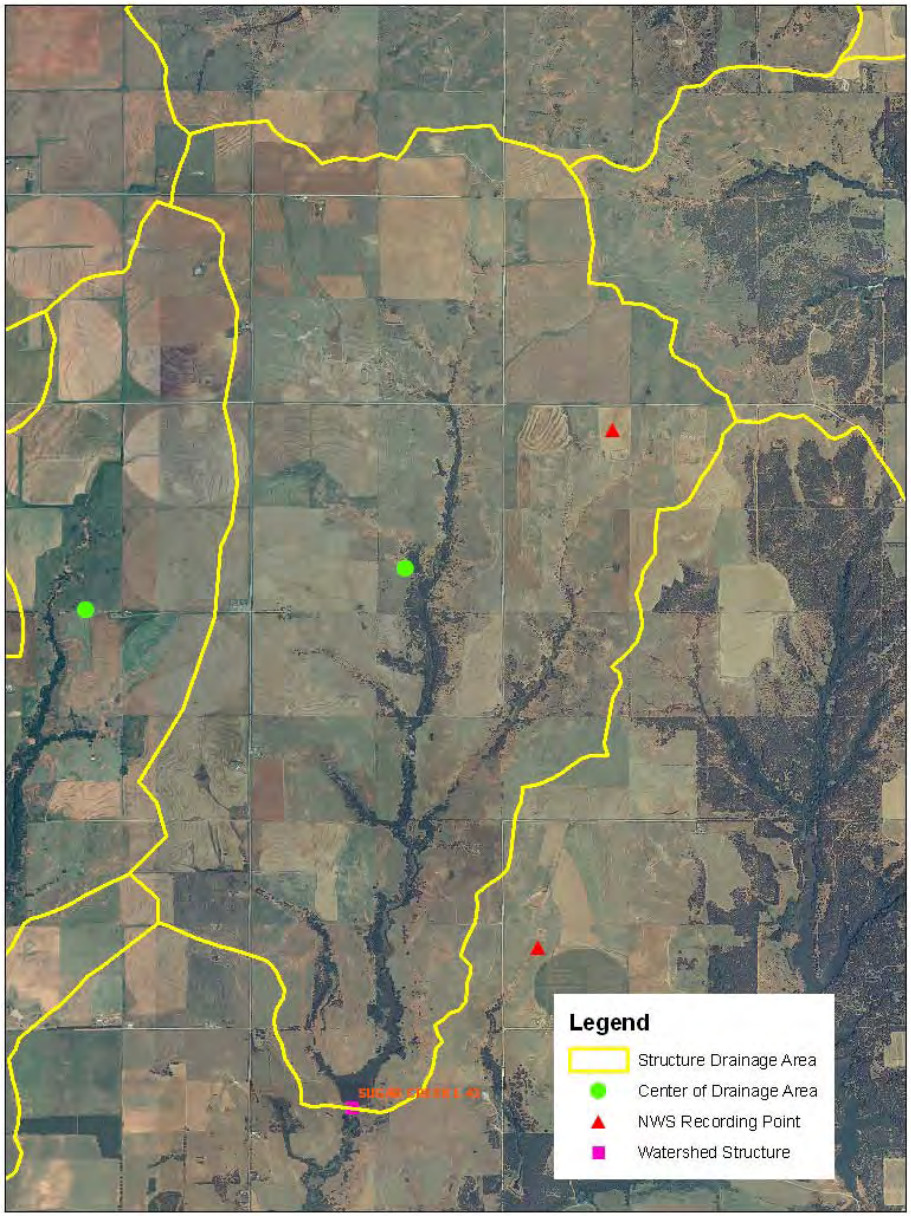
Always connected to real-time precipitation monitoring thru:

- National Weather Service
- NOAA
- USGS

National Weather Service 4 kilometer grid for Oklahoma



The rainfall data from the NWS 4 km grid is spatially joined with the center point of the watershed structure drainage area giving each point a 4km. grid identifier



2. Track real-time precipitation events and sends “alerts” to predetermined people

When it is determined that the precipitation over the drainage area of a specific dam exceeds a predetermined threshold value, an email “alert” is sent to predetermined people

- Conservation district
- NRCS
- OCC

2. Track real-time precipitation events and sends “alerts” to predetermined people

“Alerts” can be prioritized;

examples:

- High-hazard dams
- Precipitation amounts
- “Problem” dams

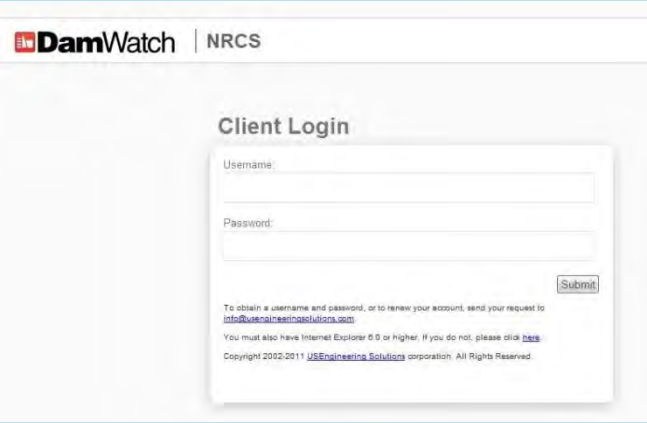
3. Maintains “tickets” of actions that need to be addressed

Types of “tickets”

- Information: notes on specific dams
- Monitoring: stays active until needed action is addressed
- Inspection: periodic inspections
- Maintenance: specific actions needed
- Emergency: near breach situation

Who can access “DamWatch”?

- Anyone with access permission
- 220 users – maximum
- Password protected
- Intended users
  - Conservation district staff
  - OCC staff
  - NRCS staff (field office, state office , NHQ)
  - Local emergency managers



Would you like to see a demo of Oklahoma “DamWatch”?

Come to the

National Watershed Coalition Conference

Oklahoma City

May 15 – 18, 2011

OKLAHOMA CONSERVATION COMMISSION

NRCS

Natural Resources Conservation Service

This publication is issued by the Oklahoma Conservation Commission as authorized by Mike Thralls, executive director. Copies have not been printed but are available through the agency website, http://www.conservation.ok.gov.