# USGS National Water Quality Assessment (NAWQA) Data Warehouse

## NWQMC Chattanooga TN

## May 2004

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USGS National Water-Quality Assessment Program (NAWQA) - Microsoft Internet Explorer

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Address http://water.usgs.gov/nawqa/

# water.usgs.gov/nawqa

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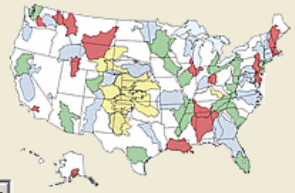
## National Water-Quality Assessment (NAWQA) Program

- Home
- About the Program
- What's New
- Study Unit Basins
- National Synthesis
- Data
- Publications
- Summary Reports
- Maps
- How to Request Information
- Glossary
- Contacts

### Assessing more than 50 river basins and aquifer systems

In more than 50 major river basins and aquifers covering nearly all 50 states, USGS scientists collect and interpret data about water chemistry, hydrology, land use, stream habitat, and aquatic life.

**Activities by state:** Select a state



**Activities by basin:**

Select a basin

### What's New

Newest Activities pertaining to the NAWQA program. For a full list, visit the archive.

- **National Academy of Sciences Review**
  - Representative Accomplishments of NAWQA, Cycle I
  - Opportunities to Improve the USGS NAWQA Program - A Summary
- **Heinz Center Report--*The State of the Nation's Ecosystems***

### How and why water quality varies across the Nation

Each assessment adheres to a nationally consistent study design which allows comparisons among river basins and comprehensive national evaluations of:

- Pesticides
- Nutrients
- Volatile organic compounds (VOCs)
- Trace elements
- Ecology
- Modeling

### Informing decision makers about water resources

Information from the NAWQA program is used by decision makers at all levels—local, state, interstate, and national—to address and prioritize water-resource issues related to:

- Agriculture
- Urbanization
- Chemical use
- Drinking water and human health
- Source water protection
- Pesticide registration
- Nutrient enrichment and criteria
- Fish consumption
- Beneficial uses and impaired waters (TMDL's)

Summary reports, written primarily for decision makers, discuss national findings from individual river basins and aquifers and relate these findings to national assessments.

NAWQA Intranet (Internal Use Only)

USGS WRD Homepage | | Local USGS Contacts | | Office of Water Quality | | Office of Surface Water | | Office of Ground Water | | Toxic Substances Hydrology Program | | Drinking Water Program | | National Atmospheric Deposition Program | | National Research Program | | National Water Information Center | | National Stream Quality Accounting Network | | Hydrologic Benchmark Network

*U.S. Department of the Interior, U.S. Geological Survey*
*Contact for NAWQA: nawqa_whq@usgs.gov*

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Address http://infotrek.er.usgs.gov/servlet/page?_pageid=543&_dad=portal30&_schema=PORTAL30 Go Links

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USGS National Water C

# water.usgs.gov/nawqa/data

NAWQA Water Quality Data Warehouse

NAWQA Data Home

MAP SITES & RESULTS
Map Chemical Conc.
Find Sites from Map

RETRIEVE DATA
Site Information
Constituent Finder
Ground Water
Surface Water/ Bed Sediment
Mixed (SW & GW)
Animal Tissue
Daily Discharge
Fish Community

SEARCH SUMMARY REPORTS

HELP:
Data Retrieval Tips
About NAWQA Data
Glossary
FAQ

Other USGS Data

*What's New?*

Contact Us

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Go

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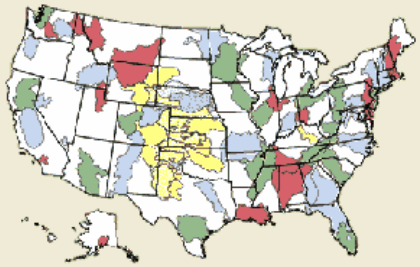
See What's New

Get Started Here:
Select an option: GO!



**Map of NAWQA Study Units**
Click on map to go to index of study unit home pages.

Software Requires Browser to accept cookies. See note at bottom.

Data subject to change -- current version loaded 07/01/03. Data available through 9/30/02.

## About the NAWQA Data Warehouse

The U.S. Geological Survey (USGS) began its NAWQA (National Water Quality Assessment) program in 1991, systematically collecting chemical, biological, and physical water quality data from 42 study units (basins) across the nation. The data warehouse currently contains and links the following data up through 9/30/2002:

- Chemical concentrations in water, bed sediment, and aquatic organism tissues for about 500 chemical constituents
- Site, basin, well and network characteristics with many descriptive variables
- Daily stream flow information for fixed sampling sites
- Ground water levels for sampled wells
- 6,100 surface water sites and 7,000 wells
- 46,000 nutrient samples and 31,000 pesticide samples as well as 11,000 VOC samples
- 3,200 samples of bed sediment and aquatic organism tissues

Much of this data came from the USGS National Water Information System--NWIS Water-Quality Data for NAWQA sites.

NOTE: Cookies are used for the Advanced Features of the Software but are not used to collect information about users.

Start X Cli... Aud... San... The... fs0... Jun... Dat... USG... USG... Micr... Sea... dwh... NA... 9:50 AM

# NAWQA Overview

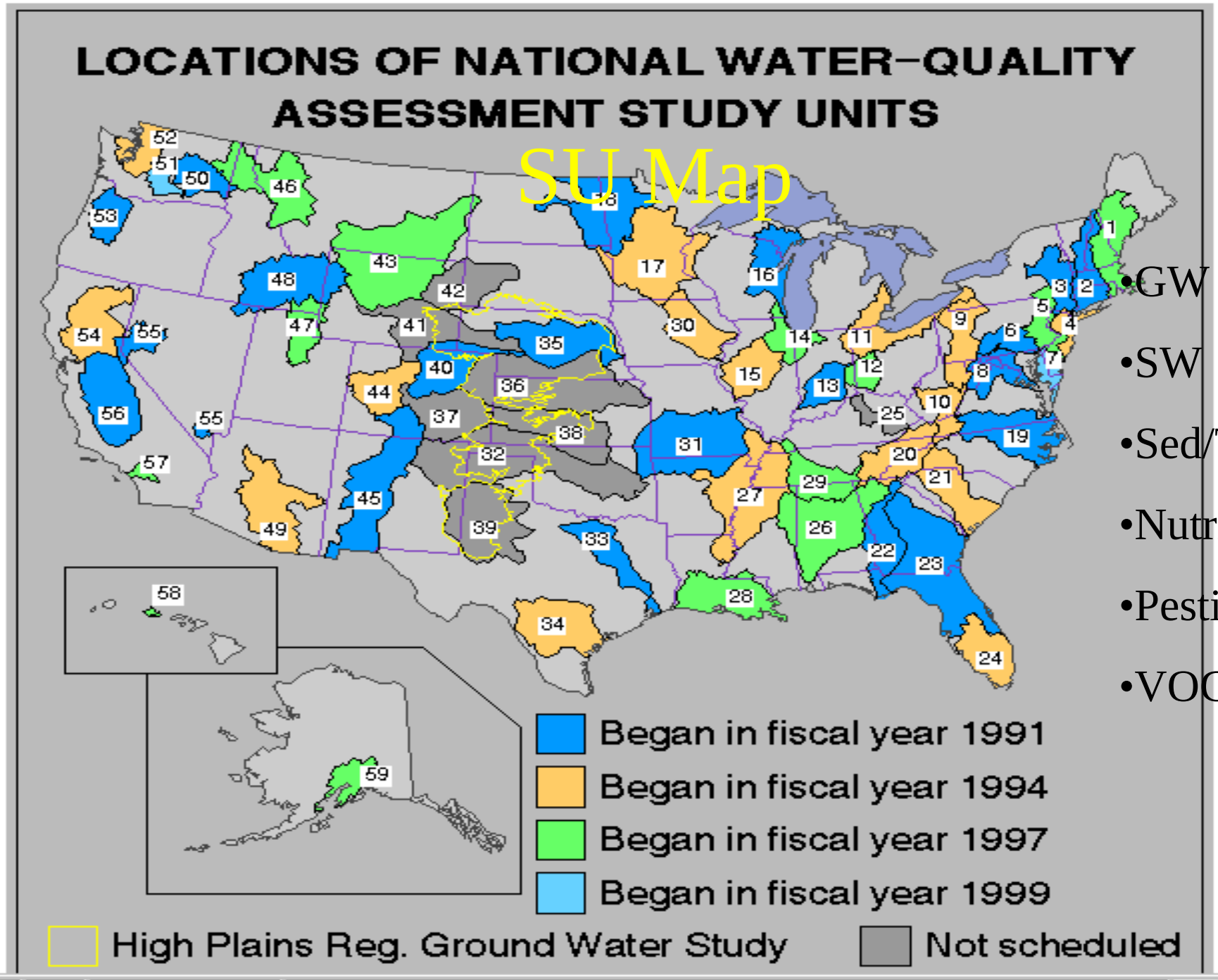
**Purposes:**

- Status of WQ in USA
- Controlling Processes
- Trends in WQ

**Elements:**

- GW & SW & Bio. Integrated
- 42+ Study Units
- Nationally Consistent Design/Sampling/Labs
- 5 National Synthesis Teams

# SU Map




- GW
- SW
- Sed/Tissue
- Nutrients
- Pesticides
- VOCs

Document: Done

# NAWQA Data Summary

**Surface Water**

- Water, Sediment, & Tissue Chemistry
- Fish, Algae, Invert Communities
- Fixed Sites
- Synoptic Surveys
- Processes & Trends

**Ground Water**

- Land Use Studies
- Aquifer Studies
- Sm. Scale Processes
- Some age-dated

**Both:** Nutrients,
90+ Pesticides,
80+ VOC's,
40+ Trace Elements

- Automated weekend update of data from all servers

# Software Development Philosophy

- **Maximum Use of off-the-Shelf Software**: Oracle Discoverer chosen for retrievals: Web Applet version for USGS Users and Web Viewer for Public Users. Informatica for data aggregation. Mapinfo for web mapping.
- **Joint Application Development** benefits from expert outside consultants working with USGS team in WI and elsewhere
- **Incremental Steps Completed on Time**

# NAWQA DWH Development Principles

1. Use of best and most flexible out-of-the box software to minimize code development and maintenance costs
2. Rapid prototyping vs. 'throwing requirements over the wall'
3. Adjusting scope rather than timelines or quality when budgets are fixed keeps us meeting timelines
4. Adding functionality only as it becomes available in out-of-the box applications
5. Appropriate use of contractors to effectively develop nearly cutting edge out-of-the-box applications
6. How, Where, & How much to document
7. Manage user suggestions – cost vs. benefit

Back Search Favorites History

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Submit Query Reset

**Query to find parameters (chemical or biological) of interest. Note code and use in additional queries.**

*Click Parameter Code on Query Results to view all NAWQA sites where the parameter was found.*

Search by Parameter Name (i.e.phos):

%zine

(%: Search All Parameters)

-OR-

Search by Parameter Code (i.e.608):

%

(%: Search All Parameter Codes)

Parameter search

-AND/OR- Select a Sampling Schedule:

Search All Schedules

-AND/OR- Limit parameters returned to only those that are sampled more than X percent of the time.

Enter Percent:

0

Done Internet

Back Search Favorites History

SCHEDULE: Nutrients - Nitrogen and Phosphorous (2702) [8]

Nitr*

| Code | Name | Constituent | Cas Num | Report Units | % of Samples where Parameter Analyzed |
|---|---|---|---|---|---|
| 00608 | NITROGEN AMMONIA DISSOLVED (MG/L AS N) | NITROGEN, AMMONIA | 7664-41-7 | MG/L AS N | 60.77 |
| 00613 | NITROGEN, NITRITE, DISSOLVED, MG/L AS N | NITROGEN, NITRITE | 14797-65-0 | MG/L AS N | 60.52 |
| 00623 | NITROGEN AMMONIA PLUS ORGANIC DISSOLVED | NITROGEN, AMMONIA + ORGANIC NITROGEN | 17778-88-0 | MG/L AS N | 58.61 |
| 00625 | NITROGEN AMMONIA PLUS ORGANIC TOTAL (MG/ | NITROGEN, AMMONIA + ORGANIC NITROGEN | 17778-88-0 | MG/L AS N | 47.56 |
| 00631 | NITROGEN NITRITE PLUS NITRATE DISSOLVED | NITROGEN, NITRITE + NITRATE | | MG/L AS N | 61.16 |

GROUP: PESTICIDE/VOC

SCHEDULE: Volatile Organic Compounds (2020) [89]

| Code | Name | Constituent | Cas Num | Report Units | % of Samples where Parameter Analyzed |
|---|---|---|---|---|---|
| 34215 | ACRYLONITRILE TOTAL (UG/L) | ACRYLONITRILE | 107-13-1 | UG/L | 5.44 |

GROUP: SEMI-VOLATILE

SCHEDULE: Semivolatile Organic Compounds in sediment (2502) [81]

| Code | Name | Constituent | Cas Num | Report Units | % of Samples where Parameter Analyzed |
|---|---|---|---|---|---|

USGS-NAWQA Water-Quality Thematic Map - Microsoft Internet Explorer

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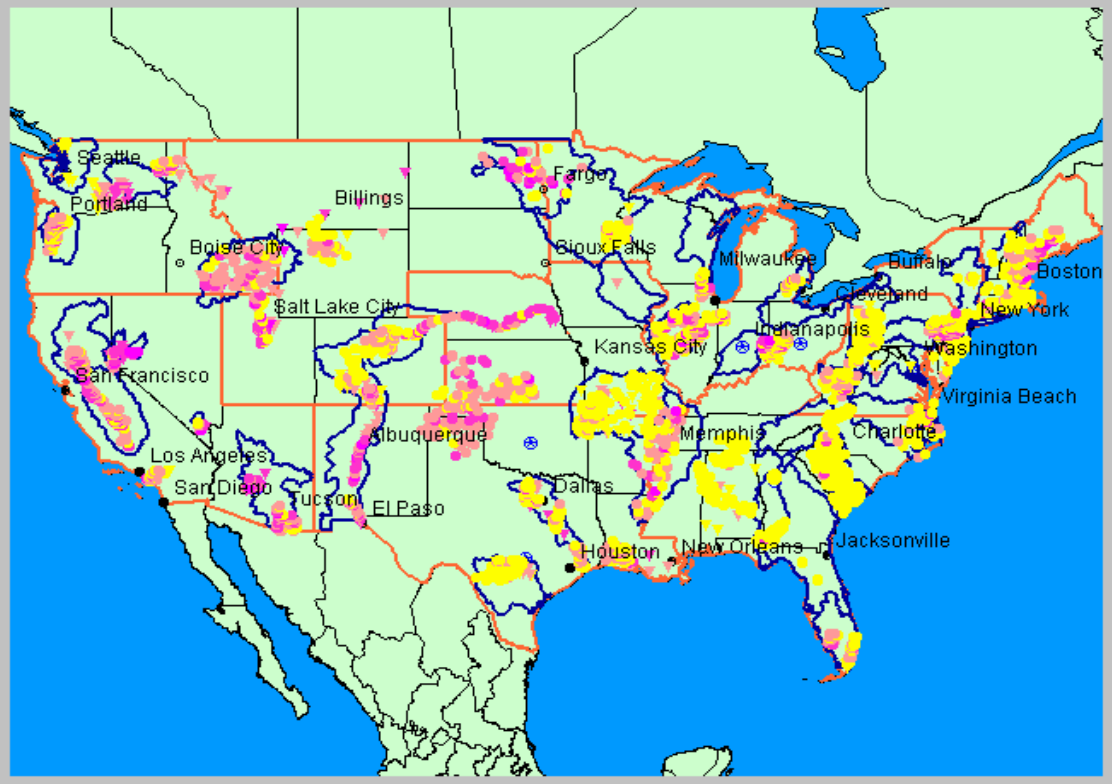
Address http://osbddwimdn.er.usgs.gov/NAWQAMapTheme/index.jsp Go

Links dwh map 4i applet public dwh public dw-admin datasyn nwis-web-qw dwh pub directory coding outline public dwh-internal

NAWQA National Water-Quality Assessment Program

NAWQA Data Warehouse




State
ALABAMA
ALASKA
ARIZONA
ARKANSAS

EPA Region
R 01 (New England)
R 02 (NY-NJ)
R 03 (PA-VA)
R 04 (Southeast)

Study Unit
Acadian-Pontchartrain
Apalachicola-Chattahoochee-Fli...
Albemarle-Pamlico Drainage
Allegheny and Monongahela Basi...

Data Display Options:

Select the type of theme you would like to create:

Single Break Point, value: 0.5

Multiple Break Points, number: 5

Distribution Standard Deviation

Colors:

Hi Magenta

Low Yellow

Refresh Data Display

Legend

ARSENIC DISSOLVED (UG/L AS AS) in UG/L AS AS

21.29 to 550
3.8 to 21.29
0 to 3.8
0 to 0
0 to 0

Site Type

GW
SW

The map is 3200 mi wide.

The center of the map is at: (-96.157, 37.638)

W E

# Thematic maps

#11

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http://www.topozone.com/map.asp?z=10&n=5040398&e=526031&s=25&size=m

Search

Home My Netscape Net2Phone Download Customize...

TopoZone.com

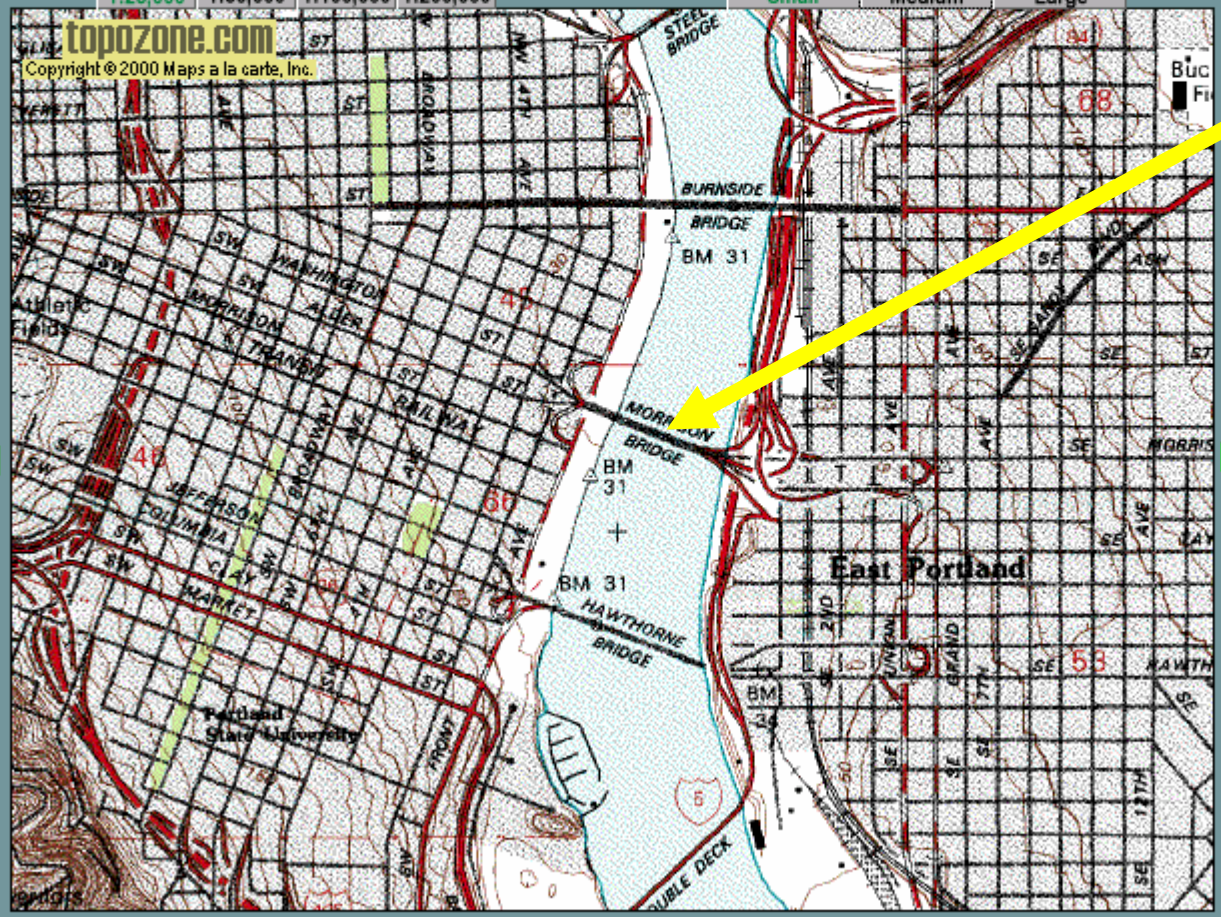
Pick a State: California

Click here to find your new apartment!

apartments.com

Target is UTM 10 526031E 5040398N - **PORTLAND** quad [Quad Info]
Move the mouse over the map to display coordinates in the status bar

1:25,000 1:50,000 1:100,000 1:200,000 Small Medium Large




meters 0 500 1000 1500 2000

miles 0 0.5 1.0

Gage Location

Topomap of site

**Get a Map**
ace name search
ecimal degrees
Deg/min/sec
UTM coords

**ownload Maps**
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out TopoFactory
Specifications
opoFactory Store

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ut topo maps on your Web site
Get digital data
Link to us

**What's New?**
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http://tiger.census.gov/cgi-bin/mapgen?on=interstate&on=statehwy&on=ushwy&on=water&lat=45.5

Search

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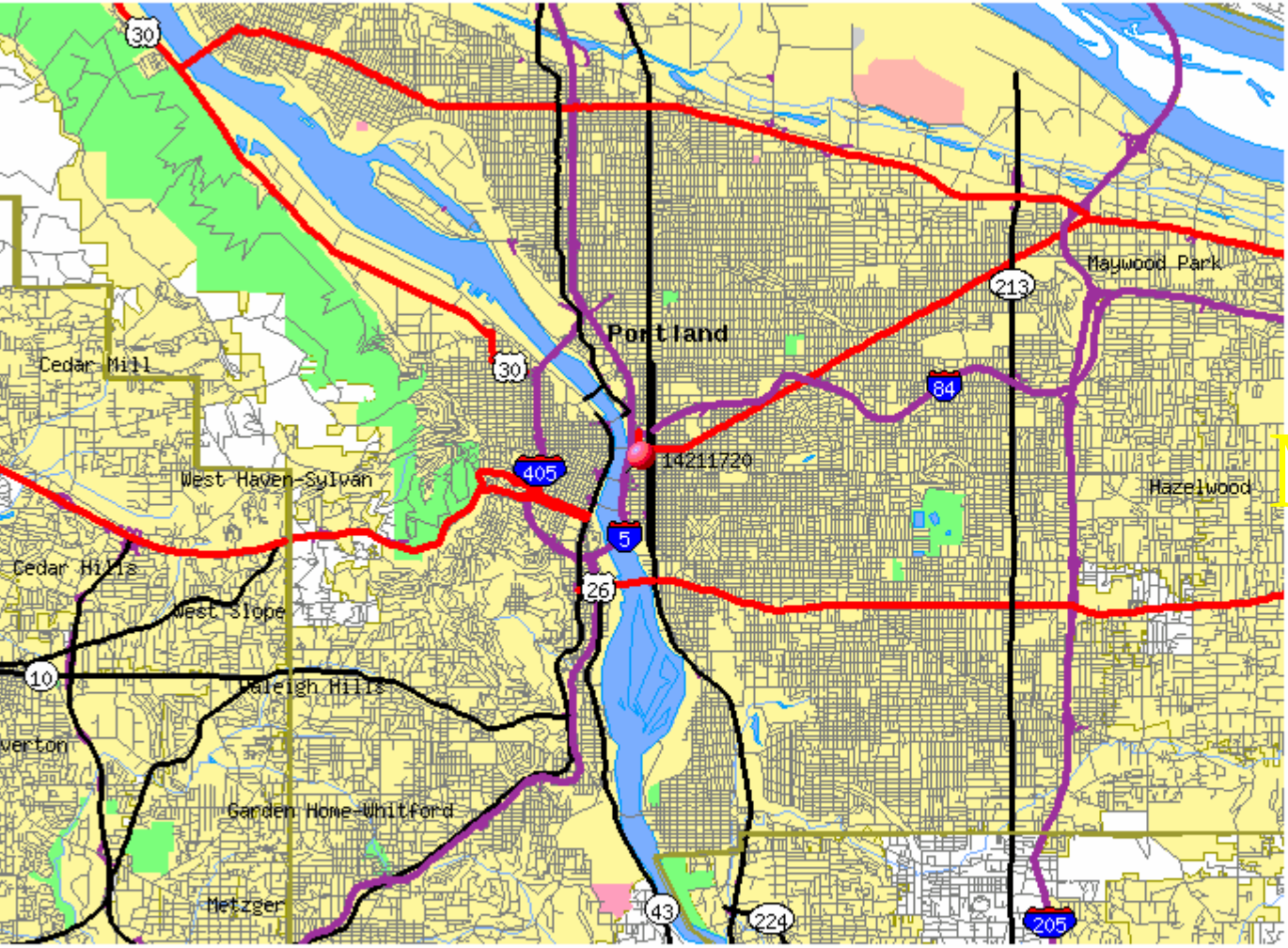


# Vicinity Map to Site

Retrieve data - Microsoft Internet Explorer

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# Public DWH—sw query

NAWQA Water Quality Data Warehouse

USGS National Water Quality Assessment Data Warehouse

April 1, 2002

NAWQA Data Home

Data Retrieval Tips | Site Information | Ground Water | Surface Water/ Bed Sediment | Daily Discharge | Mixed (SW & GW) | Animal Tissue

**MAP SITES & RESULTS**
Map Chemical Conc.
Find Sites from Map

**RETRIEVE DATA**
Site Information
Ground Water
Surface Water/ Bed Sediment
Daily Discharge
Mixed (SW & GW)
Animal Tissue

**SEARCH SUMMARY REPORTS**

**HELP:**
Data Retrieval Tips
About NAWQA Data
Glossary

PLEASE NOTE: Multiple Selection of Parameters is now available. For example, you can search for Connecticut AND Virginia results in the same query---for information about multi-selects, check "Data Retrieval Tips under HELP in the blue frame on the left. To query the entire United States, Choose 'Do Not Search by State'.

Additional explanation of Surface Water data output choices

Choose a Surface Water Query Output below:

Select an option: GO!

- Select an option:
- Count of Samples per Chemical or Chemical Group
- Serial (Long) Output
- Cross-tab (Pivot Table) Output
- Expanded Cross-tab (Pivot Table) Output

#14

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Back Forward Stop Refresh Home Search Favorites History Mail

**Please select values for the following parameters. To change these values later, click the "Edit Parameters" link.**

Enter or select State(s)

Do Not Search by State
ALABAMA
ALASKA
ARIZONA
ARKANSAS

# Search Filters 1

Enter or Select County Name(s)

Do Not Search by County
AL - BARBOUR
AL - HENRY
AL - HOUSTON
AL - LEE

Enter or Select NAWQA Study unit(s)

Do Not Search by Study Unit
ACADIAN-PONTCHARTRAIN
ALBEMARLE-PAMLICO DRAINAGE
ALLEGHENY AND MONONGAHELA BASINS
APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN

Back Forward Stop Refresh Home Search Favorites History Mail

Enter or Select Lab Schedule Name(s)

- Do Not Search by Lab Schedule
- Major Anions and Cations (2750) [13]
- Nutrients - Nitrogen and Phosphorous (2702) [8]
- Pesticides (chlorinated) and PCBs in aquatic tissue (2101) [34]
- Pesticides (chlorinated) and PCBs in sediment (2501) [38]

Schedules are groups of compounds analyzed together

Enter or select Parameter Name(s)

- NITROGEN NITRATE D. (337)
- Do Not Search by Parameter Name
- 1 1-DICHLOROPROPENE (4373)
- 1 2 3-TRICHLORO BEN (4373)
- 1 2-DICHLOROETHANE (4459)

Format is Name (Count of Regular Samples for Parameter)

Enter Minimum for result Value: 0

If you want to get only exceedances of a user-supplied value

Filter to only see detects? NO

Enter YES to get detects only

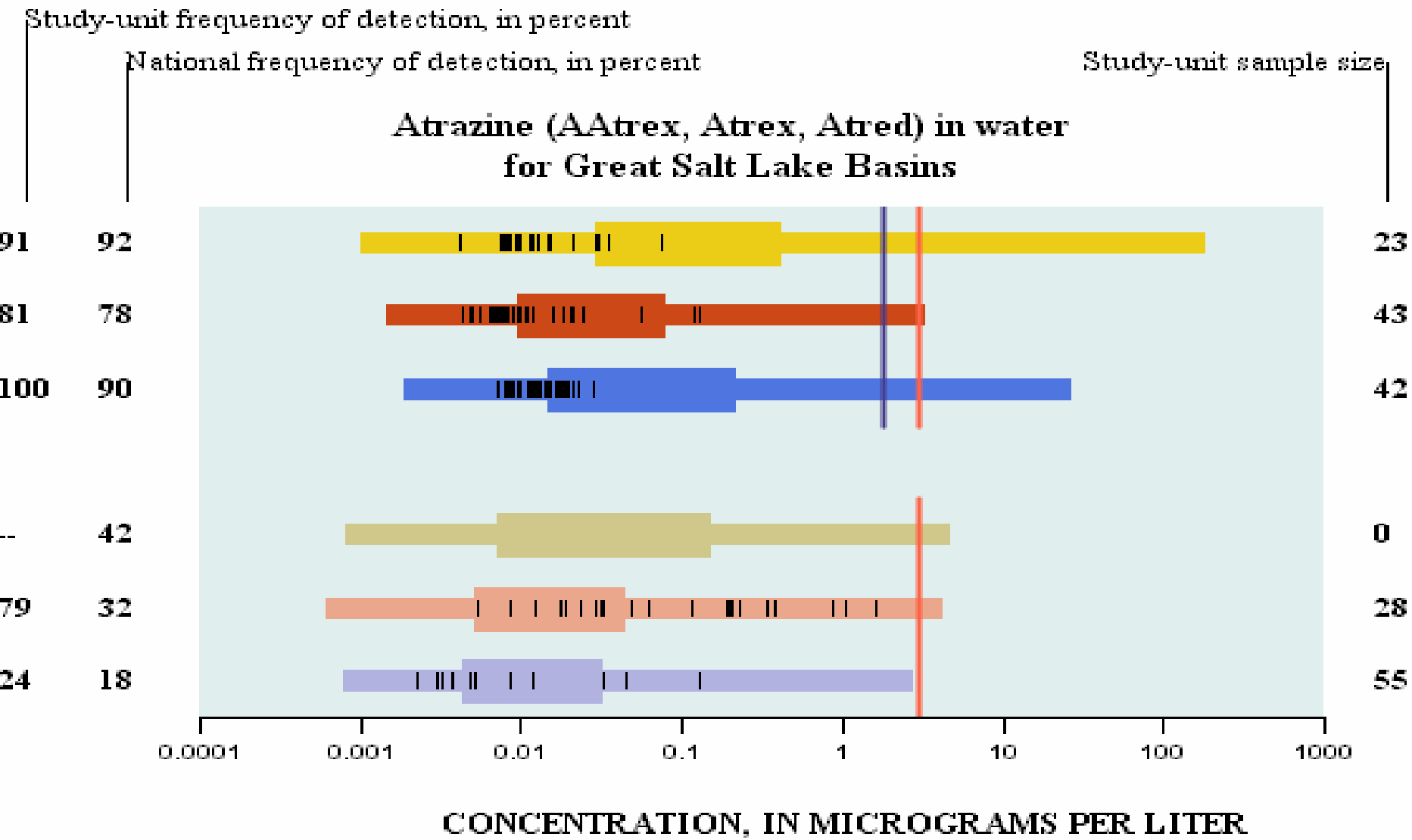
Get Data

# Search Filters 2

| taid | Place Name | SW Site Type Desc | Totalarea, in sq.mi. | Huc | Latitude1983 | Longitude1983 | Lat Long Accuracy Desc | Top |
|---|---|---|---|---|---|---|---|---|
| 7026040 | OBION RIVER AT HWY 51 NEAR OBION, TN | STREAM | 1875.00 | 08010202 | 36.2 | -89.2 | F | |
| 7027050 | RUNNING REELFOOT BAYOU AT HWY 103 | STREAM | 289.13 | 08010202 | 36.2 | -89.5 | M | |
| 7030050 | HATCHIE RIVER AT RIALTO, TN | STREAM | 2308.00 | 08010208 | 35.6 | -89.6 | F | |
| 7030392 | WOLF RIVER AT LAGRANGE, TN | STREAM | 210.00 | 08010210 | 35.0 | -89.2 | F | |
| 7031692 | FLETCHER CREEK AT SYCAMORE VIEW ROAD AT MEMPHIS | STREAM | 30.50 | 08010210 | 35.2 | -89.9 | F | |
| 35785002 | BRADLEY CREEK AT PRAIRIE PLAINS, TN | STREAM | -999.00 | 06030003 | 35.3 | -86.0 | H | |
| 3455000 | FRENCH BROAD RIVER NEAR NEWPORT, TN | STREAM | 1858.00 | 06010105 | 36.0 | -83.2 | S | |
| 3461080 | PIGEON RIVER NEAR DENTON, TN | STREAM | 568.22 | 06010106 | 35.8 | -83.2 | U | |
| 3461500 | PIGEON RIVER | | | 0106 | 36.0 | -83.2 | U | |
| 3465500 | NOLICHUCKY R | | | 0108 | 36.2 | -82.5 | U | |
| 3465650 | LITTLE LIMESTO | | | 0108 | 36.2 | -82.6 | U | |
| 3466208 | BIG LIMESTONE | | | 0108 | 36.2 | -82.7 | U | |
| 3466233 | SINKING CREE | | | 0108 | 36.2 | -82.7 | U | |
| 3466298 | CAMP CREEK AT ZION CHURCH BRIDGE NEAR GREENEVILLE | STREAM | 32.80 | 06010108 | 36.1 | -82.7 | U | |
| 3466363 | RICHLAND CREEK AT STAUNTON MILL, TN | STREAM | 7.43 | 06010108 | 36.1 | -82.8 | U | |
| 3466550 | NOLICHUCKY RIVER AT EVANS ISLAND | STREAM | 68.39 | 06010108 | 36.1 | -83.0 | U | |
| 3466698 | LITTLE CHUCKY CREEK NEAR WARRENSBURG, TN | STREAM | 41.00 | 06010108 | 36.1 | -83.1 | U | |
| 3466825 | LICK CREEK NEAR HOLLAND MILL, TN | STREAM | 53.00 | 06010108 | 36.3 | -82.8 | U | |
| 3466835 | LICK CREEK NEAR LICK CREEK MILL NEAR BAILEYTON,TN | STREAM | 76.30 | 06010108 | 36.3 | -82.8 | U | |
| 3467300 | LICK CREEK AT SCOOT MILL, TN | STREAM | 262.45 | 06010108 | 36.2 | -83.1 | U | |
| 3467485 | BENT CREEK NEAR SILVER CITY, TN | STREAM | 45.00 | 06010108 | 36.2 | -83.2 | U | |
| 3467609 | NOLICHUCKY RIVER NEAR LOWLAND | STREAM | 1688.40 | 06010108 | 36.1 | -83.2 | U | |
| 3468065 | LONG CREEK NEAR LOWLAND | STREAM | 39.36 | 06010108 | 36.1 | -83.2 | U | |
| 3478592 | BEAVER CREEK NEAR AVOCA BELOW BRISTOL, TN | STREAM | 61.80 | 06010102 | 36.5 | -82.2 | S | |

Can export to Excel or delimited ascii files

# Graphs of Compound Concentration Ranges



# Graph Explanation

## CHEMICALS IN WATER

**Concentrations and detection frequencies, Acadian-Pontchartrain Drainages, 1999–2001**

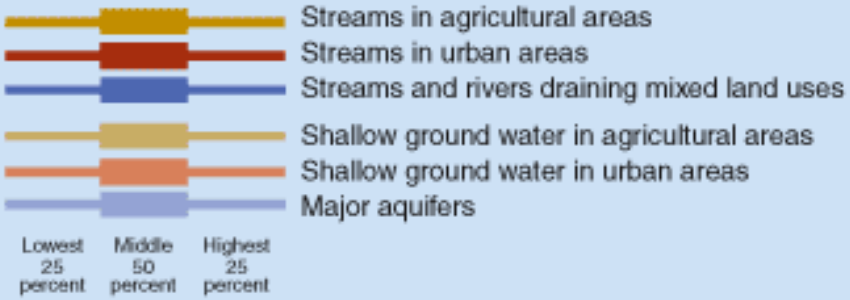
| Detected concentration in Study Unit

66 38 Frequencies of detection, in percent. Detection frequencies were not censored at any common reporting limit. The left-hand column is the study-unit frequency and the right-hand column is the national frequency

-- Not measured or sample size less than two

*12* Study-unit sample size. For ground water, the number of samples is equal to the number of wells sampled

**National ranges of detected concentrations, by land use, in 51 NAWQA Study Units, 1991–2001**—Ranges include only samples in which a chemical was detected




**National water-quality benchmarks**

National benchmarks include standards and guidelines related to drinking-water quality, criteria for protecting the health of aquatic life, and the desired goal for preventing nuisance plant growth due to phosphorus. Sources include the U.S. Environmental Protection Agency and the Canadian Council of Ministers of the Environment

| Drinking-water quality (applies to ground water and surface water)

| Protection of aquatic life (applies to surface water only)

| Prevention of nuisance plant growth in streams

* No benchmark for drinking-water quality

** No benchmark for protection of aquatic life

Edit View Search Go Bookmarks Tasks Help

http://water.usgs.gov/or/nwis/uv/?14211720 Search

Home My Netscape Net2Phone Download Customize...

# SGS 14211720 WILLAMETTE RIVER AT PORTLAND,OREG.

Available data for this site | Real-time | GO

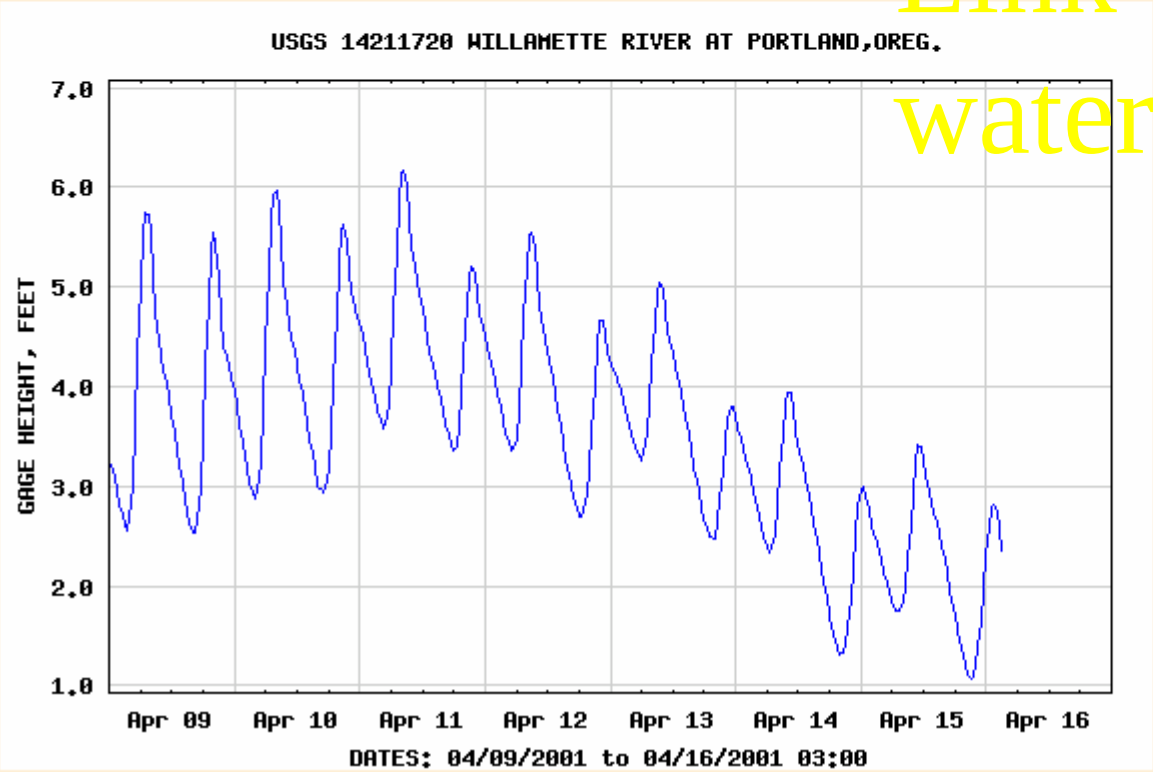
**Display options**

| Parameter | Output format | Days | |
|---|---|---|---|
| All 1 parameters available at this site | Graph | 7 | GO |

**GAGE HEIGHT, FEET**

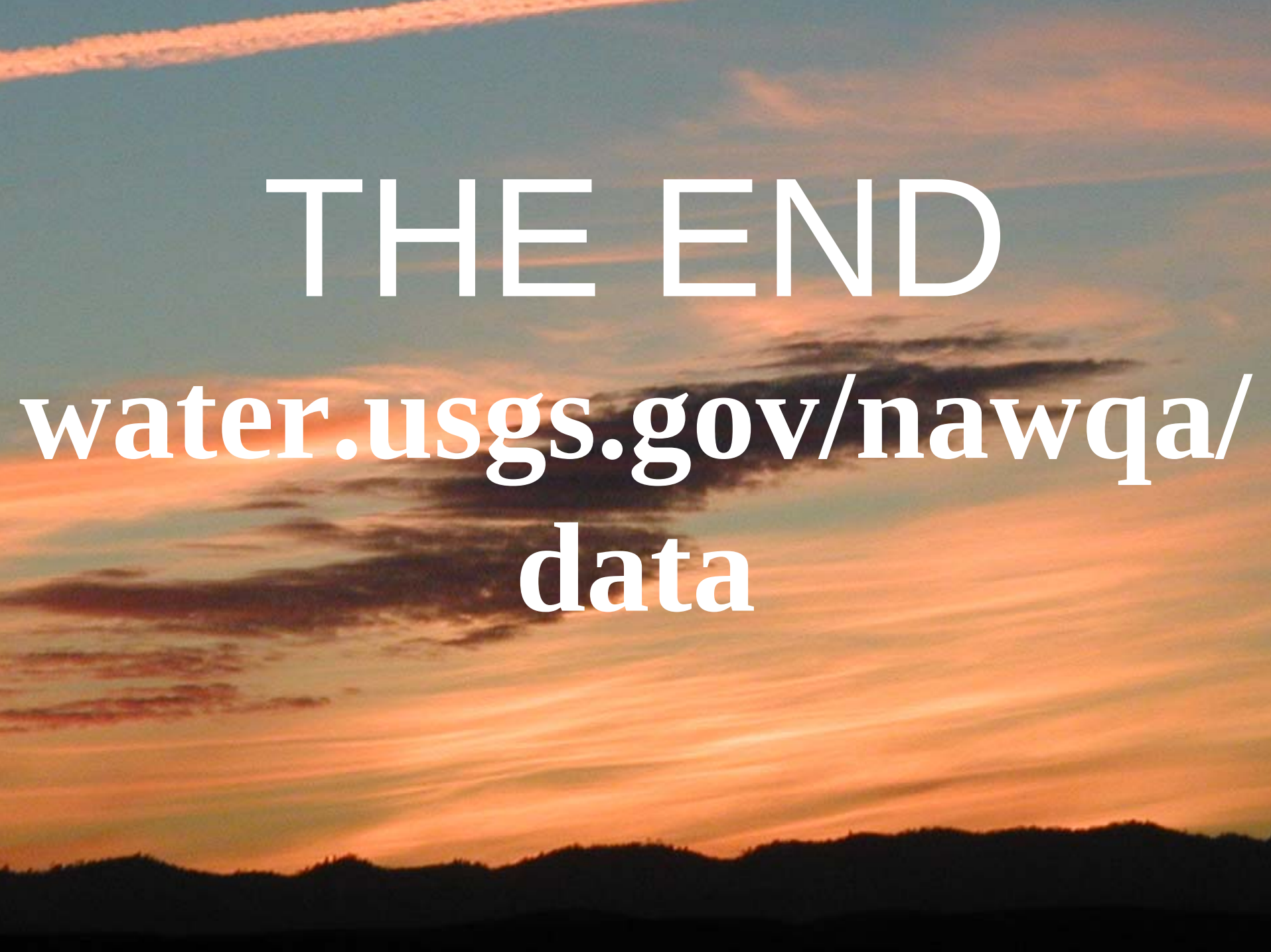
Most recent value: 2.36 04-16-2001 03:00

Link to NWIS Web
water.usgs.gov/nwi



# Future Plans

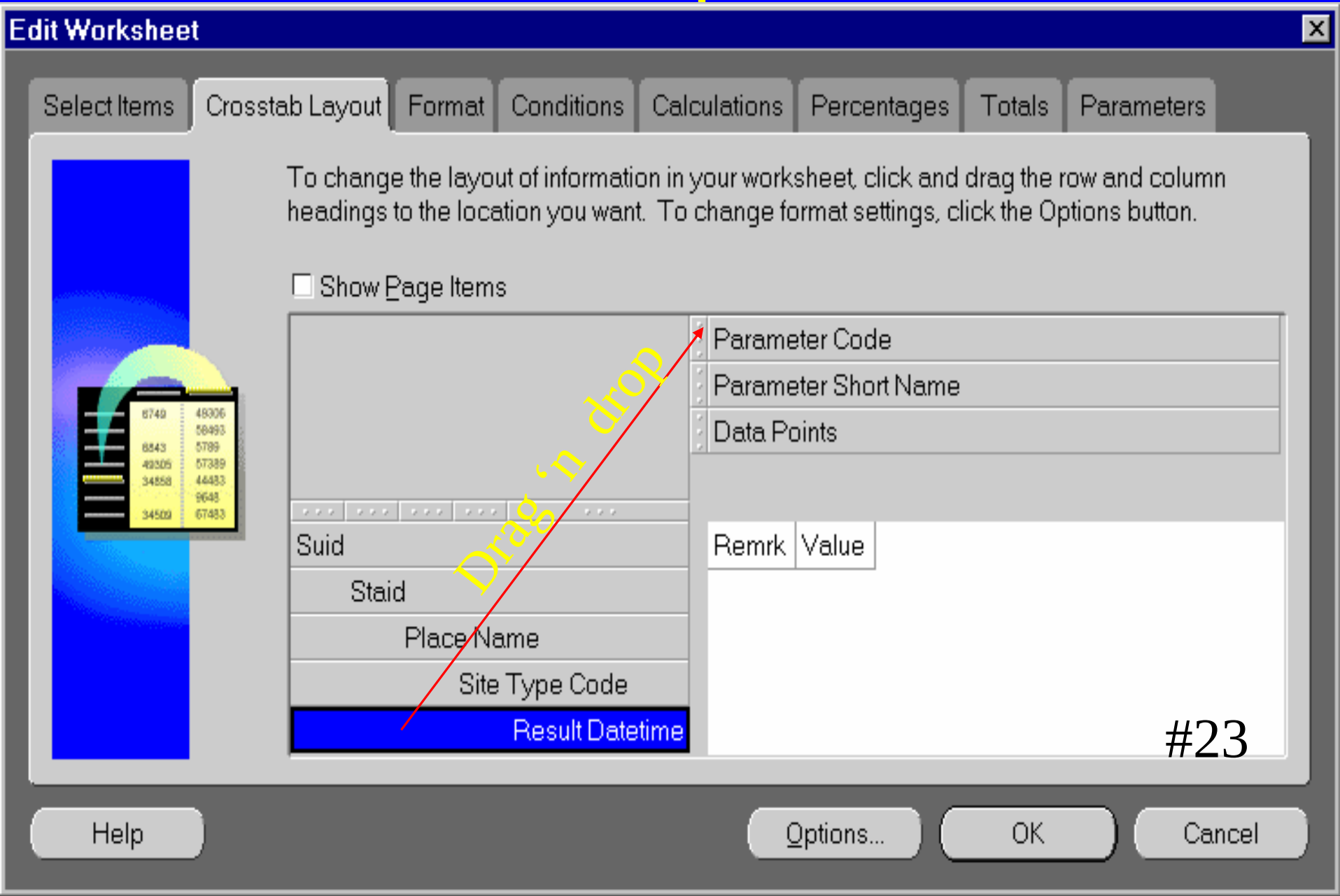
- Load Algae and Habitat data
- Customizable summary tables and graphs from the warehouse to answer public questions
- Capability to display results from warehouse query on a map
- Support of new field computers



# THE END

**water.usgs.gov/nawqa/data**

# Pivot Example—cont.




#23

# Choose Value(s) for Item

Edit Condition

Name: Parameter Short Name = 'ATRAZINE DISS REC'

☑ Generate name automatically

Description:

Location: Workbook1

Formula

Enter a single-quoted text value or select from the drop list. Multiple values must be separated with commas.

| Item | Condition | Value(s) |
|---|---|---|
| Parameter Short Name | = | |

Advanced >>

- ☑ ATRAZINE DISS REC
- ☐ ATRAZINE UNF REC
- ☐ ATRAZINE WTR FILTER
- ☐ AVBSLOPE
- ☐ AZOBENZENE BM <2MM
- ☐ B2CHL1MTHETHETHER<2
- ☐ B2CHLETHYLETHER<2M

☑ Match case

Cancel

Help

# Ag SW Sites

USGS-NAWQA Water-Quality Thematic Map - Microsoft Internet Explorer

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Address http://osbddwimdn.er.usgs.gov/NAWQAMapTheme/index.jsp Go

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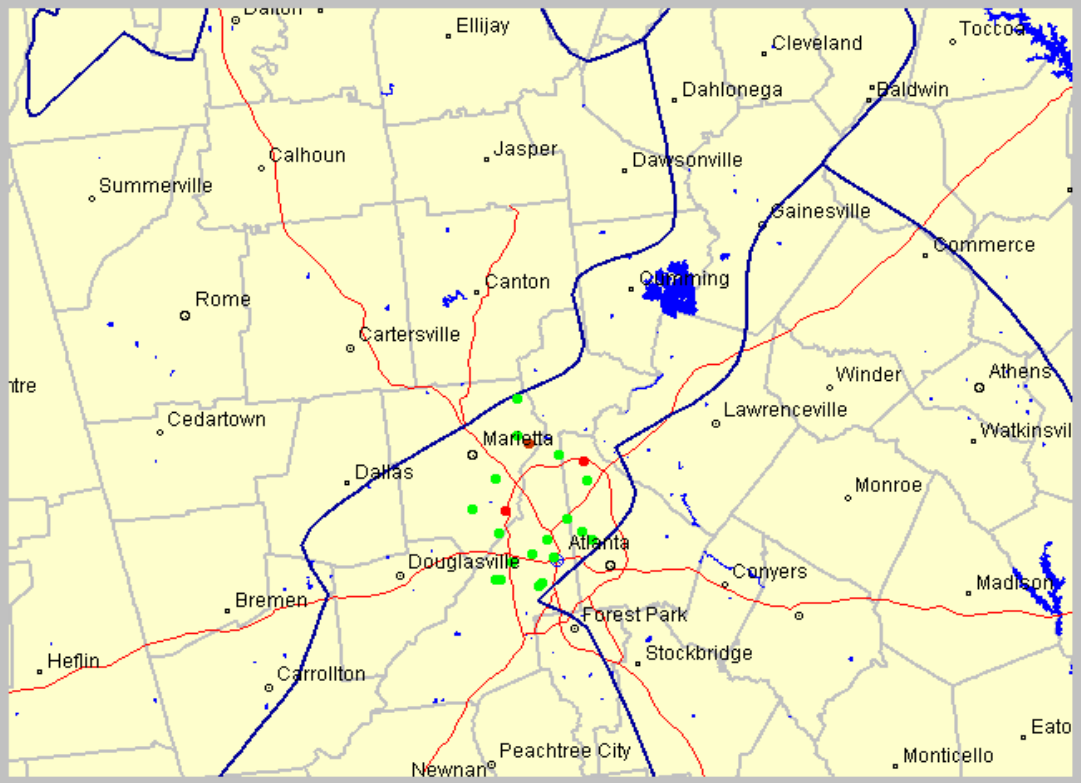
NAWQA Data Warehouse




ARIZONA
ARKANSAS

EPA Region
- R 01 (New England)
- R 02 (NY-NJ)
- R 03 (PA-VA)
- R 04 (Southeast)

Study Unit
- Acadian-Pontchartrain
- Apalachicola-Chattahoochee-Fli...
- Albemarle-Pamlico Drainage
- Allegheny and Monongahela Basi.

Data Display Options:

Select the type of theme you would like to create:

Single Break Point, value: 0.5

Multiple Break Points, number: 5

Distribution: Standard Deviatio

Colors:

Hi: Red

Low: Green

Refresh Data Display

# Thematic maps, cont.

http://maptrek.er.usgs.gov/NAWQAMapTheme

## Legend

METHYL TERTIARY-BUTYL ETHER (MTBE), WATE in UG/L

- 0.91 to 6.3
- 0.12 to 0.91
- 0 to 0.12
- 0 to 0
- 0 to 0

Site Type

- GW
- SW

The map is 133 miles wide.

The center of the map is at: (-84.378, 34.045)

USGS National Water Quality Assessment Program - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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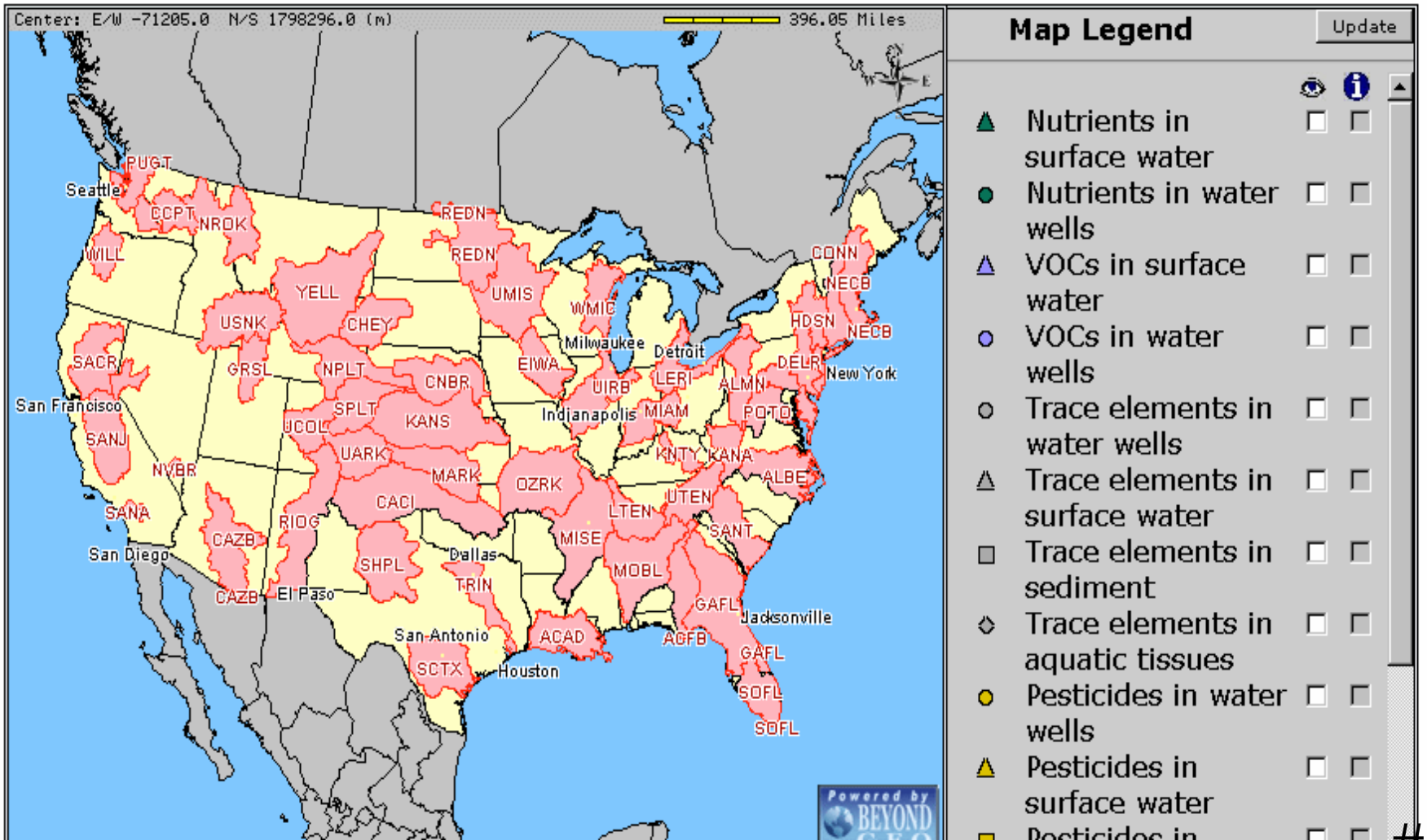
Address http://www.beyondgeo.com/galleries/nawqamap.htm Go

# Beyondgeo

USGS National Water Quality Assessment Program - Data Warehouse

http://www.beyondgeo.com/galleries/nawqamap.htm



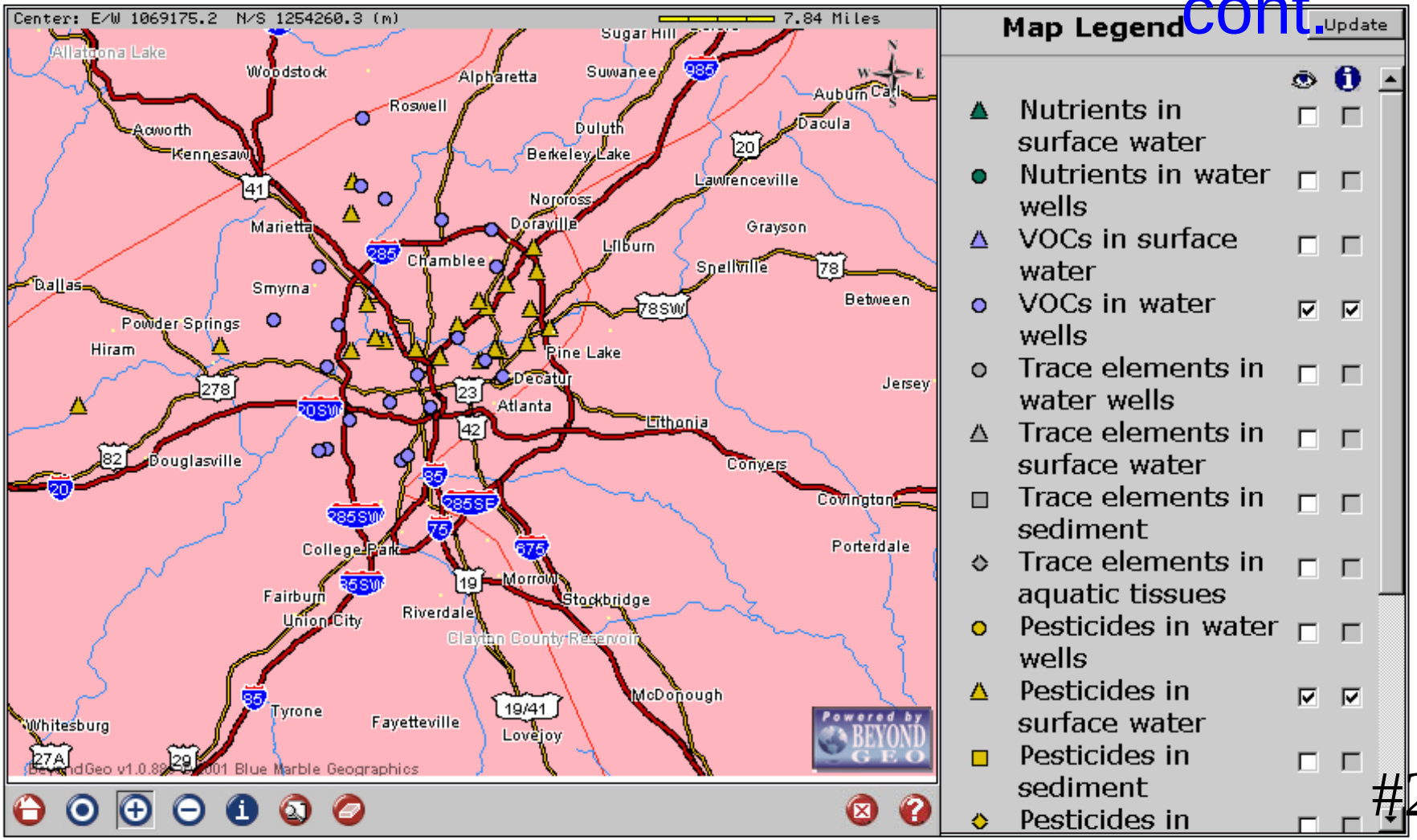
USGS National Water Quality Assessment Program - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss Real.com

USGS National Water Quality Assessment Program - Data Warehouse

# Beyondgeo, cont.




#28

Done

Internet

ArcIMS HTML 3.0 Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss Real.com

Address http://rockys20.cr.usgs.gov/nawqa/viewer.htm Go

USGS

# NAWQA

Locator Off
Zoom In
Zoom Out
Full Extent
Back
Hyperlink
Identify
Find
Clear Select
Print
Help

Zoom Level

United States
Region
State
County
City
Local
Site

Layers | Legend

## Layers

Visible Active

- Major Rivers
- States
- Major Lakes
- NAWQA study units (small scale)
- Shaded Relief

NAWQA study units (small scale)
Selection cleared

Refresh Map

#29

# USGS Mapping Division

http://rockys20.cr.usgs.gov/nawqa/viewer.htm

Zoom In Selected

Links: NAWQA Data Warehouse | NAWQA Program | email: gs.nawqa.data@usgs.gov | Privacy Statement |

ArcIMS HTML 3.0 Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss Real.com

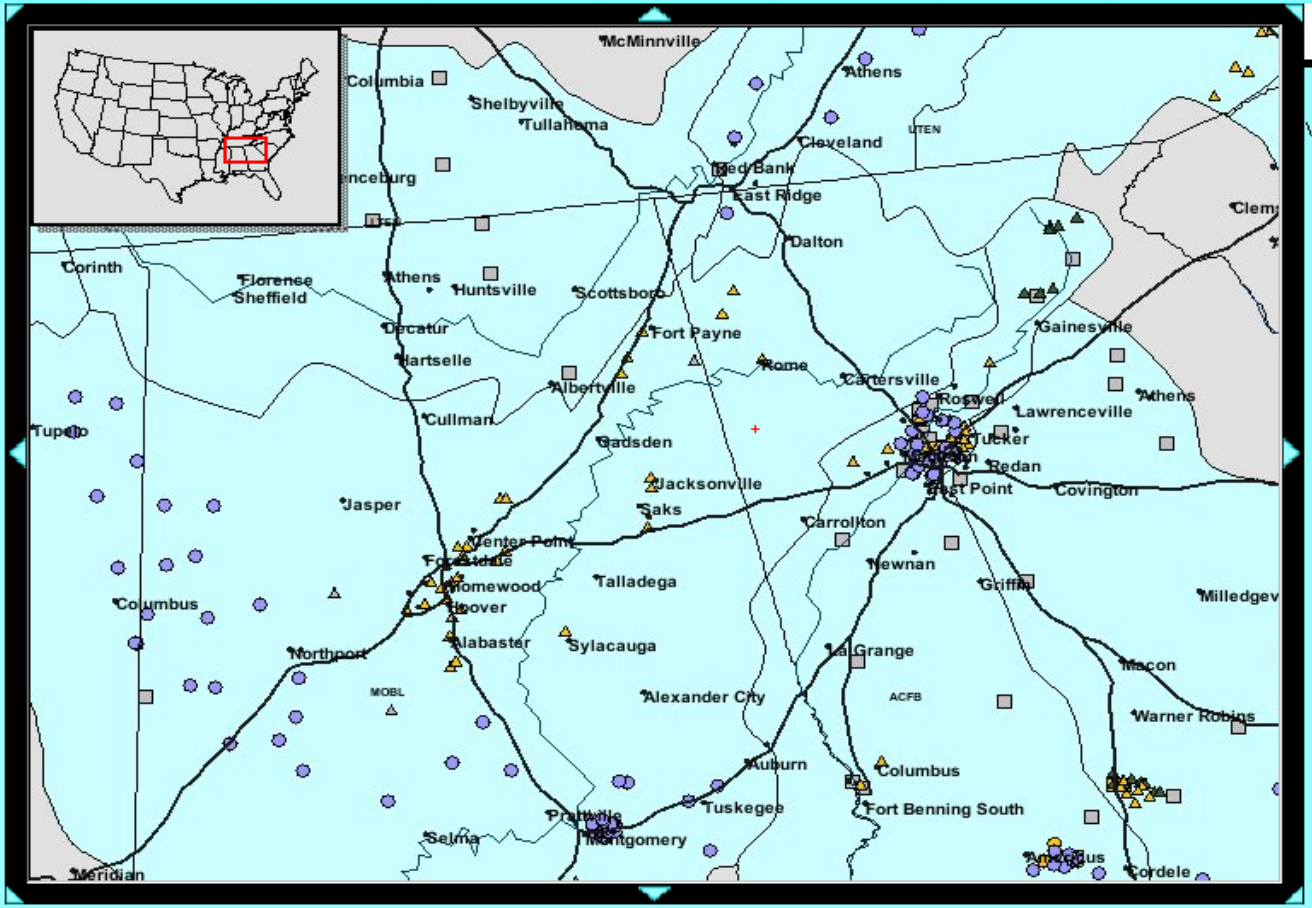
Address http://rockys20.cr.usgs.gov/nawqa/viewer.htm Go

USGS

NAWQA

Locator Off
Zoom In
Zoom Out
Full Extent
Back
Hyperlink
Identify
Find
Clear Select
Print
Help

Zoom Level
United States
Region
State
County
City
Local
Site




Layers Legend

Layers

Visible Active

- Major Rivers
- Major Cities
- Major Roads
- States
- Volatile organic chemicals in wells
- Trace elements in wells
- Pesticides in wells
- Nutrients in wells
- Volatile organic chemicals in streams
- Trace elements in streams
- Pesticides in streams
- Nutrients in streams
- Trace elements in tissue

Refresh Map

NAWQA study units (small scale)
Selection cleared

# USGS Mapping Division, cont.

http://rockys20.cr.usgs.gov/nawqa/viewer.htm

Zoom In Selected

Links: NAWQA Data Warehouse | NAWQA Program | email: gs.nawqa.data@usgs.gov | Privacy Statement |

# Progress – Data coding/aggregation

- Network and purpose of site visit coding issues for cycle II resolved and instructions out.
- Error tracking / correction loop - baby steps-finished data-checking reports with new "OKd status"
- needed pcodes added to NWIS (especially particle size codes)
- clarified NWIS documentation and new codes for purpose of site visit: needed by topical teams and trends.
- assisted NWQL in meeting NAWQA's needs on reload tracking

# Progress – Data Warehouse

- DWH training in Illinois for ~25 people in October.
- Cyber training in October
- TANC Data Mart up and people trianed: why- MS ACCESS too slow and not web deployed
- fish data out internally 12/02 and public 3/03
- invert data for internal 4-1-03, ready for public now
- Draft DWH manual prepared and reviewed

# Progress - Other

- Occurrence charts web application
- Occurrence Graphs for 97 Summary Rpts
- Pie Charts for 97 Summary Rpts
- Jon represents NAWQA to NWIS
- Sandy represents WRD on information architecture Bureau committee with Kevin Gallagher.
- Sandy represents NAWQA in WRD ITAC - Information Technology Advisory Committee

# Plans

- algae still priority #1 to load by summer
- ongoing work with other labs data direct to NWIS
- add Redox category to most samples in the DWH
- NWIS nightly auto aggregation approach
- interface for Nat'l network work
- rounding/censoring – Ken and Rick now trained in SQL, Jessica hired
- guidance for avoiding some cases of time-offsets
- Better website usage stats

# Issues

- continued significant effort with coding issues
- pie chart support continues -- heating up w/ summary report deadlines.
- TANC support and other topical teams’ data marts?

# Challenges That Remain

- Effective Data Integration
  - QC and Regular Data
  - Biology and Chemistry Data
- Daily Data refresh – pilot beginning
- Error tracking / correction loop - baby steps done
- Network Speed & Capacity – much improved
- Software / DWH Updates – improved with applet version
- Training -> Discoverer & Data Organization
- Delivering Large Retrievals to Public

# Meets Core Requirements

- Free-form query
- Export to various formats
- Very little custom-coding
- Dynamic reporting publishable to web

# Pivot Example

Oracle Discoverer - [first.query.2001]

File Edit Sheet Tools Graph Help

| | | | | | Parameter Code | 39632 | | 46342 | | 82679 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Parameter Short Name | ATRAZINE DISS REC | | ALACHLOR DISS REC. | | PROPANIL FIL 0.7 RE | |
| | | | | | | Remrk | Value | Remrk | Value | Remrk | Value |
| Suid | Staid | Place Name | Site Type Code | Result Datetime | | | | | | | |
| | 392646105193701 | XLN - 19 | GW | 22-Aug-95 09:10 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 392947105212601 | XLN - 20 | GW | 22-Aug-95 12:15 PM | | < | .00100 | < | .00200 | < | .00400 |
| | | | | 22-Aug-95 12:20 PM | | - | .08800 | - | .09300 | - | .08900 |
| | | | | 22-Aug-95 12:25 PM | | - | .09000 | - | .13000 | - | .09700 |
| | 393245105155000 | XLN - 27 | GW | 11-Sep-95 10:00 AM | | < | .00100 | < | .00200 | < | .00400 |
| | | | | 11-Sep-95 10:06 AM | | - | .13000 | - | .11000 | - | .13000 |
| | | | | 11-Sep-95 10:09 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393256105215901 | XLN - 21 | GW | 23-Aug-95 09:30 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393257105140301 | XLN - 24 | GW | 24-Aug-95 09:40 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393357105020201 | CENTENNIAL | GW | 15-Jul-93 03:00 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393422105240101 | XLN - 22 | GW | 23-Aug-95 12:00 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393604105172701 | XLN - 23 | GW | 23-Aug-95 02:30 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393632105013201 | FARNELL | GW | 04-Aug-93 09:45 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393644105182101 | XLN - 16 | GW | 16-Aug-95 12:20 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393703105171501 | XLN - 25 | GW | 24-Aug-95 12:50 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393717105151701 | XLN - 15 | GW | 16-Aug-95 08:35 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393736105004001 | BELLVIEW-4 | GW | 29-Jul-93 02:00 PM | | - | .05000 | < | .00200 | < | .00400 |
| | | | | 30-Jul-93 08:30 AM | | < | .00100 | < | .00200 | < | .00400 |
| | 393827105244701 | XLN - 17 | GW | 16-Aug-95 03:45 PM | | < | .00100 | < | .00200 | < | .00400 |
| | | | | 17-Aug-95 09:50 AM | | < | .00100 | < | .00200 | < | .00400 |
| SPLT | 393843105005201 | ENGLEWOOD-1 | GW | 04-Aug-93 03:30 PM | | < | .00100 | < | .00200 | < | .00400 |
| | 393922105031201 | SHERIDAN | GW | 11-Aug-93 09:30 AM | | < | .00100 | < | .00200 | < | .00400 |
| | | | | 11-Aug-93 10:55 AM | | | .00800 | | .13000 | | .11000 |

Page 1 of 4

40 Rows per Page

gw atrazine table | gw atrazine xtab

# Pivot Example—cont.

Oracle Discoverer - [first.query.2001]

File Edit Sheet Tools Graph Help

ORACLE Discoverer™

| | | | | Result Datetime | 14-Jul-93 02:30 PM | | | | | | 29-Jul-93 02:00 PM | | | | | | 30-Jul-93 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Parameter Code | 39632 | | 46342 | | 82679 | | 39632 | | 46342 | | 82679 | | 39632 | |
| | | | | Parameter Short Name | ATRAZINE DISS REC | | ALACHLOR DISS REC. | | PROPANIL FIL 0.7 RE | | ATRAZINE DISS REC | | ALACHLOR DISS REC. | | PROPANIL FIL 0.7 RE | | ATRAZI DISS RI | |
| | | | | | Remrk | Value | Remrk | Value | Remrk | Value | Remrk | Value | Remrk | Value | Remrk | Value | Remrk | V |
| Suid | Staid | Place Name | Site Type Code | | | | | | | | | | | | | | | |
| SPLT | 393422105240101 | XLN - 22 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 393604105172701 | XLN - 23 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 393736105004001 | BELLVIEW-4 | GW | | - | - | - | - | - | - | - | .05000 | < | .00200 | < | .00400 | < | .0 |
| | 393941105201701 | XLN - 14 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 394044104533901 | CHERRY CREEK | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 394314104575001 | HIGH ST | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 394437105411301 | XLN - 2 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 394648105072301 | WHEATRIDGE | GW | | < | .00100 | < | .00200 | < | .00400 | - | - | - | - | - | - | - | |
| | 394830104564001 | I-270 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 401544103443101 | SB00305703BBA | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 401630104462903 | FP S3 - DUBOIS | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 401726104442201 | SB00406526ABB | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 401844104450102 | FP E2 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402016104465501 | SPLT1 - PW24 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402016104465508 | SPLT1B-48 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402018103571801 | SB00405902CBC | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402034103301001 | SB00405502BCD | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402104104404501 | SB00506532DDB | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 402115104432001 | FP D1 | GW | | - | - | - | - | - | - | - | - | - | - | - | - | - | |

Page 1 of 1

30 Rows per Page

gw atrazine table | gw atrazine xtab

# Filter: Values > Health Criteria—cont.

Oracle Discoverer - [health.criteria]

File Edit Sheet Tools Graph Help

| | | Parameter Code | 00631 | 01049 |
|---|---|---|---|---|
| | | **Parameter Short Name** | NO2 + NO3 DISSOLVED | LEAD DISSOLVED |
| | | **Report Units** | (MG/L AS N) | (UG/L AS PB) |
| | | **Human Health Guideline** | 10 | 15 |
| | | | Value | Value |
| Staid | Result Datetime | | | |
| 392349090021001 | 1996-08-29 1100 | | 77.0 | |
| 392756084300900 | 2000-08-02 1100 | | 12.5 | |
| 392825118395001 | 1988-06-22 0900 | | | 1000.0 |
| | 1994-08-18 1200 | | | 16.0 |
| 393015075054501 | 1996-10-30 1000 | | 25.0 | |
| 393050075180001 | 1996-12-20 1000 | | 18.0 | |
| 393052118333501 | 1989-05-03 1315 | | | 40.0 |
| 393104075122201 | 1997-09-04 1200 | | 10.2 | |
| 393122075383201 | 2001-07-05 0930 | | 14.0 | |
| 393159075150201 | 1996-10-30 1400 | | 20.0 | |
| 393214118421701 | 1994-04-01 1500 | | 13.0 | |
| 393311118304703 | 1994-08-22 0930 | | | 32.0 |

Page 5 of 10

100 Rows per Page

value > guideline

# Regular vs. Replicate Samples

Oracle Discoverer - [training.regular.vs.replicate]

File Edit Sheet Tools Graph Help

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Sample Type | REPLICATE | | | | | | |
| | | Parameter Code | 00608 | | 00613 | | 00623 | | 0 |
| | | Parameter Short Name | NITROGEN AMMONIA D. | | NITROGEN NITRITE D. | | NITRO AMN & ORG DIS | | N |
| | | Sample Medium Code | 6 | S | 6 | S | 6 | S | 6 |
| | | | Value | Value | Value | Value | Value | Value | |
| Staid | Begindate | | | | | | | | |
| 394234104595301 | 05-AUG-1993 | | .20000 | .21000 | - | - | .20000 | .20000 | |
| 394236104594903 | 21-APR-1994 | | .02000 | - | .01000 | - | - | - | |
| 394236104595302 | 18-APR-1994 | | .56000 | .52000 | - | - | .60000 | .60000 | |
| | 30-MAY-1995 | | .51000 | .50000 | .01000 | .01000 | .50000 | .60000 | |
| 394236104595303 | 20-APR-1994 | | .48000 | - | - | - | .50000 | - | |
| 394236104595304 | 11-AUG-1994 | | .61000 | .60000 | - | - | .60000 | .60000 | |
| 394236104595307 | 09-AUG-1994 | | .05000 | .05000 | - | - | - | .30000 | |
| 394236104595309 | 20-APR-1994 | | .52000 | .52000 | .01000 | .01000 | .50000 | .50000 | |
| 394236104595314 | 20-APR-1994 | | .21000 | - | - | - | .20000 | - | |
| | 07-JUN-1995 | | - | .23000 | - | - | - | .20000 | |
| 394418105011501 | 22-JUL-1993 | | .01000 | .01000 | - | - | - | - | |
| 394830104564001 | 13-AUG-1993 | | 23.00000 | 23.00000 | .02000 | - | 29.00000 | 29.00000 | |
| 395314105281001 | 25-JUL-1995 | | .03000 | .04000 | - | - | - | - | |
| 400324105201201 | 17-AUG-1995 | | - | - | - | - | - | - | |
| 401630104462902 | 31-AUG-1993 | | .02000 | - | - | - | .30000 | - | |

Page 1 of 1

30 Rows per Page

Sheet 1

# Conditions (advanced)—cont.

**Edit Condition**

What would you like to name your condition?

2010 -- no lindane

☐ Generate name automatically

What description would you like to give your condition?

Formula

Click one of the Insert buttons to create new items or conditions. Shift-click to select multiple items, or drag items to reorder.

| Group | Item | Condition | Values |
|---|---|---|---|
| AND | Primary Schedule Num | = | '2010' |
| | Parameter Code | <> | '39341' |

Insert: New Item, And, Or

Delete

Undo

☑ Match case

((Primary Schedule Num = '2010') AND (Parameter Code <> '39341'))

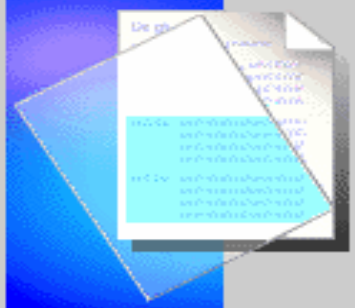
This condition is located in the workbook 'first query'.

#42

Help | OK | Cancel

# Parameters—cont.

Form for users



**Edit Parameter Values**

Please select values for the following parameters. To change these values later, select Edit Parameter Values from the Sheet menu.

| | |
|---|---|
| Enter or select State(s) | 'GEORGIA' |
| Enter or Select County Name(s) | 'Do Not Search by County' |
| Enter or Select NAWQA Study unit(s) | 'Do Not Search by Study Unit' |
| Select Site Type Description(s) | 'All GW Site Types' |
| Enter or Select Land Use(s) | 'Do Not Search by Land Use' |
| Enter or Select Lab Schedule Name(s) | 'Do Not Search by Lab Schedule' |
| Enter or select Parameter Name(s) | 'NITROGEN NITRATE D. (337)' |
| Enter Minimum for result Value | 0 |
| Filter to only see detects? | 'NO' |

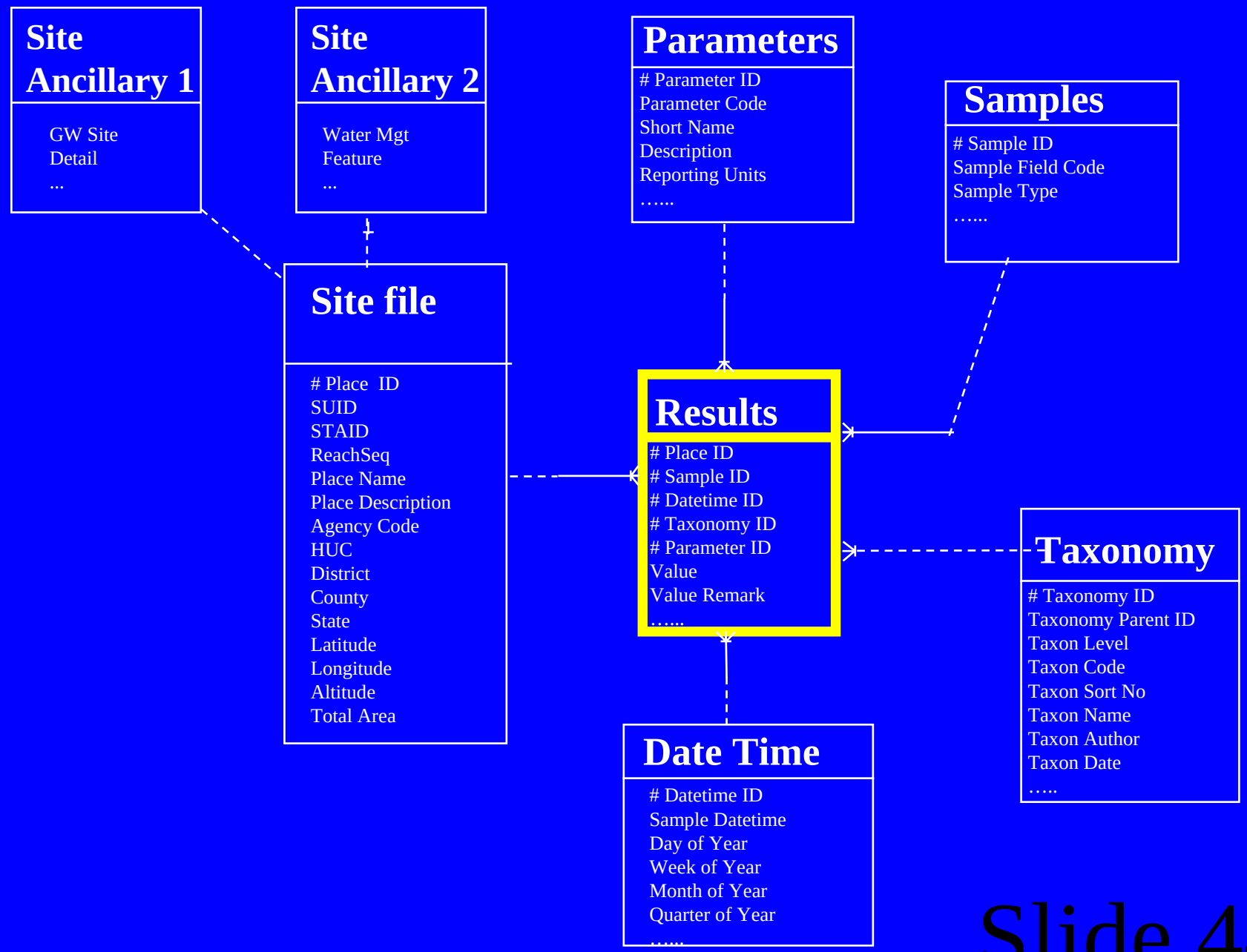
Description

No description available

#43

Help OK Cancel

# High Level Star Schema



# Usage stats