

USGS Monitoring in the Turkey River Basin



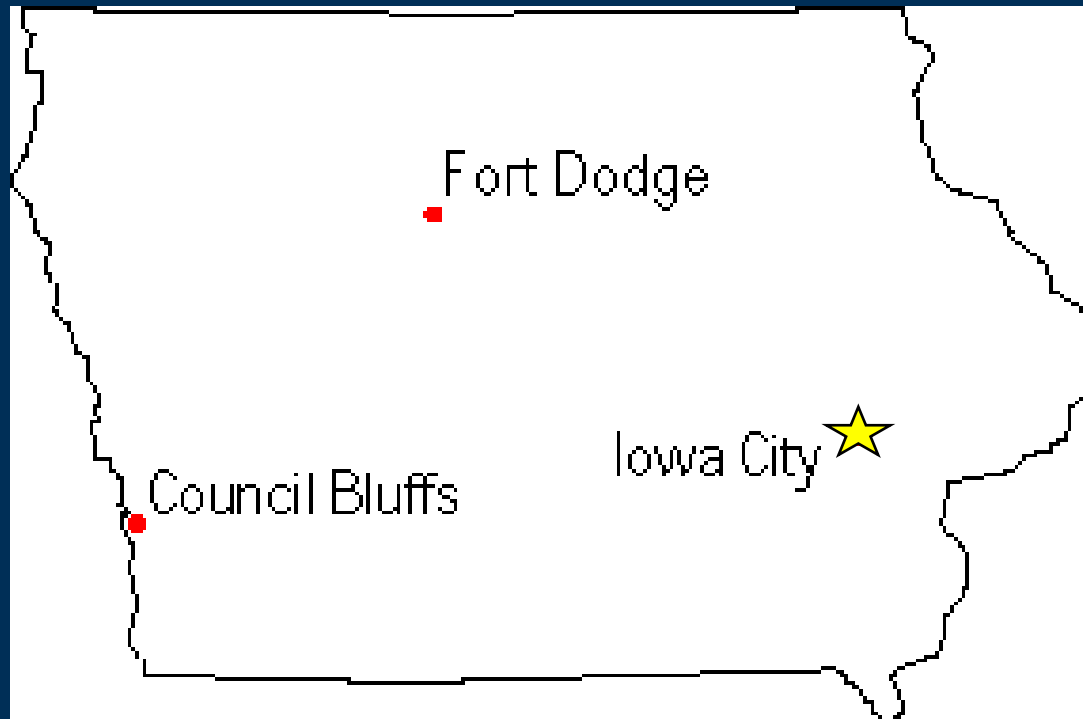
Turkey River Basin Seminar

Clermont – June 14, 2012

Jon Nania – USGS Iowa Water Science Center

USGS Overview

- Federal Agency
- Under Department of the Interior
- Created in 1879
- Every state has a local representation



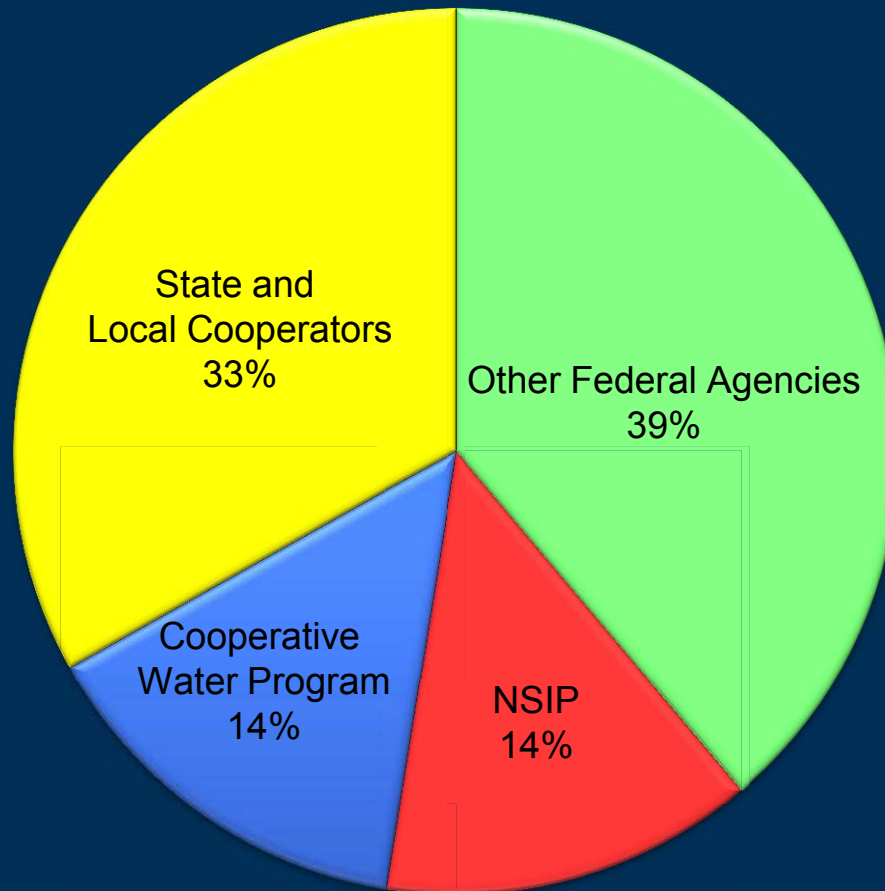
USGS Mission

The USGS serves the Nation by providing reliable scientific information to:

- minimize loss of life and property from natural disasters
- describe and understand the Earth;
- manage water, biological, energy, and mineral resources; and
- enhance and protect our quality of life



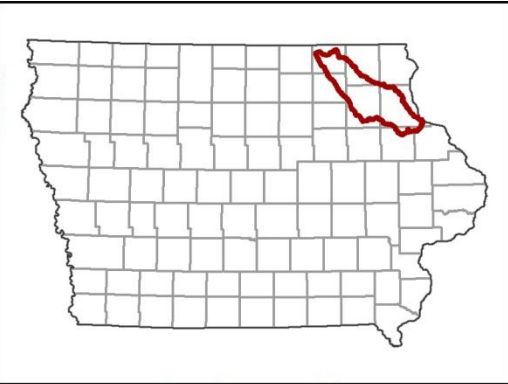
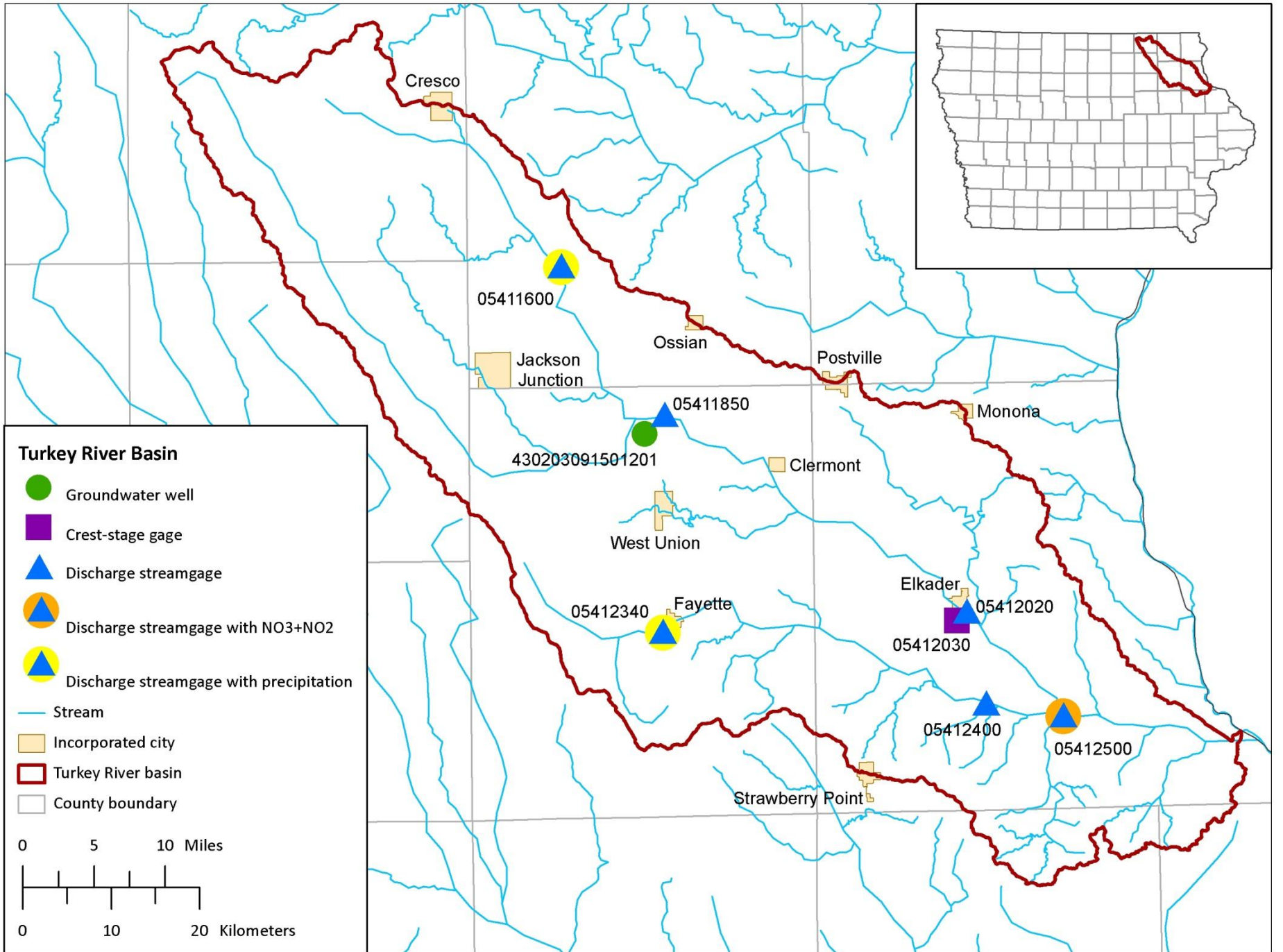
USGS IA WSC Funding



USGS Activities in the Turkey Basin

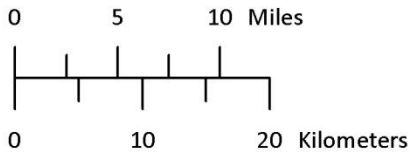
- **Streamgages**
 - Stage Information
 - Streamflow Information
- **Groundwater Monitoring**
- **Nitrate Monitoring**
- **Yearly Peak-Flow Site**
- **Precipitation**
- **Flood Profiles**





Turkey River Basin

- Groundwater well
- Crest-stage gage
- ▲ Discharge streamgage
- ▲ (Yellow/Blue) Discharge streamgage with NO₃+NO₂
- ▲ (Yellow/Blue) Discharge streamgage with precipitation
- Stream
- Incorporated city
- ▭ Turkey River basin
- ▭ County boundary



Cresco

05411600

Jackson Junction

Ossia

Postville

Monona

05411850

430203091501201

Clermont

West Union

05412340 Fayette

Elkader

05412020

05412030

Strawberry Point

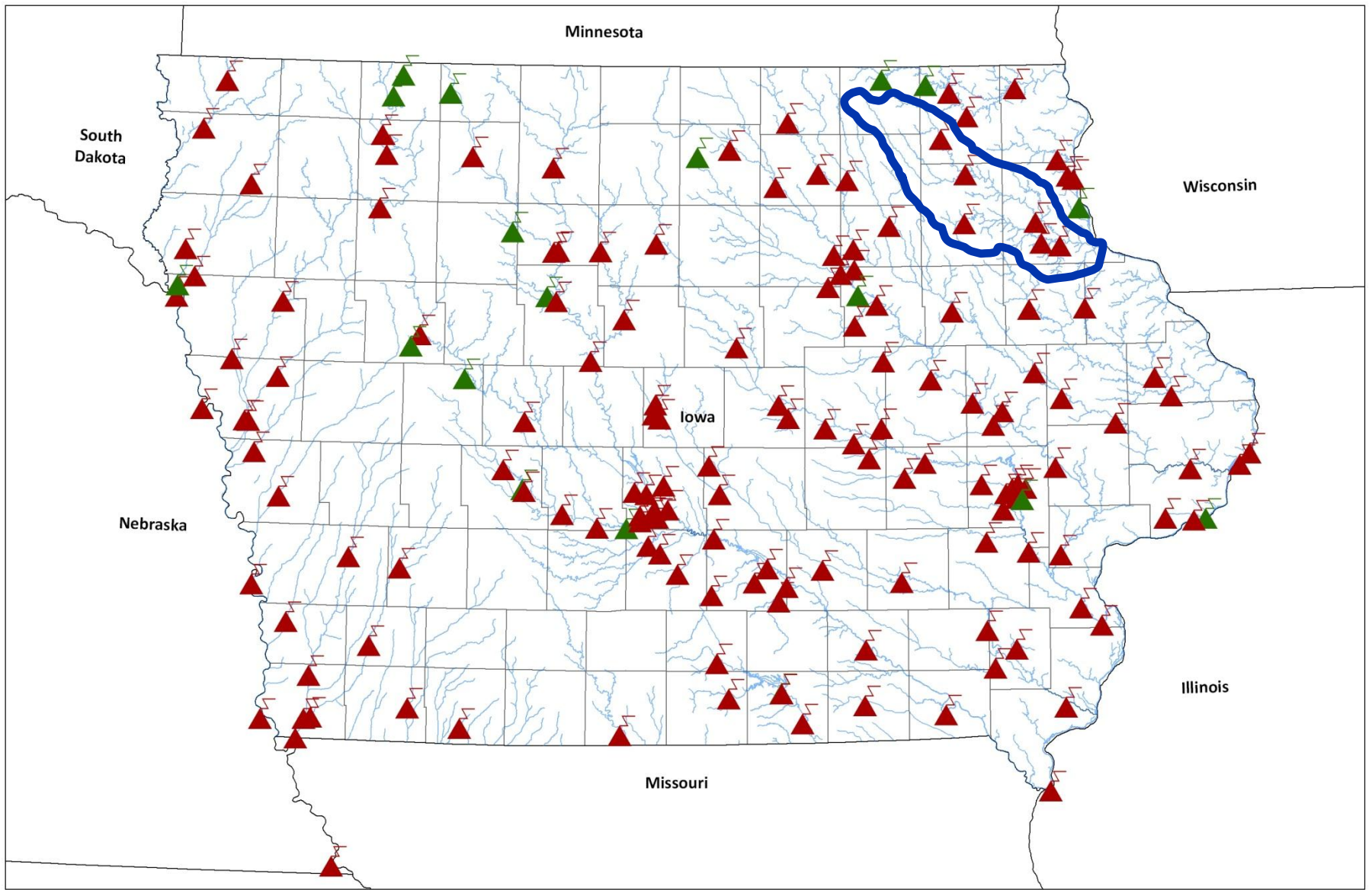
05412400

05412500

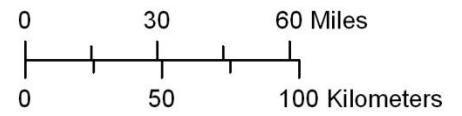
Streamgages

- Turkey River at Spillville
- Turkey River near Eldorado
- Turkey River at Elkader
- Volga River at Fayette
- Volga River at Littleport
- Turkey River at Garber





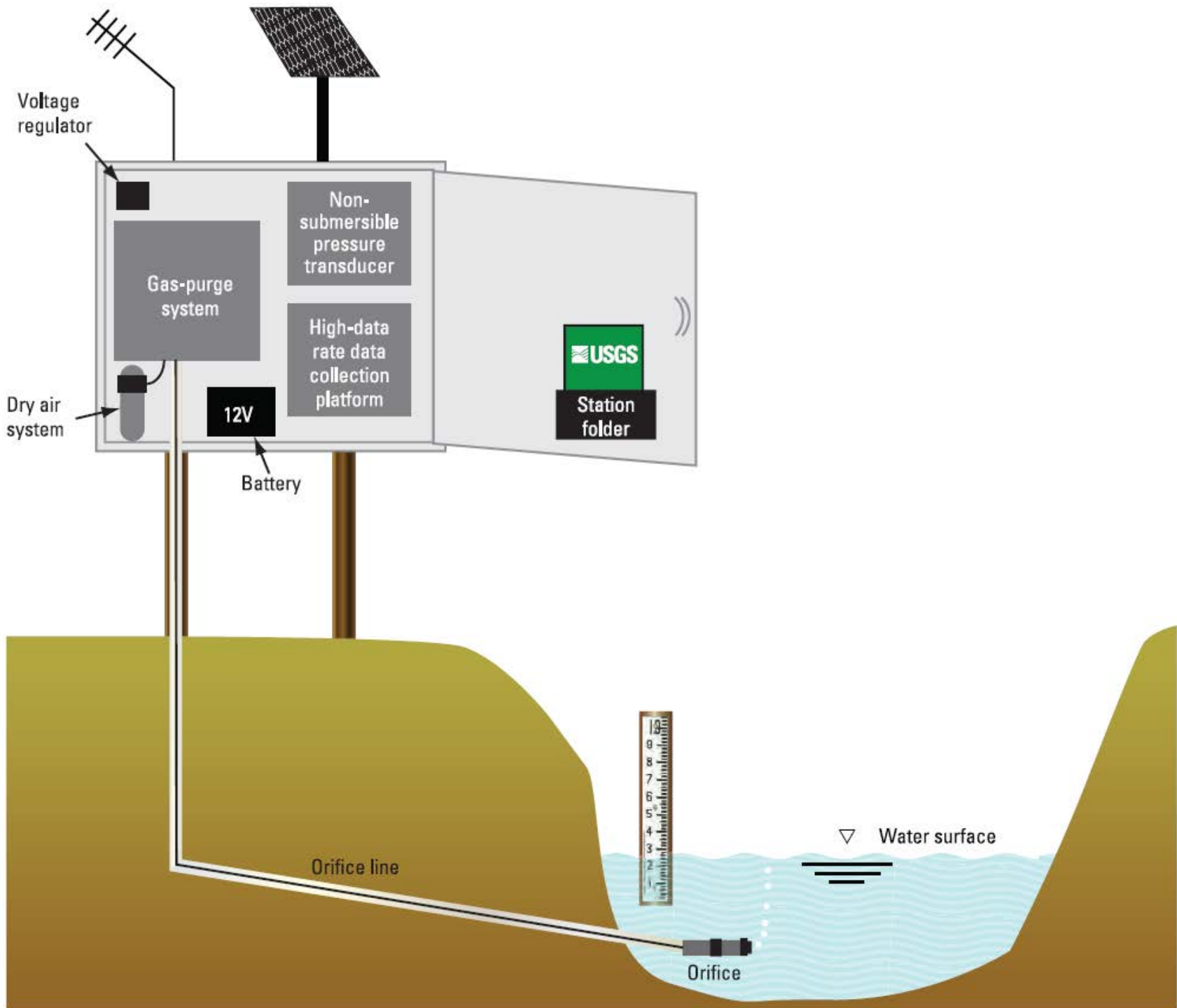
- Streams
- State boundary
- County boundary
- ▲ Discharge streamgage
- ▲ Stage-only streamgage



Streamgages

- Site visits at a six-week intervals, or more frequent as needed
- Real-Time Stage
 - Data is collected at 15 min intervals
 - Data is updated every hour on public websites



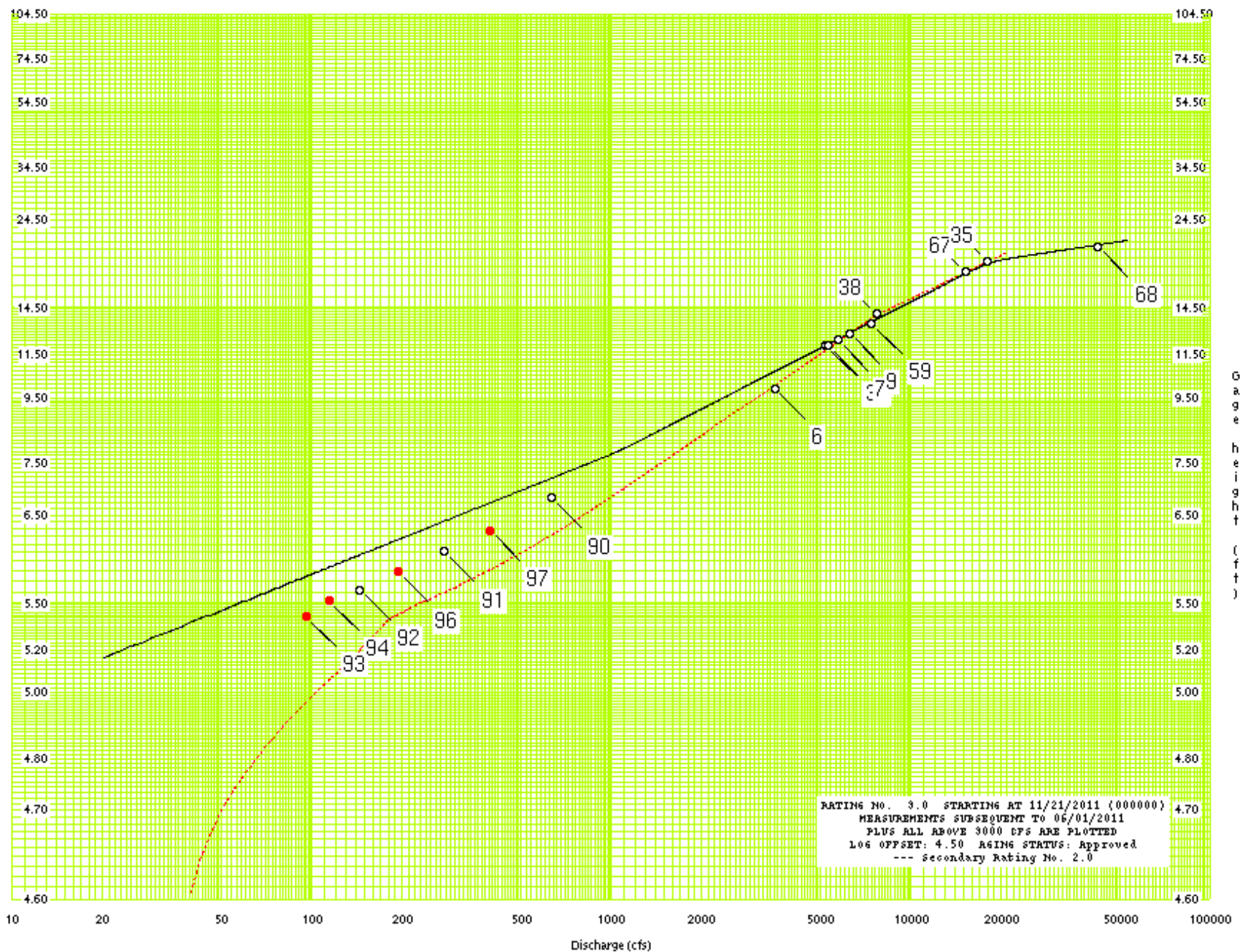


Streamgages

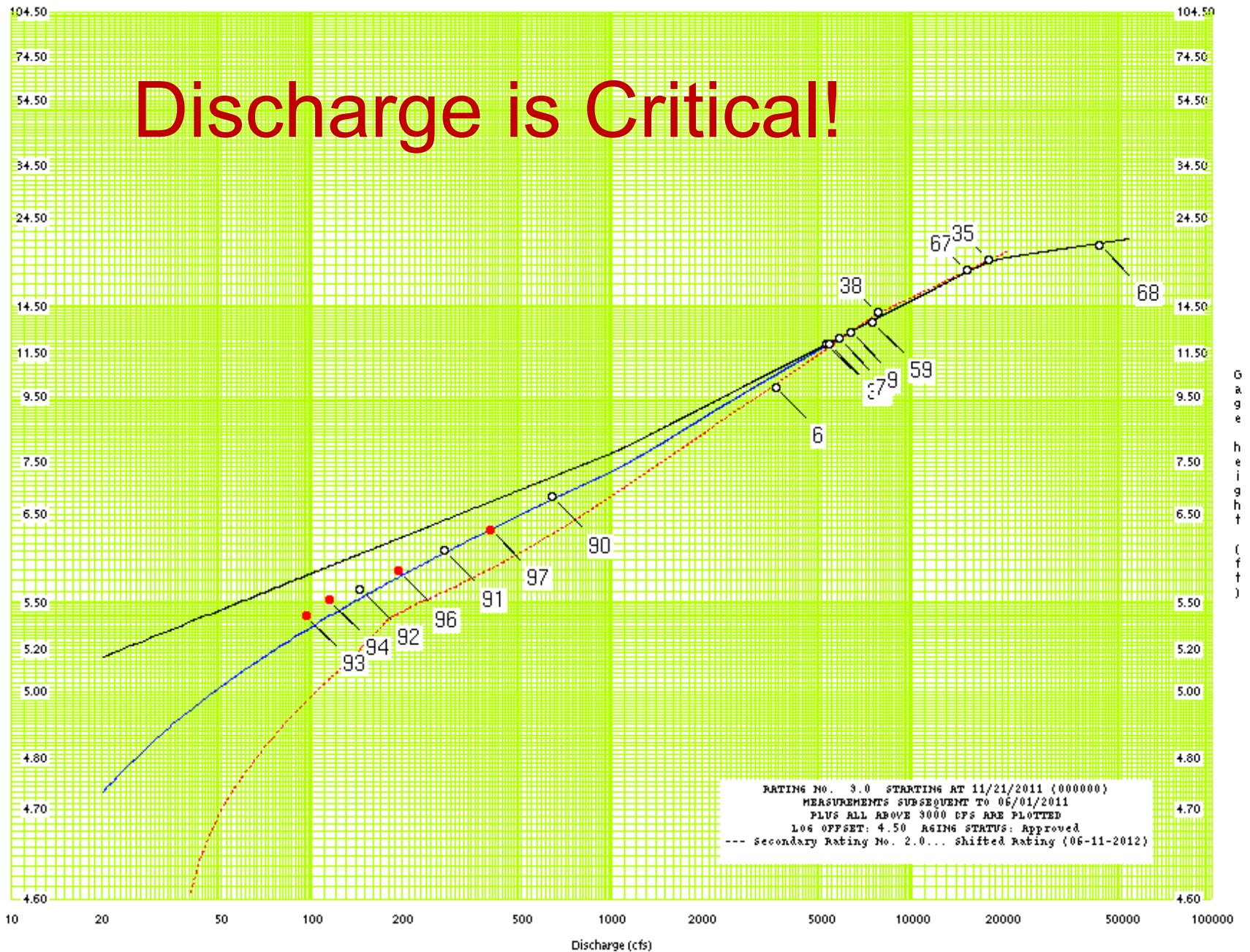
Real-time Discharge

- Updated every hour on public websites
- Based on established relation between stage and discharge





Discharge is Critical!

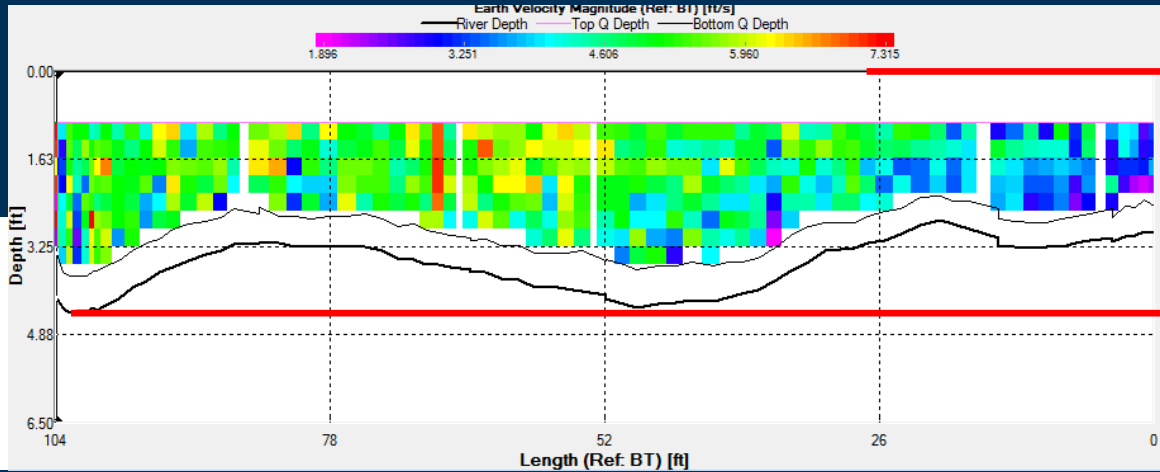


Streamgages

- Discharge measurements made at every routine site visit – every six weeks
- Additional measurements are made to define the stage-discharge relation
- Measurements are made using hydroacoustic technology



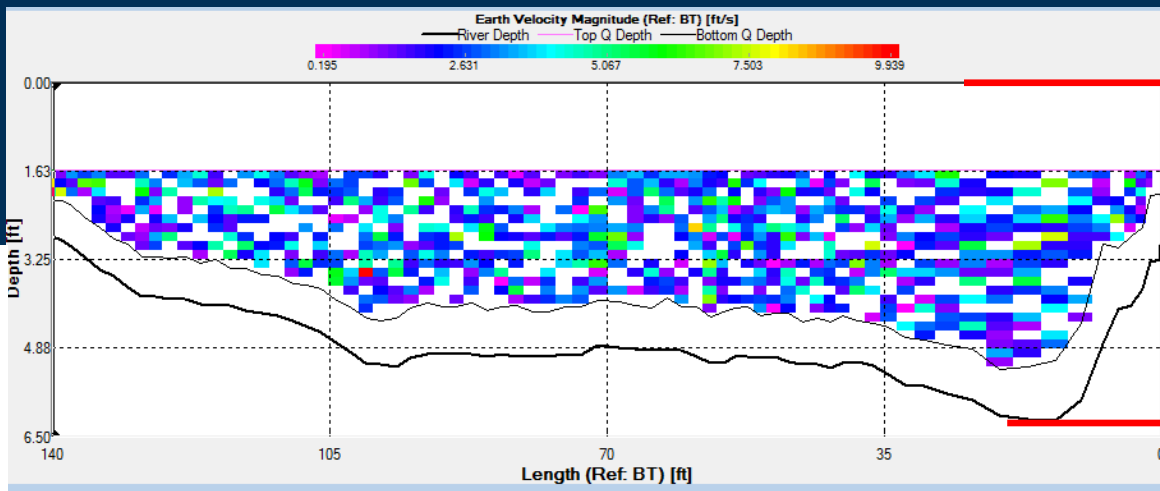
Turkey River near Eldorado



3/14/2007

Discharge =
1,840 cfs

2008 Flood



6/22/2009

Discharge =
1,340 cfs

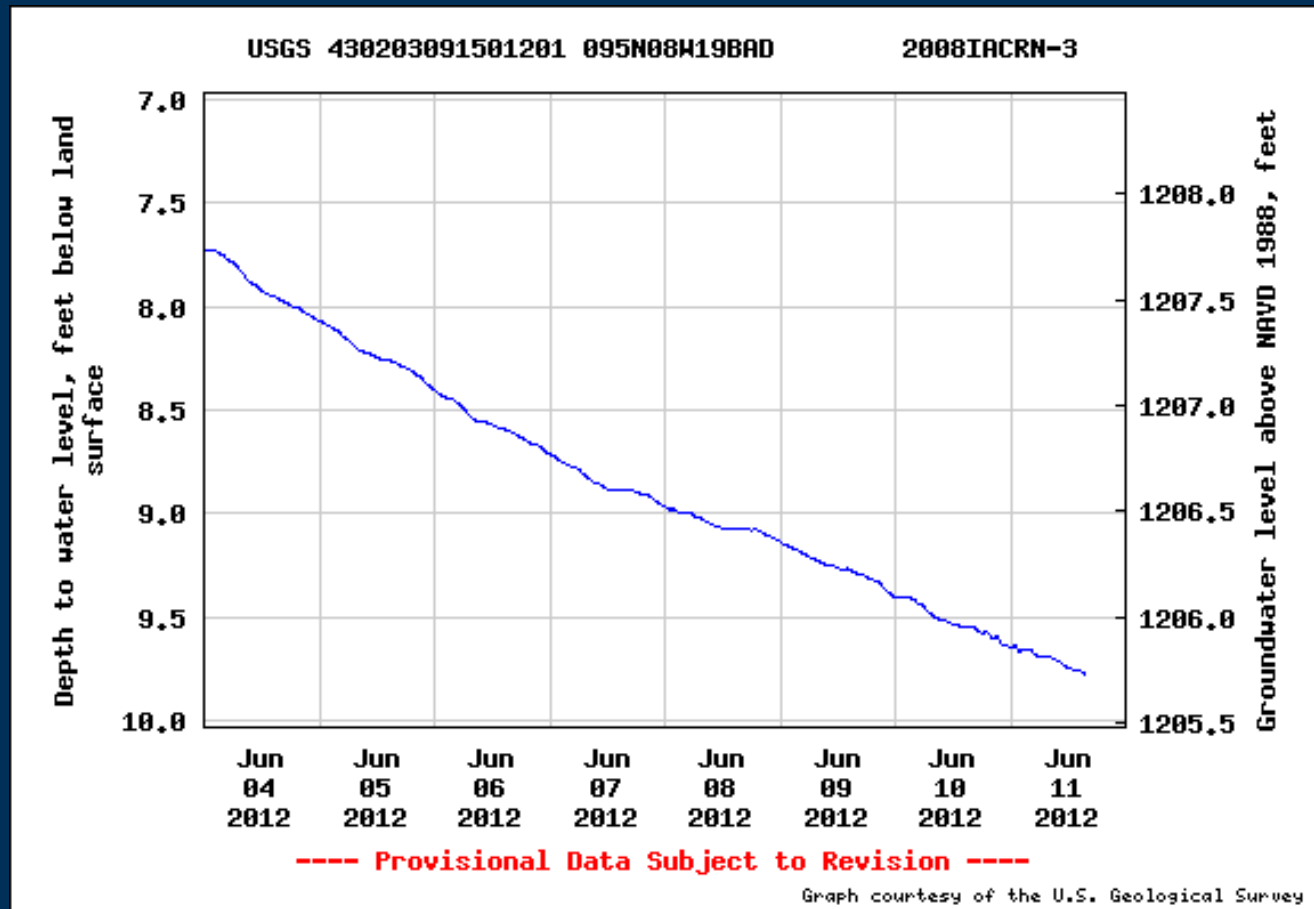






Groundwater Monitoring

- Real-Time groundwater levels
- One site near Eldorado



Groundwater Monitoring



Yearly Peak Flow Monitoring

- French Hollow Creek near Elkader
- Publish annual peak streamflow and gage height



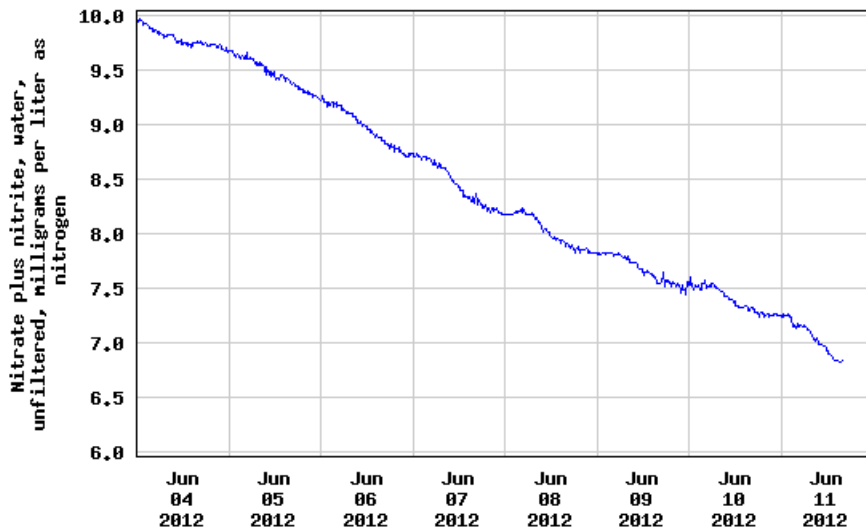
Nitrate Monitoring

- One site at the Turkey River near Garber
- Real-time data retrieval
- Also includes real-time water temperature
- Concentration and total load are published

Nitrate

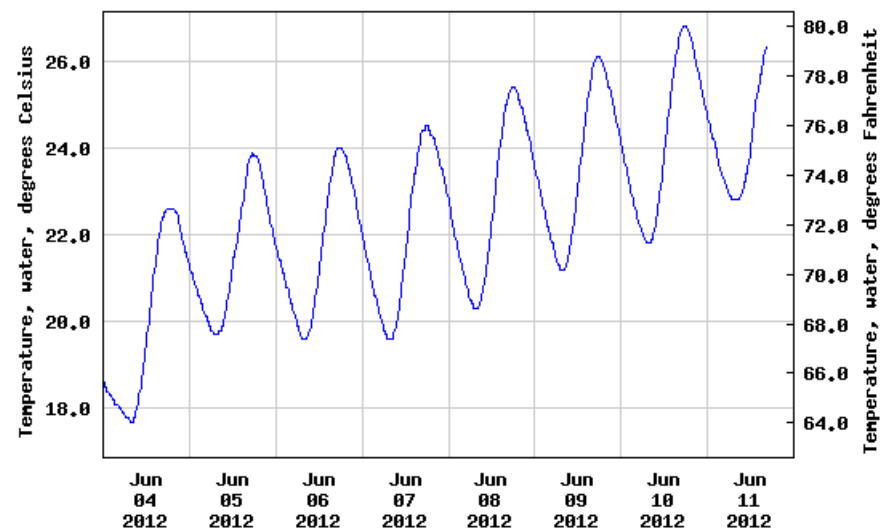
Temperature

USGS 05412500 Turkey River at Garber, IA



----- Provisional Data Subject to Revision -----

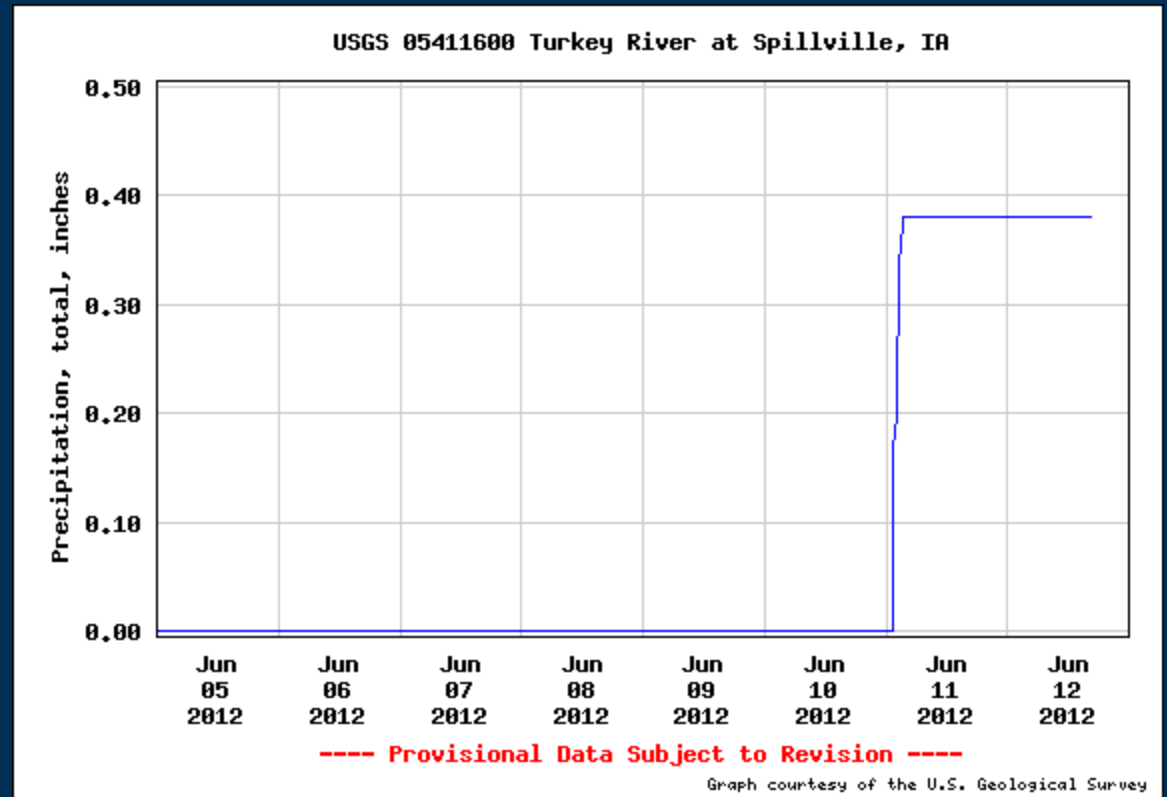
USGS 05412500 Turkey River at Garber, IA



----- Provisional Data Subject to Revision -----

Precipitation Monitoring

Two real-time sites: Fayette and Spillville



Flood Profiles near

1996, 2000, and 2006



Data Retrieval – USGS IA WSC

<http://ia.water.usgs.gov/>



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Iowa Water Science Center

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Real-Time Data

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- [Water Quality](#)
- [Precipitation](#)
- [WaterAlert](#)

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Annual Water Data Report

USGS In Your State

USGS Water Science Centers are located in each state.



Iowa City, IA Weather

63°F, Clear

Welcome To The United States Geological Survey

The U.S. Geological Survey's (USGS) mission is to provide reliable scientific information about the Nation's natural resources. An integral part of that mission is to provide consistent, long-term water-resources data to customers, cooperators, and the public. To accomplish our mission, we operate a widespread surface and ground-water data collection network as well as research a wide range of scientific issues throughout Iowa.

News & Reports



Water-Quality Assessment of the Cambrian-Ordovician Aquifer System in the Northern Midwest, United States

This report describes an assessment of groundwater quality of the Cambrian-Ordovician aquifer system across the upper Midwest, based primarily on raw water samples collected by the NAWQA Program from 1995 through 2007. An assessment was made for physical properties, major ions, trace elements, nutrients and dissolved organic carbon, radionuclides (tritium, radon, and radium), pesticides, and volatile organic compounds. The assessment objectives of this report are to (1) summarize constituent concentrations and compare them to human-health benchmarks and non-health guidelines; (2) determine the geographic distribution of constituent concentrations and relate them to various factors such as confining conditions, well type, land use, and groundwater age; and (3) evaluate near-decadal-scale changes in nitrate concentrations and pesticide detections.



[5/30/12]

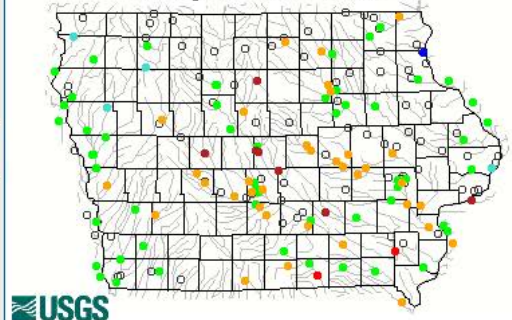
New Flood Technology Gets Information out Faster

Des Moines, Iowa is now better prepared to issue flood alerts because of enhancements to river monitoring equipment put in place by the City of Des Moines Department of Public Works and the U.S. Geological Survey.



Real-Time Iowa Streamflow Data

Select a site to retrieve streamflow & station information
Tuesday, June 12, 2012 10:30ET



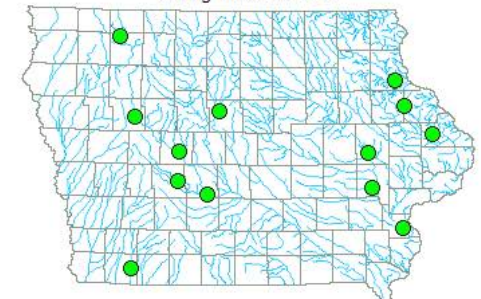
Current streamflow conditions
Low Normal High

[Google Maps IA Waterwatch](#)

[Real-Time National Data](#)

Real-Time Iowa Nitrate Levels

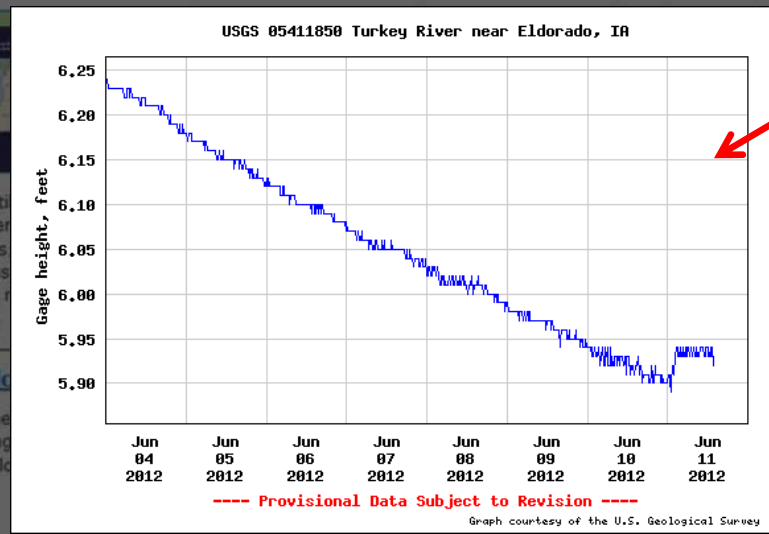
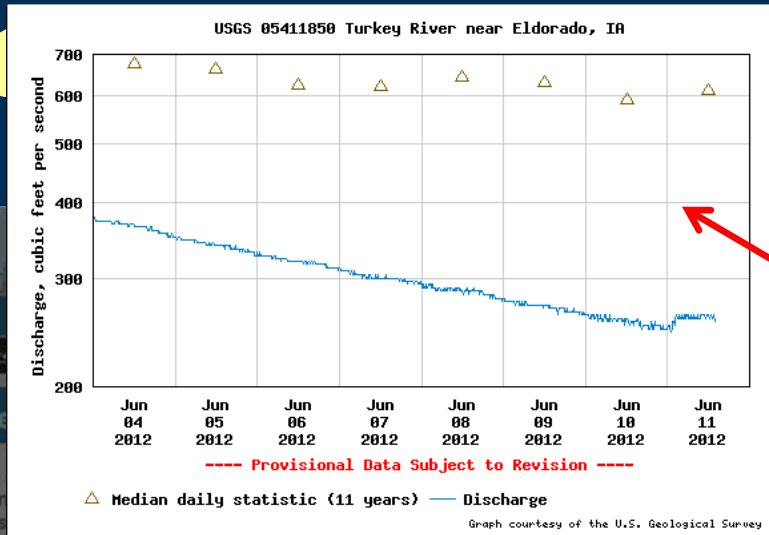
Click on site circle for a plot of nitrate concentrations during the last week



Data Ret

WSC

ov/



USGS
science for a changing world

Iowa Water Science Center

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Real-Time Data

- Streamflow
- Groundwater
- Lakes & Reservoirs
- Water Quality
- Precipitation
- WaterAlert

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Annual Water Data Report

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63°F, Clear

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USGS

Current streamflow conditions

Low Normal High

[Google Maps IA Waterwatch](#)

[Real-Time National Data](#)

Real-Time Iowa Nitrate Levels

Click on site circle for a plot of nitrate concentrations during the last week

Data Retrieval – USGS Water Watch

<http://waterwatch.usgs.gov/index.php>



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WaterWatch

Search WaterWatch

Home

Current Streamflow

Flood

Drought

Past Flow/Runoff

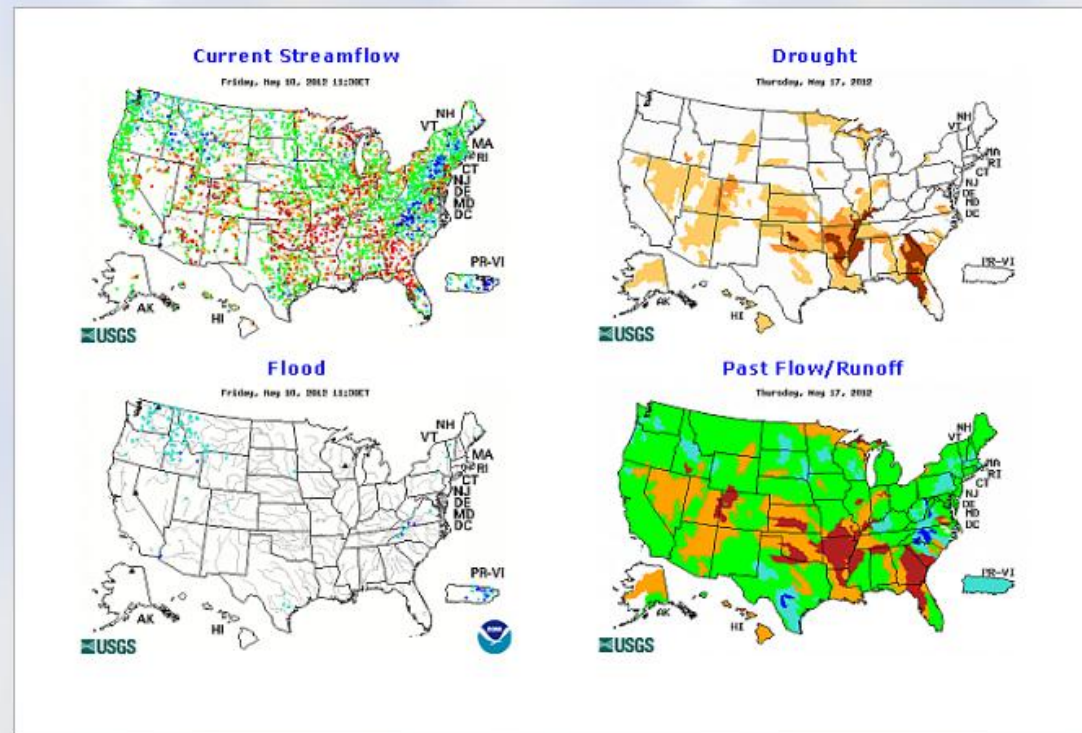
Animation

Toolkit

Toolkit (internal)

Additional Information

About WaterWatch



Data Retrieval – USGS Water Alert

Have the streamgauge text or email you!

<http://water.usgs.gov/wateralert/>

USGS WaterAlert [version 1.21]

Home Help Contact USGS Water home

Search USGS Water Sites:
Google™ Custom Search Go

WATER DATA FOR THE NATION

National Water Information System (NWIS)
View current and historical streamflow, groundwater level, and water-quality data
Data by State... [dropdown]

Data Discovery
For more data options, explore our data discovery tools.

Today's Water Conditions
View maps of current and historical conditions

WATER SCIENCE SPECIALTIES

- Streamflow
- Flood and high flow
- Drought
- Groundwater levels
- Surface water quality

Subscribe to hydrologic alerts:
WaterAlert

USGS WaterAlert
The U.S. Geological Survey WaterAlert service sends e-mail or text (SMS) messages when [certain parameters](#), as measured by a USGS real-time data-collection station, exceed user-definable thresholds. The development and maintenance of the WaterAlert system is supported by the USGS and its partners, including numerous federal, state, and local agencies.

Real-time data from USGS gages are transmitted via satellite or other telemetry to USGS offices at various intervals; in most cases, once every 1 or 4 hours. Emergency transmissions, such as during floods, may be more frequent. *Notifications will be based on the data received at these site-dependent intervals.*

[Instructions](#)

SITE SELECTION

State or Territory
(select one or more)

- Florida
- Georgia
- Guam
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa**
- Kansas
- Kentucky

Data Type

- Surface Water
- Groundwater
- Water Quality
- Precipitation



Search this selection
Reset Search

Map Satellite Hybrid Terrain USGS

Map showing numerous green triangle markers representing water quality sites across Iowa.

Done Internet | Protected Mode: On 90%

Data Retrieval – USGS Water Alert

USGS Home
Contact USGS
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USGS WaterAlert

[version 1.21]

Subscription Form

The U.S. Geological Survey WaterAlert service sends e-mail or text (SMS) messages when [certain parameters](#), as measured by a USGS real-time data-collection station, exceed user-definable thresholds. The development and maintenance of the WaterAlert system is supported by the USGS and its partners, including numerous federal, state, and local agencies.

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Site Info:	
Site Number:	05412020
Site Name:	Turkey River above French Hollow Cr at Elkader, IA
Agency:	USGS
Transaction ID:	3cr5f

Send Notification To:	about this...
<input type="radio"/> My mobile phone	
<input type="radio"/> My email address	

Notification Frequency:	about this...
Hourly	<input type="radio"/>
Daily	<input checked="" type="radio"/>

Streamflow Data-type Parameter:	about this...	Recent value:
Discharge (cfs)	<input type="radio"/>	542 [peak chart]
Gage height (ft)	<input checked="" type="radio"/>	5.67 [peak chart] NWS flood stage = 12

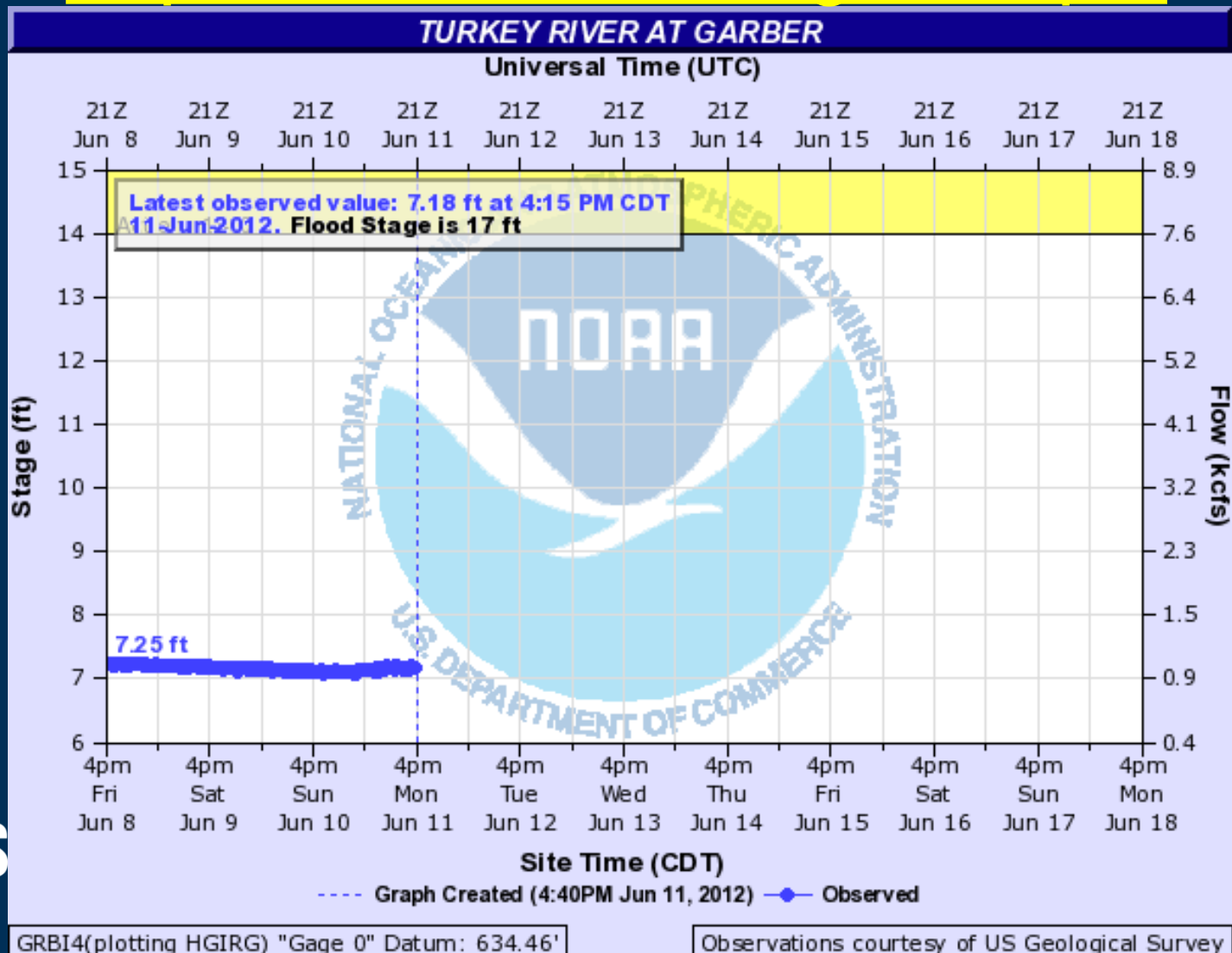
Threshold Condition:	about this...
<input checked="" type="radio"/> Greater than (>)	
<input type="radio"/> Less than (<)	
<input type="radio"/> Outside a range (< or >)	
<input type="radio"/> Inside a range (> and <)	

Real-time value is greater than: ft

I have read and acknowledge the [Provisional Data Statement](#) and [Disclaimer](#).

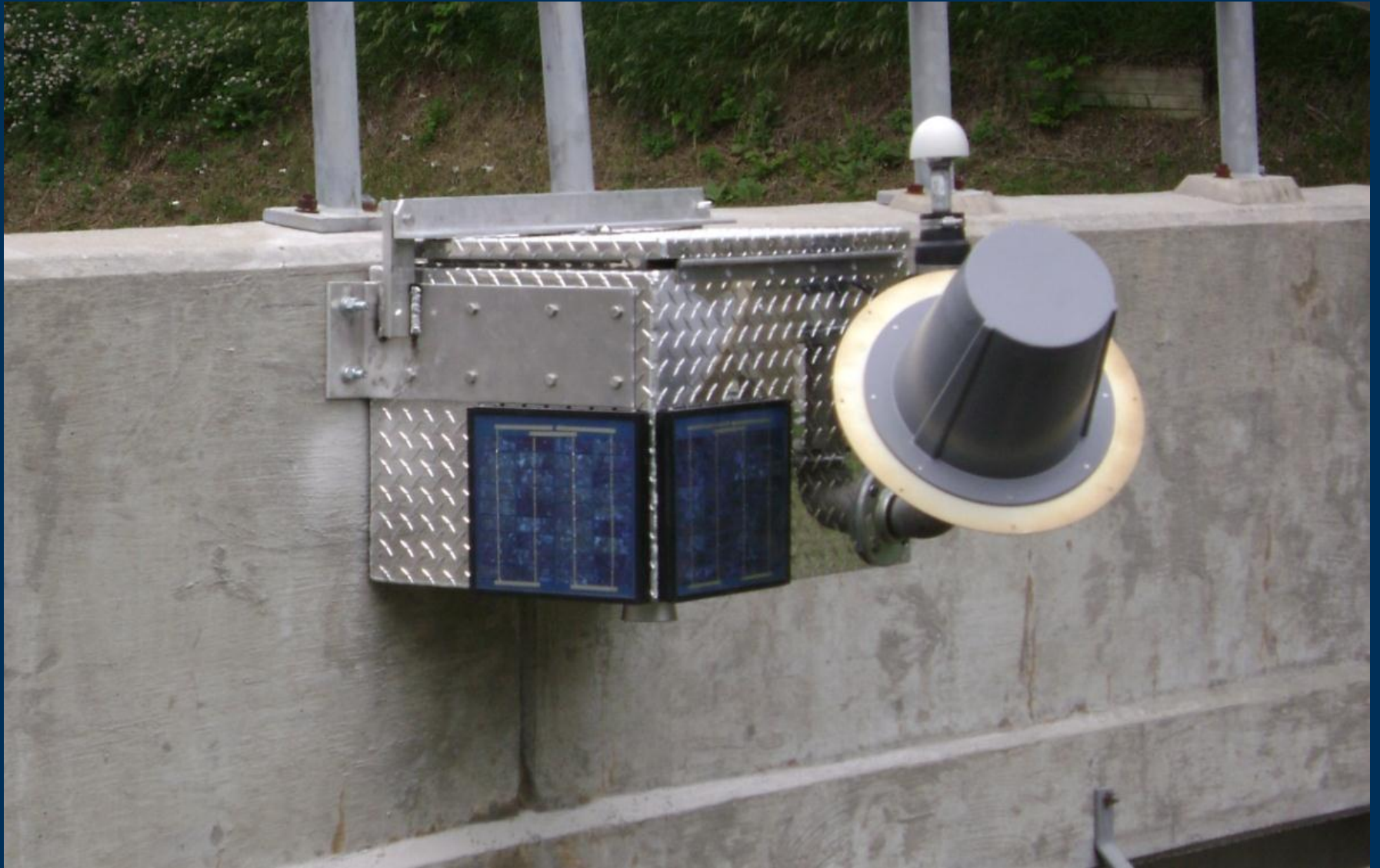
Data Retrieval - NWS

<http://water.weather.gov/ahps/>



Other Activities

Seasonal Streamgages



Questions

USGS IA WSC

<http://ia.water.usgs.gov/>

USGS Water Watch:

<http://waterwatch.usgs.gov/>

USGS Water Alert:

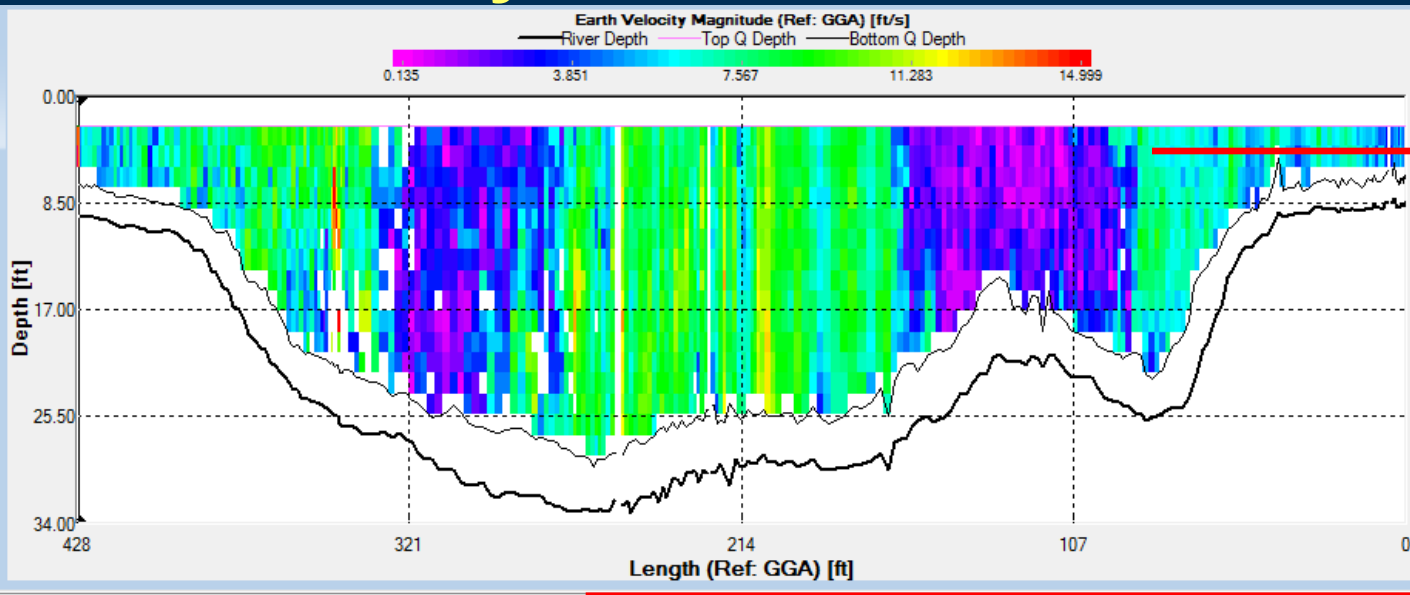
<http://water.usgs.gov/wateralert/>

NWS AHPS:

<http://water.weather.gov/ahps/>

Streamgages - Discharge

Turkey River at Garber, IA



663.33 ft
above sea
level
(NGVD29)

629.03 ft
above sea
level
(NGVD29)

June 10, 2008

Discharge: 45,600 cfs

Gage Height: 28.87 ft

Max Depth: 34.3 ft

Average Velocity: 5.48 ft/sec (3.7 mph)





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