



Overview:

DamWatch® is a real-time, web-based, dam and levee monitoring software application developed by UEngineering Solutions Corporation to afford dam and levee owners early warning of hazards to their dam and levee infrastructure. DamWatch collects real-time data from sources such as the NWS, NOAA, NRCS, and USGS to compare against client-specified thresholds and will send alert notifications if any thresholds are exceeded. Alert notifications are distributed immediately via electronic mediums (email, sms, fax, etc.) and clients can login to DamWatch for a command-and-control view of their data, infrastructure, geography, and alert specifics to respond according to their Emergency Action Plans (EAPs) or Emergency Operations Plans (EOPs).

Interface:

DamWatch offers an intuitive interface for users to view and interact with information. The interface consists of:

- 1) **Watch List:** The Watch List displays structures experiencing alert conditions. Users can select structures from the list to view alert details.
- 2) **Geography Filter:** Users can interact with the Geo-Spatial Display to view general areas and structures in each area utilizing the series of drop-down menus.
- 3) **Search Tool:** The Search Tool enables users to query for structures, gages, or user profiles.
- 4) **Data Sources:** The Data Sources buttons enable users to select information about structures, users, and official real-time meteorological, hydrologic, and seismologic sources.
- 5) **Informational Display:** The Informational Display is used to publish detailed information about individual structures, profiles, or gages. Detailed information is displayed in a tabular format for ease of user interaction.
- 6) **Geo-Spatial Display:** The Geo-Spatial Display allows users to interact with static geographic boundaries such as towns, counties, political boundaries, watersheds, basins-of-influence, inundation zones, or any other user defined areas. Dynamic data sets such as real-time meteorological, seismologic or hydrologic overlays can also be displayed.
- 7) **Admin Interface:** Users who have administrative privileges are able to access the system's Admin Interface. This interface is partitioned into three categories: Management, Notification, and Simulation. Within each respective category, users can manage profiles, create reports, and access archived data. Users can also simulate training alerts and broadcast real-time messages to others.

Interface:

The screenshot displays the DamWatch NRCS web interface. At the top, the logo 'DamWatch | NRCS' is visible on the left, and navigation links 'admin | logout | help | dispatch status: ON' are on the right. A red circle '7' is placed above the navigation links. On the left side, there are four numbered sections: '1 - Watch List' (containing a 'Refresh List' button), '2 - Geography' (with dropdowns for 'Select a Project', 'Select a County', and 'Select a HUC'), '3 - Search' (with a search input and 'Submit' button), and '4 - Data Sources' (with various icons). A red circle '6' is placed above the map. The main area features a satellite map of Oklahoma with a red circle '5' highlighting a specific dam location. Below the map is a table titled 'Dams' with the following data:

NID	Dam Name	County	Project	Latitude	Longitude
OK00001	TIMBER CREEK 1	Beckham County	Timber Creek	35.3345	-99.5537
OK00002	TIMBER CREEK 2	Beckham County	Timber Creek	35.3450	-99.5536
OK00011	UPPER ELK CREEK 28	Beckham County	Upper Elk Creek	35.2845	-99.4279
OK00015	SANDSTONE CREEK 3	Roger Mills County	Sandstone Creek	35.5093	-99.5130
OK00016	TIMBER CREEK 3	Beckham County	Timber Creek	35.3689	-99.5775
OK00017	TIMBER CREEK 4	Beckham County	Timber Creek	35.3940	-99.6001
OK00018	TIMBER CREEK 5	Beckham County	Timber Creek	35.4092	-99.5809
OK00019	TIMBER CREEK 6	Beckham County	Timber Creek	35.4112	-99.5989
OK00020	TIMBER CREEK 7	Beckham County	Timber Creek	35.3689	-99.6146
OK00021	UPPER ELK CREEK 32	Beckham County	Upper Elk Creek	35.1726	-99.3694
OK00023	SANDSTONE CREEK 10	Beckham County	Sandstone Creek	35.4644	-99.5473
OK00024	SANDSTONE CREEK 10A	Beckham County	Sandstone Creek	35.4665	-99.5557
OK00025	BIG KIOWA CREEK 3	Beckham County	Big Kiowa Creek	35.5058	-99.4474
OK00026	WHITESHIELD CREEK 10	Beckham County	Whiteshields Creek	35.4933	-99.3940

Data Tabs:

Data becomes visible through a series of detail screens in tabular format once a user selects a structure via the Geo-Spatial Display, Geography Filter, Search Tool, Structures, or Navigation Data Source buttons. Options will also appear to allow for zooming to a structure, displaying inundation areas, and potential damage locations (PDLs).

A structure detail screen consists of a series of tabs. Below is an example of a structure detail screen with eight tabs highlighted (General, Design, Sponsors, PDLs, Data Sources, File, Alerts and Tickets) to display database information for each.

Data Tabs:

DamWatch | NRCS admin | logout | help | dispatch status: ON

Watch List

There are currently no active events.
[Refresh List](#)

Geography

[Back to State Level](#)

Select a Project

Select a County

Select a HUC

Search

[Submit](#)

Data Sources

Dams | OK01429 - STILLWATER CREEK 40

General | Design | Sponsors | PDLs | Data Sources | File | Alerts | Tickets

[Edit Details](#) | [Zoom To Structure](#)

Display Inundation Area

Display PDLs

Dam Name:	STILLWATER CREEK 40	NID:	OK01429
Other Dam Name:	LAKE MC MURTRY	Watershed Name:	STILLWATER CREEK
Watershed Project Code:	2029	Program Authorization:	WS
Latitude:	36.16	Longitude:	-97.18
Nearest City/Town:	STILLWATER	Distance City/Town (mi):	7
County:	Noble County	River or Stream:	NORTH STILLWATER CREEK
Year Completed:	1971	Year Modified:	
Planned Service Life (yrs):	50	Purposes:	CSRD
Hazard Classification (current):	H	Hazard Potential Classification Year:	2004
Hazard Classification (design):	S	Population at Risk (no. of people):	1406
Emergency Action Plan:	Y	EAP Year:	2008

General Tab:

Dams | OK01429 - STILLWATER CREEK 40

General | Design | Sponsors | PDLs | Data Sources | File | Alerts | Tickets

[Edit Details](#) | [Zoom To Structure](#)

Display Inundation Area

Display PDLs

Dam Name:	STILLWATER CREEK 40	NID:	OK01429
Other Dam Name:	LAKE MC MURTRY	Watershed Name:	STILLWATER CREEK
Watershed Project Code:	2029	Program Authorization:	WS
Latitude:	36.16	Longitude:	-97.18
Nearest City/Town:	STILLWATER	Distance City/Town (mi):	7
County:	Noble County	River or Stream:	NORTH STILLWATER CREEK
Year Completed:	1971	Year Modified:	
Planned Service Life (yrs):	50	Purposes:	CSRD
Hazard Classification (current):	H	Hazard Potential Classification Year:	2004
Hazard Classification (design):	S	Population at Risk (no. of people):	1406
Emergency Action Plan:	Y	EAP Year:	2008
O&M Responsibility:			
State Regulatory Agency:	OKLAHOMA WATER RESOURCE		
State or Federal Agency ID:	OKWP0582	Section, Township, Range Location:	834 T20N R01E1M

Sponsors Tab:

Dams | OK01429 - STILLWATER CREEK 40

General | Design | Sponsors | PDLs | Data Sources | File | Alerts | Tickets

No filter applied

Name	Phone	E-mail	Fax	Address	City	State	Zip	Last Modified
Conservation District No. 16	405-372-7071	PayneCCD@conservation.ok.gov	405-372-7268	2600 S. Main, Suite C	Stillwater	OK	74241	Sun May 15 23:02:49 CDT 2011

Design Tab:

Dams | OK01429 - STILLWATER CREEK 40

General | Design | Sponsors | PDLs | Data Sources | File | Alerts | Tickets

Dam Name:	STILLWATER CREEK 40	NID:	OK01429
Watershed Name:	STILLWATER CREEK	Other Dam Name:	LAKE MC MURTRY
Dam Height (ft):	64	Dam Length (ft):	1550
Sediment Storage (ac-ft):	410	Principal Spillway Type:	
Flood Storage (ac-ft):	4993	Crest/Hill Height (ft):	3.5
Other Storage (ac-ft):	10530	Conduit Width (ft):	0
Surcharge Storage (ac-ft):	6746	Maximum Discharge (cfs):	11200
Maximum Storage (ac-ft):	30678	Secondary Spillway Type:	NO
Surface Area (ac):	1165	Spillway Width (ft):	280
Drainage Area (sq. mi.):	15.2		

PDLs Tab:

Dams | OK01429 - STILLWATER CREEK 40

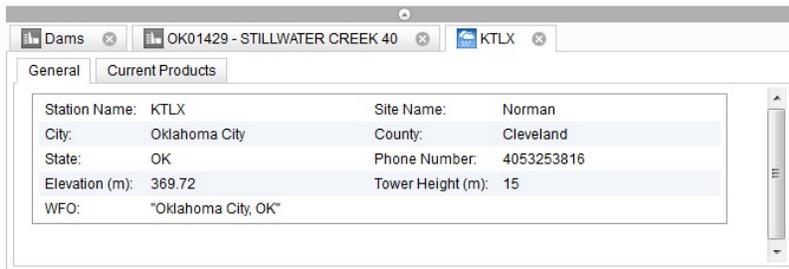
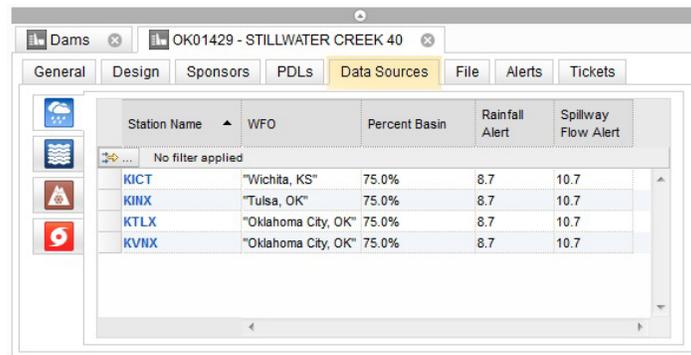
General | Design | Sponsors | PDLs | Data Sources | File | Alerts | Tickets

No filter applied

PDL Id	Type	Status	Time To Peak	Ground Elevation	Max Water Elevation	Water Depth	Notes
STW0070	Mobile Home	Occupied	8hrs 3mins	862.46	873.29	10.83	Mobile Home
STW0214	Commercial	In Use	hr 20mins	902.99	906.15	3.16	Tree nursery building
STW0064	House	Occupied	8hrs 3mins	866.32	873.25	6.94	Frame house with white wood siding
STW0030	Apartment	Occupied	3hrs 52mins	879.05	885.78	6.73	Squires Landing Apartment Complex - 18 structures
STW0058	House	Occupied	7hrs 34mins	867.47	874.27	6.8	Group of 65 typical homes
STW0026	Commercial	In Use	4hrs 9mins	862.44	864.51	2.07	Barry Sanders Auto Dealership
STW0055	Church	In Use	7hrs 21mins	870.53	874.53	4	Countryside Baptist Church
STW0065	House	Occupied	8hrs 3mins	864.69	873.25	8.57	Spanish style flat roof house
STW0053	House	Occupied	7hrs 21mins	869.31	874.53	5.22	Older flat roof home
STW0028	House	Occupied	2hrs 10mins	906.6	906.65	0.04	Older frame cedar shingle siding gray asphalt roof
STW0073	Mobile Home	Occupied	8hrs 8mins	865.59	870.54	1.94	Trailer Park group of 14 trailers
STW0218	House	Occupied	hr 21mins	903.15	905.59	2.44	Wood frame home Access denied for picture
STW0031	Commercial	In Use	3hrs 53mins	862.91	865.71	2.8	Frontier Engineering Office Complex
STW0068	House	Occupied	hr 17mins	891.17	897.29	16.11	Older gray masonry siding home
STW0071	Commercial	In Use	8hrs 4mins	871.53	873.17	1.64	Animal Welfare Center
STW0068	Church	In Use	7hrs 58mins	865.91	873.47	7.56	Church at intersection of S Heaster St. and 11th Ave
STW0054	House	Occupied	7hrs 12mins	861.67	874.67	12.61	2 story masonry siding dark tan shad style roof home
STW0049	House	Occupied	5hrs 8mins	876.29	877.83	1.54	Newer light gray siding with dark gray roof

The “Data Sources” tab allows the user to display USGS gages, SNOTEL gages and NOAA/NWS NEXRAD stations that are associated with the selected structure. Users can access sub-tabs and select data sources to obtain real-time information and thresholds related to that structure. For example, once a NEXRAD station is selected, users can view general information about the station and overlay one of the three precipitation products on to the Geo-Spatial Display.

Data Sources Tab:



Tabs also delineate locations where documents, alerts, tickets, and even navigational information can be viewed, stored, and updated. Users can select the “File” tab to access sub-tabs containing Images, Inspection Reports, Emergency Operation/Action Plans (EOP/EAPs), Operation and Maintenance Manuals (OMMs), Site Plans, and any other supported files. Each document can be viewed within the informational display area by clicking on the "Show" button.

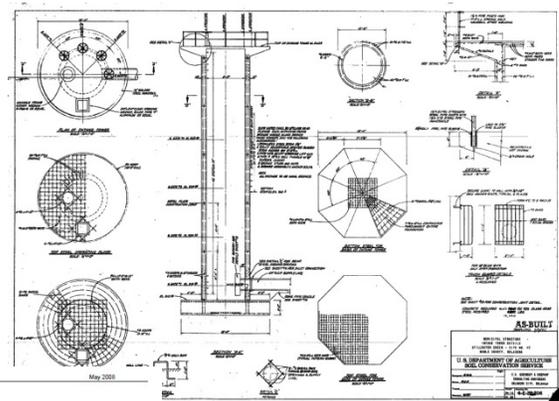
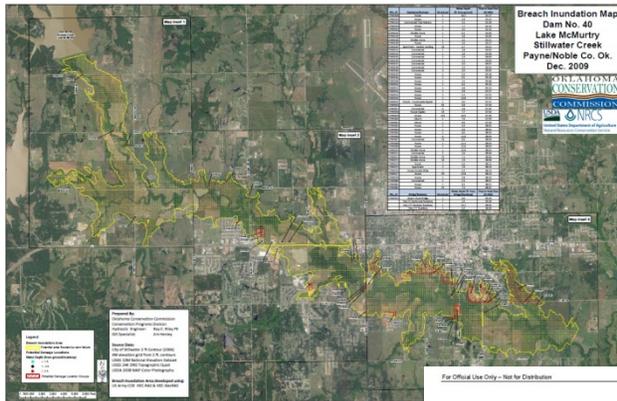
File Tab:

Dams OK01429 - STILLWATER CREEK 40

General Design Sponsors PDLs Data Sources **File** Alerts Tickets

Upload File

Name	Type	Creator	Description	Show	Delete
No filter applied					
AP2029_D40M.pdf	Document	jmirkin	Agreements	Show	Delete File
STW-040 Dam Inspection Documentation.xls	Document	jmirkin	Inspections	Show	Delete File
STW-40-Location Map.pdf	Document	jmirkin	Map	Show	Delete File
STW-40-Breach Inundation Map-Aerial.pdf	Document	jmirkin	Maps	Show	Delete File
STW-40-Breach Inundation Map-Aerial-Panel 1.pdf	Document	jmirkin	Maps	Show	Delete File
STW-40-Breach Inundation Map-Aerial-Panel 2.pdf	Document	jmirkin	Maps	Show	Delete File

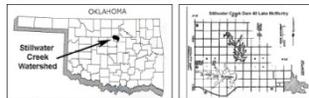


Emergency Action Plan (EAP)

STILLWATER CREEK WATERSHED
 Dam No. 40
 Lake McMurtry
 NID No. OK01429

Noble County, Oklahoma

Noble County Conservation District
 Stillwater Creek Conservancy District
 Payne County Conservation District
 With assistance from the
 U.S. Department of Agriculture
 Natural Resources Conservation Service



Chair, Noble County Conservation District _____ Date _____

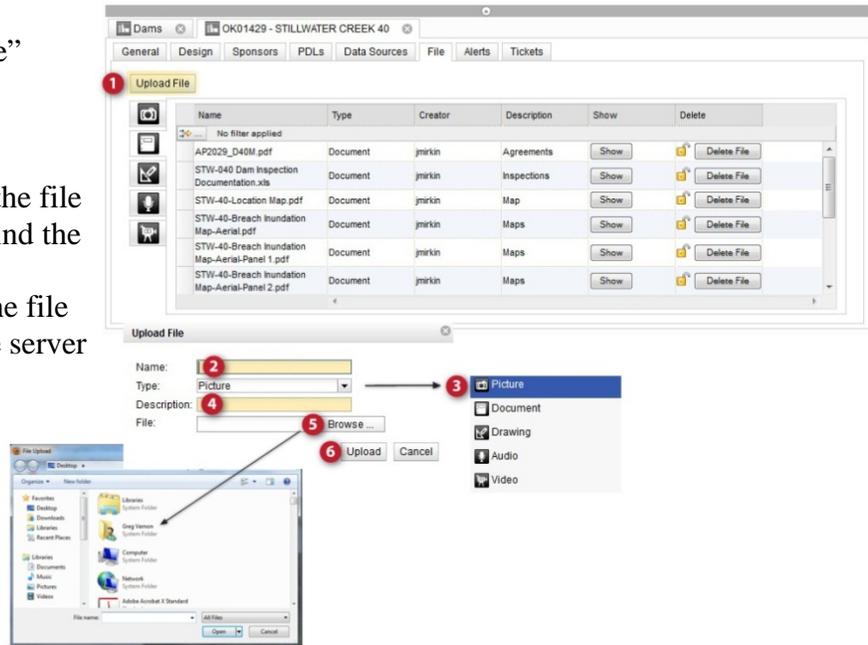
Noble County Emergency Management Director _____ Date _____

Payne County Emergency Management Director _____ Date _____

Copy ___ of ___

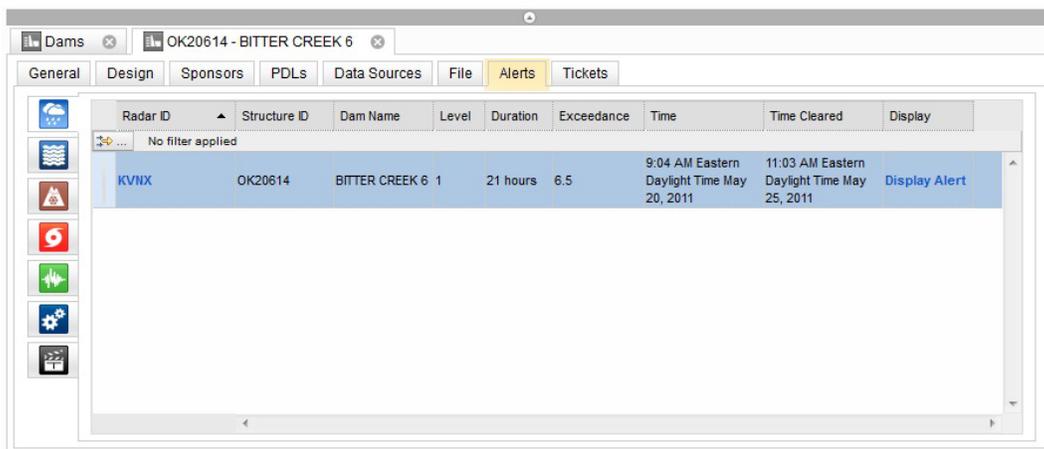
To add files to data tabs:

- 1) Select the “Upload File” button
- 2) Name the file
- 3) Select “Type”
- 4) Give a Description of the file
- 5) Select “Browse” and find the file to upload
- 6) Select “Upload” and the file will be uploaded to the server



Alerts are documented and stored in the “Alert” tab when an alert is triggered. Users can view alert history for radar, gages, devices, and simulations by accessing the “Alert” tab. Users can also overlay radar alerts on the Geo-Spatial Display. An active alert will be represented in the Geo-Spatial Display with a red dam icon.

Alerts Tab:



DamWatch | NRCS admin | logout | help | dispatch status: ON

Watch List

There are currently no active events.
[Refresh List](#)

Geography

[Back to State Level](#)

Select a Project:

Select a County:

Select a HUC:

Search

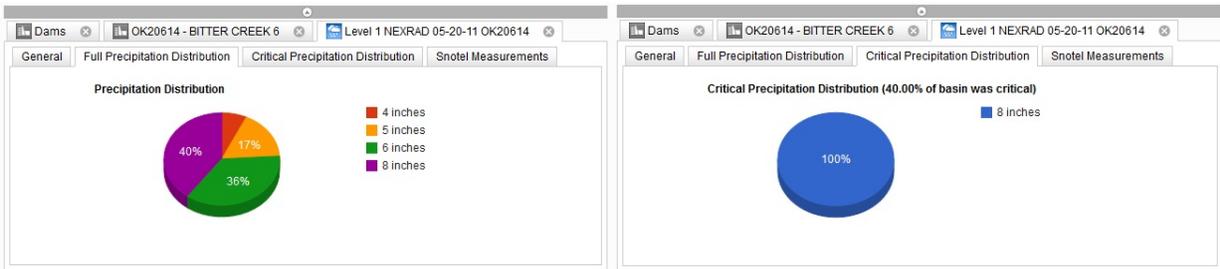
Data Sources

-
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OK20614 - BITTER CREEK 6 | **Level 1 NEXRAD 05-20-11 OK20614**

General | Full Precipitation Distribution | Critical Precipitation Distribution | Snotel Measurements

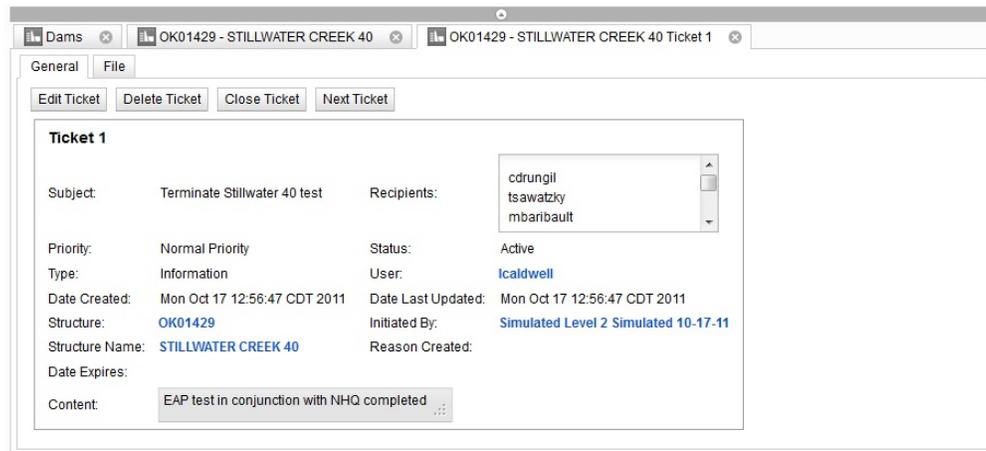
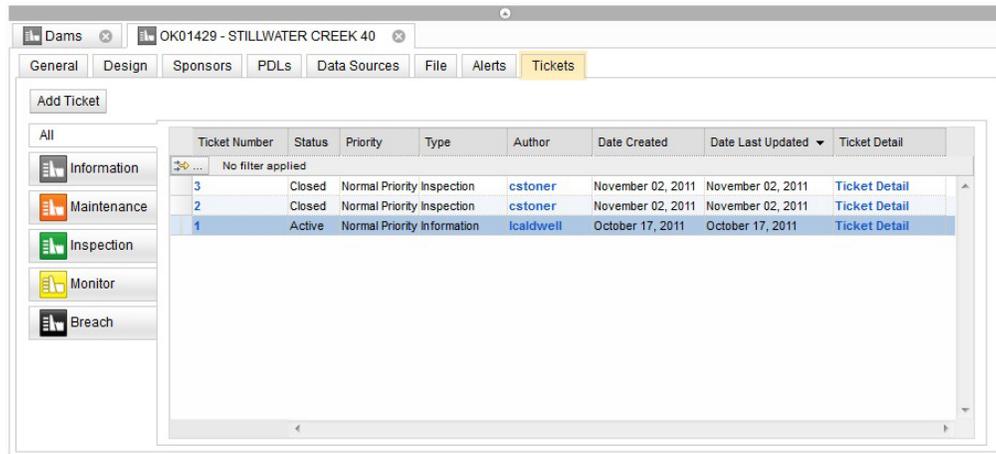
Event:	1	Structure:	OK20614
NEXRAD Station:	KVNK	SNOTEL Gage:	
Value:	8.0	Status:	Finished
Duration:	Twenty Four Hour		
Time Caused:	Fri May 20 2011 09:04:34 GMT-04		
Time Cleared:	Wed May 25 2011 11:03:06 GMT-		
NEXRAD Product:	Display	SNOTEL Contribution:	0.0



The “Tickets” tab allows users to document the condition and status of structures. Users initiate tickets by choosing one of five types: Information, Maintenance, Inspection, Monitor, or Breach. Once the type of ticket has been selected, the user fills out the ticket, adds an attachment, and can even select other users to whom the ticket will be distributed. Once submitted, the ticket is considered to be open and will be represented on the map with a color-coded status to enable users to quickly identify the progression to their Emergency Operations Plan (EOP/EAP). A ticket will remain open until the author of the ticket or an administrator closes it.

- Information
- Maintenance
- Inspection
- Monitor
- Breach

Ticket Tabs:



Data Sources:

The Data Sources window has ten selectable buttons with logical icons representing their respective data source. Users can choose the respective data-source layer to overlay on the Geo-Spatial Display by selecting the corresponding button.



The **Structure** button allows the user to view all of the structures and query a dam by primary identification number, county, and project.



The **User** button enables users to display a list of other users and their contact information. By clicking on a username hyperlink, the profile belonging to that username appears with the username, assigned area, contacts and subscriptions. Users have the ability to edit their individual profile through the interface.



The **Navigation** button provides users with an easy way to navigate between sites and addresses. The display allows users to select their starting point, destination, and whether they want to view the directions within the system, on Google Maps or Bing Maps. Once “Get Directions” is selected the directions will be generated.



The **NEXRAD** button enables users to perform a real-time meteorological review. Users can select local NWS radar sites and one of the three precipitation products to overlay. These products are the one hour, three hour, and storm total accumulated precipitation estimates.



Users can perform a real-time hydrologic review using USGS streamflow data. When the **USGS** button is selected, users are able to view gages and structures within hydrologic units or query gage sites for the current discharge and height measurements.



The **NWS Warnings** button enables users to view active system-aggregated NWS projects such as Flash Flood (FFW) and Flood Warnings (FLW).



The **SLOSH** button allows users to overlay NOAA storm surge data over coastlines. Probabilistic storm surge for impending tropical systems can also be displayed.



The **Seismic** button enables users to view seismic data from USGS and visualize energy propagation within the Geo-Spatial Display.



NRCS snow data is available when users select the **SNOTEL** button. Users can interact and query SNOTEL sites to review precipitation, accumulated precipitation, snow-to-water equivalency, and temperature.



The **Devices** button enables users to view monitoring instruments that are specific to the client.



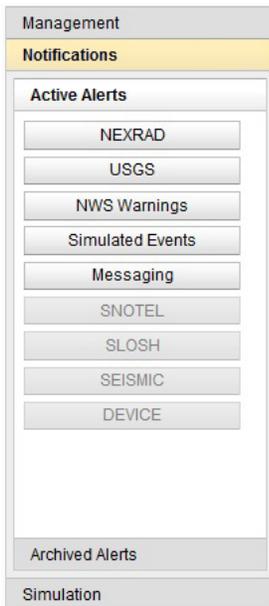
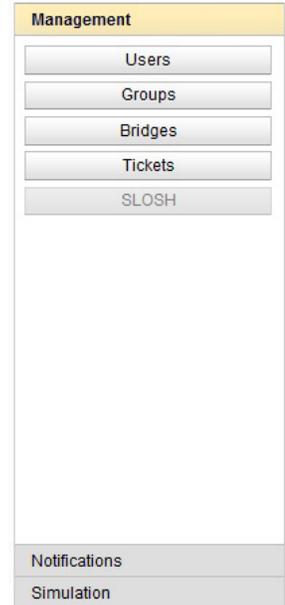
The **Projects** button enables users to view NRCS watershed projects and their benefits, sponsors and structures.

Admin Interface:

Users with administrative privileges are able to utilize advanced features for managing and querying data through the Admin Interface. This interface is partitioned into three categories: Management, Notification, and Simulation. Within each respective category, users can manage profiles, create reports, and access archived data. Users can also simulate training alerts and broadcast real-time messages to others.

Management:

Management provides administrators with the capability to add new users, edit existing profiles, or delete individuals. Administrators can use this feature to easily update contact information and alerts subscriptions.



Notification:

The majority of the Notification group contains all active and archived alerts that are processed by DamWatch. Notification also offers interactive features such as messaging.

“Active Alerts” provides administrators the ability to view all NEXRAD, USGS, NWS Warnings, or Simulated Events. With this function, administrators can simultaneously view, document, and close individual or multiple structure alerts.

The “Archived Alerts” provides administrators the ability to view all inactive NEXRAD, USGS, and NWS Warnings and display a history of all alerts that have occurred over the life of the system. Data is displayed in tabular format and can be exported to

an Excel® file with a single click.

“Messaging” allows an administrator to quickly distribute information to other users. Administrators can quickly select individual or multiple users, the form of contact (email, sms, fax, etc.) and submit for instant delivery.

Simulation:

The Simulation “NEXRAD,” “USGS,” and “Structure” buttons are selected when a user wants to conduct training sessions. Administrators can create a simulated NEXRAD, USGS, or Structure events to test the effectiveness of current Emergency Action Plans (EAPs), inspection team response, and/or visualize influence of data source-driven events.

