

Using the New Water Quality Portal

A Watershed Academy Webcast



Tuesday, October 23, 2012

1:00pm – 3:00pm Eastern

Instructors:

Susan Holdsworth, Chief, U.S. EPA's Monitoring Branch and Co-Chair of the National Water Quality Monitoring Council

Nate Booth, Lead Architect, Center for Integrated Data Analysis, U.S. Geological Survey, Madison, WI

Charles Kovatch, WQX and STORET Team Leader, U.S. EPA's Monitoring Branch

Webcast Logistics

- **To Ask a Question** – Type your question in the “Questions” tool box on the right side of your screen and click “Send.”
- **To report any technical issues** (such as audio problems) – Type your issue in the “Questions” tool box on the right side of your screen and click “Send” and we will respond by posting an answer in the “Questions” box.

Topics for Today's Webcast

- **Introduction:** The new Water Quality Portal and the Water Quality Exchange
- **Demonstration:** Accessing water quality data from the Water Quality Portal
- **Demonstration:** Using the Water Quality Exchange to put data into the Water Quality Portal





NATIONAL WATER QUALITY MONITORING COUNCIL

Working Together for Clean Water

Using the New Water Quality Portal

Susan Holdsworth, EPA and Mike Yurowitz, USGS co-chairs
Nate Booth, USGS Center for Integrated Data Analysis
Charles Kovatch, EPA Office of Wetlands, Oceans and
Watersheds



NATIONAL WATER QUALITY MONITORING COUNCIL

Working Together for Clean Water

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National Environmental
Methods Index (NEMI)

Publications

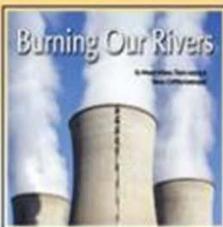
Understand, Restore, and Protect our Waters: The National Water Quality Monitoring Council (Council) provides a forum to improve the Nation's water quality through partnerships that foster increased understanding and stewardship of our water resources.

COMMUNICATE >>> COLLABORATE >>> COORDINATE



"SMART" Monitoring: Strategic Monitoring and Assessment for River Basin Teams

View the presentation from Warren Kimball, Watershed Program Manager, Massachusetts Department of Environmental Protection, as he presents details on [a proposal to coordinate federal, state and local monitoring programs](#) in Massachusetts. ([See all webinars here](#))



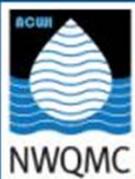
Webinar: "Burning Our Rivers: The Water Footprint of Electricity"

A new report by River Network provides an important accounting of how much water is used to generate electricity on an average per-kilowatt basis. The Burning Our Rivers report summarizes current research on the water use and consumption of all power production in the U.S., including both non-renewable and renewable energy sources. [View the presentation](#) || [Read the report](#)



Comparability of Biological Assessments

Biological assessment comparability is the subject of 4 articles that are written based on the concept that quality control provides the single most important building block of comparability analysis. [Read more...](#)



NATIONAL WATER QUALITY MONITORING COUNCIL



Working Together for Clean Water

WQP

Water Quality Portal

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC).

DOWNLOAD DATA

Download water-quality data in Excel, CSV, TSV, and KML formats.

HOW TO USE THE WQP

- User Guide
- Web Services Guide
- FAQs

NATIONAL RESULTS COVERAGE

Water-quality data in your state.

ABOUT THE WQP

- What is the WQP?
- Contributing organizations
- Comments



2003 USGS – USEPA Memorandum of Understanding

“Working with the National Water Quality Monitoring Council (NWQMC), [USGS and EPA] will develop a geospatial internet based query tool. This tool should be designed to facilitate the greatest possible sharing of data from all sources to all users...”

Benefits of the Portal

- ▶ Reduces effort to use other data sources
 - Collecting data from multiple sources
 - Combining into common format
 - Deliver in single file
- ▶ Leverages and protects investments in monitoring data
 - Common data elements emerging from monitoring community
 - Marketplace of what, when and where for monitoring
- ▶ Supports water quality based decision making
 - Comparison to water quality standards
 - Identify hot spots
 - Develop protection and restoration plans
 - Modeling expected changes

What's next today

- ▶ Nate Booth, USGS will lead you through a demonstration of the portal and show some applications of the data
- ▶ Charles Kovatch, EPA will show you how to add your data to the portal through the Water Quality eXchange

How you can help

- ▶ Use the portal, use the data
 - This webinar is being recorded, so you can refer to it later
 - The portal has a user guide available from the web
- ▶ Add more data through the Water Quality eXchange
 - Visit the tutorials for detailed instructions beyond those provided in this webinar
- ▶ Provide us feedback on likes and suggested improvements

Questions?





NATIONAL WATER QUALITY MONITORING COUNCIL



Water Quality Portal

www.waterqualitydata.us



Search over 150 million water-quality data records from States, Tribal Partners, USEPA, and USGS

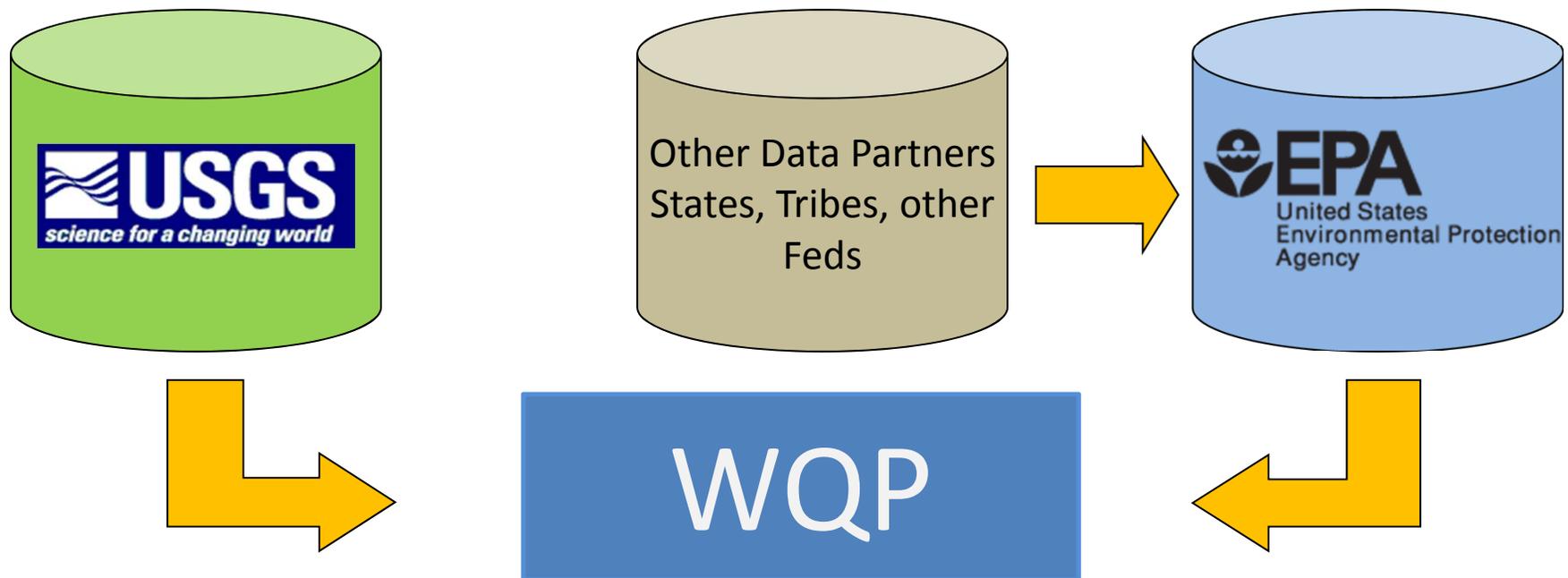


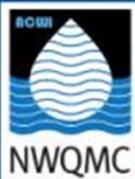
Portal Description and Capabilities

- Includes water-quality data from federal, state and tribal partners through the USGS NWIS & EPA STORET systems
- Based on WQX data format and convention (Water Quality Exchange)
- Organized to support broad regional and national assessments
- Updated every night from NWIS; every week from STORET

Water Quality Portal

The WQP integrates water-quality data from the USGS National Water Information System (**NWIS**) and the EPA STOrage and RETrieval (**STORET**) Data Warehouse.





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Comments



Water Quality Portal

Query data

LOCATION

Country: [select](#)
State: [select](#)
County: [select](#)

Point location: ?

Within: miles from:
Lat: Long:
[my location](#)

Bounding box: ?

North:
West: East:
South:

SITE PARAMETERS

Site Type: [select](#)
Organization ID: [select](#)
Site ID: ?
HUC: ?

SAMPLING PARAMETERS

Sample Media: [select](#)
Characteristic Group: [select](#)
Characteristics: [select](#)
Date range: from to (mm-dd-yyyy)

DOWNLOAD

Select database: All databases USGS NWIS only EPA STORET only
Select data: Sites only Sample results only

Download tabular data:

File format:

- Comma-separated
 Tab-separated
 MS Excel (Excel 2003 and earlier versions have a limit of 65,536 rows. If your download exceeds this limit, only the first 65,536 rows will open.)

Download map data:

File format:

- KML (Keyhole Markup Language - this is available for Sites only)

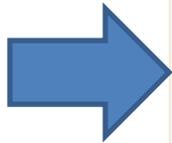
[Show data on Google Maps](#) Google Maps limits the number of sites shown to a maximum of 1000. It will also time out if the query is slow.

DOWNLOAD

Show RESTlike queries ?

Water Quality Portal

Query data



LOCATION

Country: [select](#)
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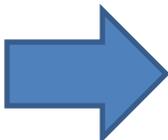
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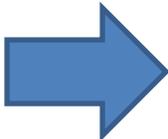
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DOWNLOAD

Show RESTlike queries ?



Result-2.xls [Read-Only] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

F2068 Surface Water

	B	F	G	AF	AG	AH	AI	AJ
1	OrganizationFormalName	ActivityMediaSubdivisionName	ActivityStartDate	CharacteristicName	ResultSampleFractionText	ResultMeasureValue	ResultMeasure/MeasureUnitCode	MeasureQualifierCode
2062	USGS Oregon Water Science Center	Surface Water	2009-12-02	Phosphorus	Total	0.10500	mg/l	
2063	USGS Oregon Water Science Center	Surface Water	2009-12-02	Organic nitrogen	Total	0.39	mg/l	
2064	USGS Oregon Water Science Center	Surface Water	2009-12-02	Ammonia and ammonium	Dissolved	0.015	mg/l NH4	
2065	USGS Oregon Water Science Center	Surface Water	2009-12-16	Kjeldahl nitrogen	Total	0.857	mg/l as N	
2066	USGS Oregon Water Science Center	Surface Water	2009-12-16	Nitrogen, mixed forms (NH3), (NH4), organic, (N	Total	3.2	mg/l	
2067	USGS Oregon Water Science Center	Surface Water	2009-12-16	Phosphate	Dissolved	0.178	mg/l	
2068	USGS Oregon Water Science Center	Surface Water	2009-12-16	Ammonia and ammonium	Dissolved	0.017	mg/l NH4	
2069	USGS Oregon Water Science Center	Surface Water	2009-12-16	Phosphate	Dissolved	0.05800	mg/l as P	
2070	USGS Oregon Water Science Center	Surface Water	2009-12-16	Phosphorus	Total	0.18400	mg/l	
2071	USGS Oregon Water Science Center	Surface Water	2009-12-16	Ammonia and ammonium	Dissolved	0.013	mg/l as N	
2072	USGS Oregon Water Science Center	Surface Water	2009-12-16	Nitrate-nitrite	Dissolved	2.39	mg/l as N	
2073	USGS Oregon Water Science Center	Surface Water	2009-12-16	Organic nitrogen	Total	0.84	mg/l	
2074								
2075	EPA Region 10 Superfund Portland	Groundwater	2005-05-12	Phosphorus	Total	2.23	mg/l	
2076	EPA Region 10 Superfund Portland	Groundwater	2005-05-12	Nitrate	Total	0.0392	mg/l	
2077	EPA Region 10 Superfund Portland	Groundwater	2005-05-12	Nitrite	Total	0.025	mg/l	U
2078	EPA Region 10 Superfund Portland	Groundwater	2005-05-12	Nitrite	Total	0.025	mg/l	U
2079	EPA Region 10 Superfund Portland	Groundwater	2005-05-12	Nitrate	Total	0.111	mg/l	
2080	EPA Region 10 Superfund Portland	Groundwater	2005-05-12					
2081	EPA Region 10 Superfund Portland	Groundwater	2005-05-13					
2082	EPA Region 10 Superfund Portland	Groundwater	2005-05-13					
2083	EPA Region 10 Superfund Portland	Groundwater	2005-05-13					
2084	EPA Region 10 Superfund Portland	Groundwater	2005-05-13					

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- Export Sites
- Export Results

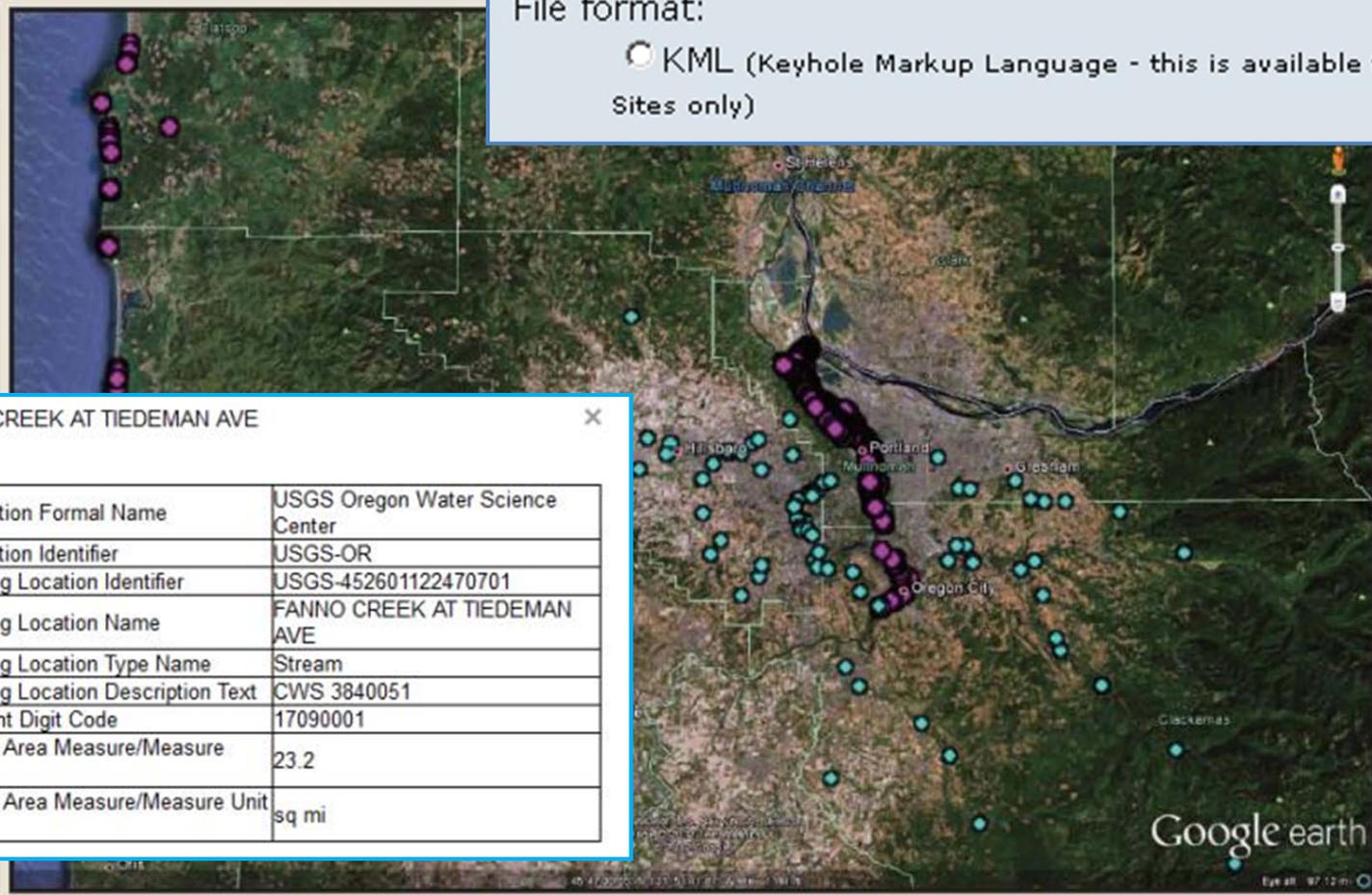
Sites Retrieval

Organization Identifier	USGS-OR
Organization Formal Name	USGS Oregon Water Science Center
Monitoring Location Identifier	USGS-452601122470701
Monitoring Location Name	FANNO CREEK AT TIEDEMAN AVE
Monitoring Location Type Name	Stream
Monitoring Location Description Text	CWS 3840051
HUC Eight Digit Code	17090001
Drainage Area	23.2
Drainage Area Unit	sq mi
Latitude	45.4336778
Longitude	-122.7853417
Country Code	US
State Code	41
County Code	67

Download map data:

File format:

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Map output from the Water Quality Portal for all sites in the Portland, Oreg. area that have been sampled since 2005. The pink dots represent STORET and the blue dots represent NWIS sites.

Sample Result Retrieval

ActivityMediaName	Water
ActivityStartDate	4/25/2011
ActivityStartTime/Time	16:15:00
ActivityStartTime/TimeZoneCode	PDT
ProjectIdentifier	97119H6TU
ActivityConductingOrganizationText	U.S. Geological Survey-Water Resources Discipline
MonitoringLocationIdentifier	USGS-452601122470701
ActivityCommentText	A-1220118 TPCN Volumes: 1- 15.20mL 2- 17.30mL 3- 16.50mL L-1220118 Date on FCC 4/26/11,
HydrologicCondition	Rising Stage
HydrologicEvent	Storm
CharacteristicName	Nitrogen
ResultSampleFractionText	Suspended
ResultMeasureValue	0.53
ResultMeasure/MeasureUnitCode	mg/l
ResultValueTypeName	actual
USGSPCode	49570
ResultAnalyticalMethod/MethodIdentifier	COMB7
ResultAnalyticalMethod/MethodName	TPN, GF/F, combustion
LaboratoryName	USGS-National Water Quality Lab, Denver, CO
AnalysisStartDate	5/19/2011
DetectionQuantitationLimitTypeName	Long Term Method Detection Level
DetectionQuantitationLimitMeasure/MeasureValue	0.017
DetectionQuantitationLimitMeasure/MeasureUnitCode	mg/l

Water: One Science - Shared Effort - Common Future
Eighth National Monitoring Conference

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MILMS

working to
KRON
SWDP
Earth
Reference

Get US
NAME

- All roads
converge
in Manhattan

The tablet displays the 'Water Quality Portal' interface. The page includes a header with the MDOC and EPA logos, and a navigation menu on the left. The main content area is divided into several sections: 'LOCATION' with fields for Country, State, County, and Point Selection; 'SITE PARAMETERS' with fields for Site Type, Organization ID, Site ID, and AQS; 'SAMPLING PARAMETERS' with fields for Sample Media, Characteristic Group, Characteristic, and Date Range; and 'DOWNLOAD' options for tabular data and map data. A 'Show Data on Google Maps' section is also visible at the bottom.



Example Data Retrieval

“I want to download all the stream sites and sampling results in the Big Thompson River Basin (HUC 10190006) where nutrient data were collected from October 1, 2000 to September 30, 2004.”

www.waterqualitydata.us

LOCATION

Country: [select](#)
State: [select](#)
County: [select](#)

Point location: [?](#)

Within: miles from:
Lat: Long:
[my location](#)

Bounding box: [?](#)

North:
West: East:
South:

SITE PARAMETERS

Site Type: [select](#)
Organization ID: [select](#)
Site ID: [?](#)
HUC: [?](#)

SAMPLING PARAMETERS

Sample Media: [select](#)
Characteristic Group: [select](#)
Characteristics: [select](#)
Date range: from to (mm-dd-yyyy)

DOWNLOAD

Select database: All databases USGS NWIS only EPA STORET only
Select data: Sites only Sample results only

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Point location

Within:
Lat:
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HUC: ?

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Select database: All databases USGS N
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DOWNLOAD

Select siteType

For help, go to the [User's Guide](#)

- Check the box to select all items
- Aggregate groundwater use (NWIS only)
 - Aggregate surface-water-use (NWIS only)
 - Atmosphere
 - Estuary
 - Facility
 - Glacier (NWIS only)
 - Lake, Reservoir, Impoundment
 - Land
 - Ocean
 - Other-Ground Water (STORET only)
 - Other-Surface Water (STORET only)
 - Spring
 - Stream
 - Subsurface
 - Well
 - Wetland

Ok

LOCATION

Country: [select](#)
State: [select](#)
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DOWNLOAD

Select sampleMedia



Select characteristicType



For help, go to the [User's Guide](#)

Check the box to select all items

- Biological (NWIS only)
- Information (NWIS only)
- Inorganics, Major, Metals (NWIS only)
- Inorganics, Major, Non-metals (NWIS only)
- Inorganics, Minor, Metals
- Inorganics, Minor, Non-metals
- Microbiological
- Not Assigned (STORET only)
- Nutrient
- Organics, Other
- Organics, PCBs
- Organics, Pesticide
- Physical
- Radiochemical
- Sediment (NWIS only)
- Stable Isotopes (NWIS only)

Ok

Bounding box: ?

Files from:

North:

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South:

SAMPLING PARAMETERS

Sample Media:

[select](#)

Characteristic Group:

[select](#)

Characteristics:

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Date range: from

to

(mm-dd-yyyy)

EPA STORET only

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Bounding box: ?

North:
West: East:

SITE PARAMETER

Site Type: [select](#)
Organization ID: [select](#)
Site ID: [select](#)
HUC: 10

Download Status

Your query will return **14,759** sample results from **76** sites:
From NWIS: 13,247 sample results from 33 sites
From STORET: 1,512 sample results from 43 sites

Click Continue to download the data or Cancel to terminate the request.

Cancel

Continue

Cancel

Continue

DOWNLOAD

Select database:
Select data:

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Search

Search

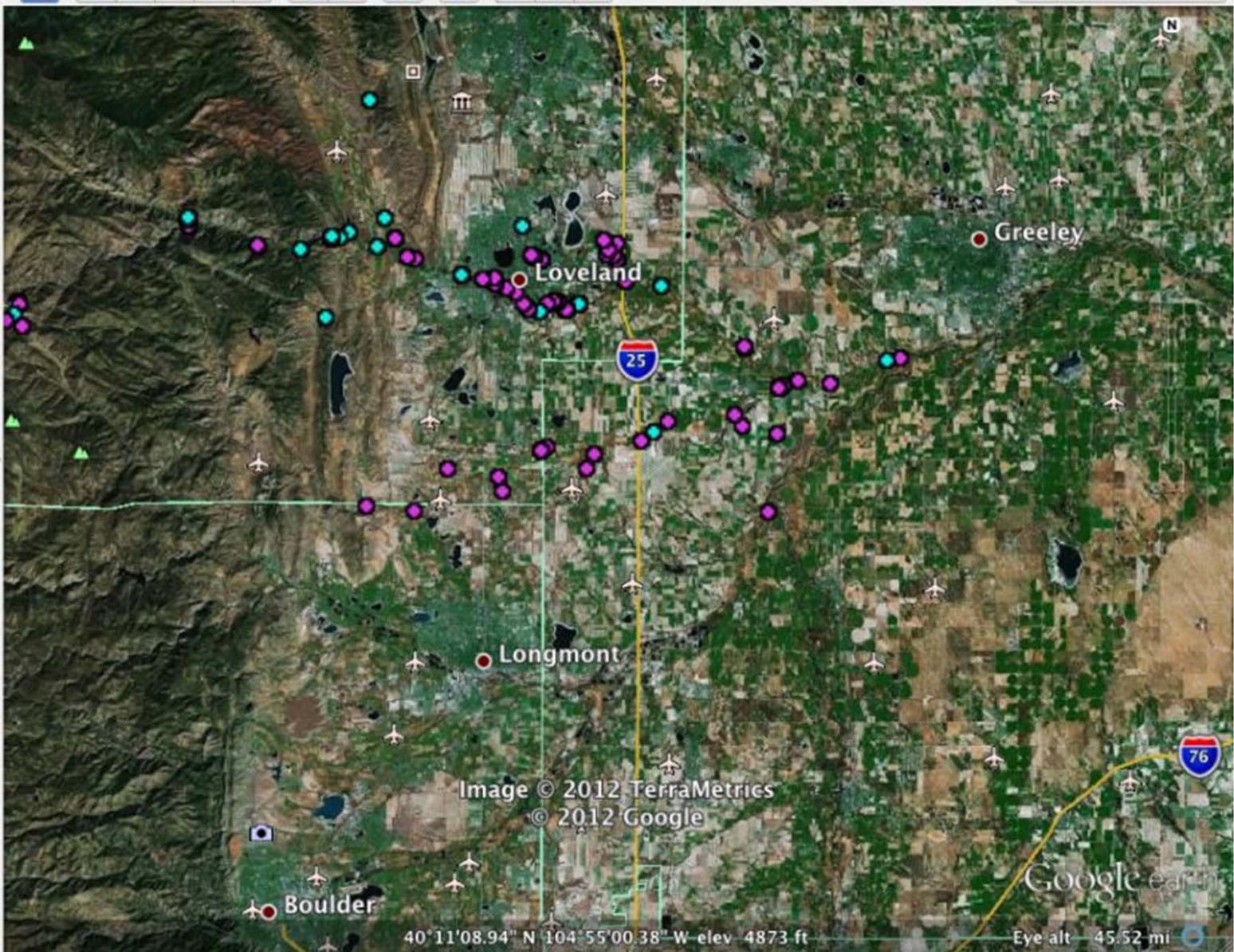
ex: pizza near NYC
[Get Directions](#) [History](#)

Places

- My Places
 - [Sightseeing Tour](#)
Make sure 3D
Buildings
- Temporary Places
 - Station.kml
 - Station-1.kml

Layers [Earth Gallery >>](#)

- Primary Database
 - Borders and Labels
 - Borders
 - Labels
 - Places
 - Photos
 - Roads
 - 3D Buildings
 - Ocean
 - Weather
 - Gallery
 - Global Awareness
 - More



Portal supporting other tools across
the water management community



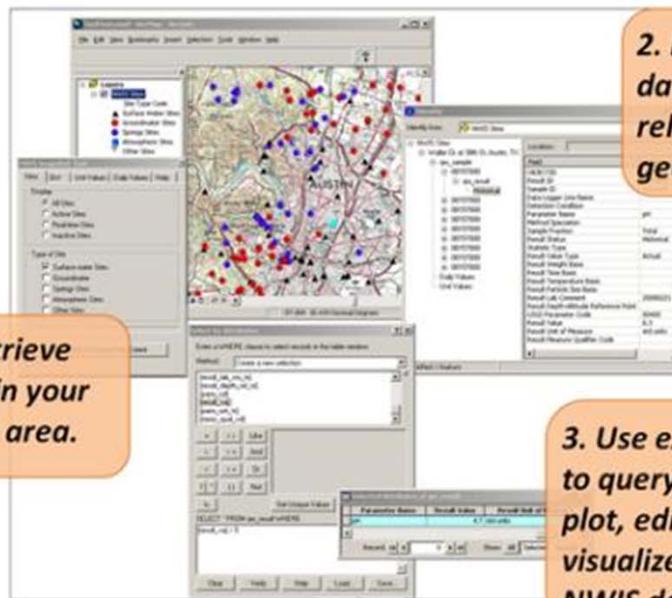
NWIS Snapshot

What is the NWIS Snapshot?

The NWIS Web Services Snapshot Add-In gives ArcGIS users the ability to query NWIS web services and download a "snapshot" of NWIS data from the web services to a geodatabase.

The geodatabase, provided with the Snapshot Add-In installation files, has built-in relationships between sites and measurements taken at each site so users can run powerful queries, import tables and build new relationships with the NWIS data, and edit the data while maintaining the built-in relationships.

After requesting data from NWIS web services and populating the geodatabase, standard ArcGIS functions may then be used to visualize, analyze, and export data to other analysis software also. Aside from the software download links, this website contains tutorials that demonstrate how to install and use the NWIS Web Services Snapshot Add-In for ArcGIS.



1. Retrieve sites in your study area.

2. Retrieve data to a relational geodatabase.

3. Use existing tools to query, analyze, plot, edit, expand, visualize, and export NWIS data.

 [Download Latest Version](#)

Holl, Reece, McCullough (2012)
Supported by USGS CDI

National Groundwater Monitoring Network



National Ground Water Monitoring Network

TIPPECANOE 17 (TC 17)

Filter Map

Agency: All Orgs, ARKAN, IL Envtl, IL State, MT Bur

U.S. Priority: All Natl, Ada-Va, Alluvial, Arbutck, Basin a

Water Quality: Trend - Trend - Special, Special

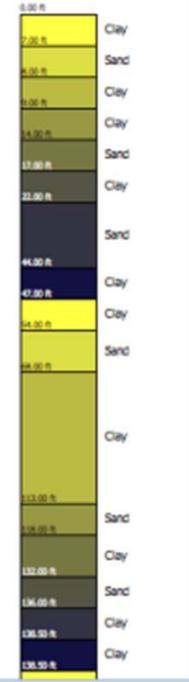
Water Quality: All Wat, Surveill, Surveill, Trend - Trend -

TIPPECANOE 17 (TC 17)

Summary Well Log Water Levels Water Quality

Activity Start Date	Activity Start Time	Time Zone	Characteristic Name	Measure Value	Units
1989-08-17	17:25:00	EST	Temperature, water	11.9	deg C
1989-08-17	17:25:00	EST	Depth, from ground surface to well water level	36.6	m
1989-08-17	17:25:00	EST	Sodium adsorption ratio	0.16	None
1989-08-17	17:25:00	EST	Sodium	6.60	mg/l
1989-08-17	17:25:00	EST	Fluoride	0.20	mg/l
1989-08-17	17:25:00	EST	Silica	18.0	mg/l
1989-08-17	17:25:00	EST	Sulfate	47	mg/l
1989-08-17	17:25:00	EST	Specific conductance	621	uS/cm @25C
1989-08-17	17:25:00	EST	Magnesium	30.0	mg/l
1989-08-17	17:25:00	EST	Potassium	1.40	mg/l
1989-08-17	17:25:00	EST	Alkalinity	320	mg/l CaCO3
1989-08-17	17:25:00	EST	Chloride	4.0	mg/l
1989-08-17	17:25:00	EST	Total dissolved solids	385	mg/l
1989-08-17	17:25:00	EST	Total dissolved solids	0.52	tons/ac ft
1989-08-17	17:25:00	EST	Ammonia and ammonium	0.049	mg/l NH4
1989-08-17	17:25:00	EST	Ammonia and ammonium	0.038	mg/l as N
1989-08-17	17:25:00	EST	Nitrate-nitrite	0.288	mg/l as N
1989-08-17	17:25:00	EST	Iron	7.0	ug/l
1989-08-17	17:25:00	EST	Carbon dioxide	51	mg/l
1989-08-17	17:25:00	EST	pH	7.1	std units
1989-08-17	17:25:00	EST	pH, lab	7.4	std units

Download Data Done



Longitude: -87.0595
Latitude: 40.4595
Elevation: 681.00 ft.
Well Depth: 212.54 ft.

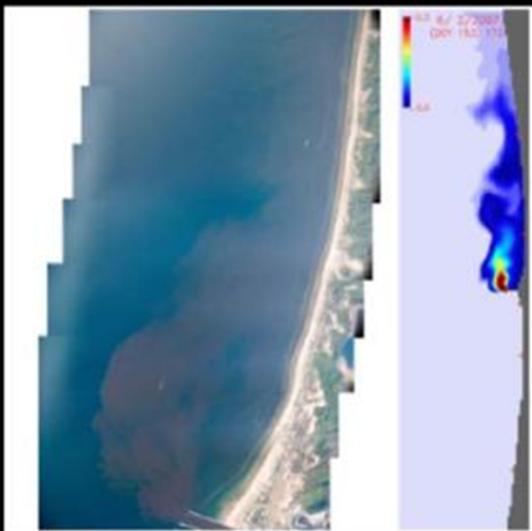
Download Data Done



3 /

Grand River Plume Aerial Photography and Model Simulations

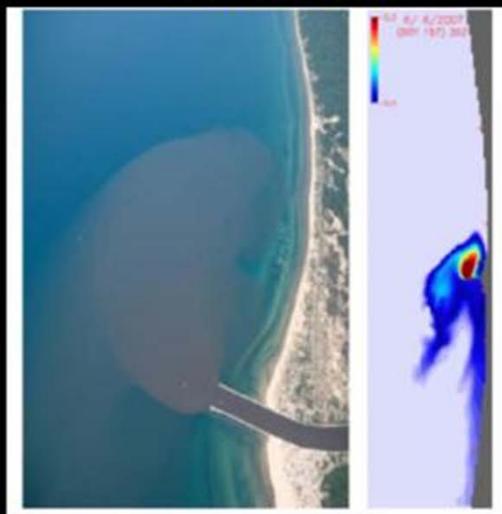
June 2, 2007



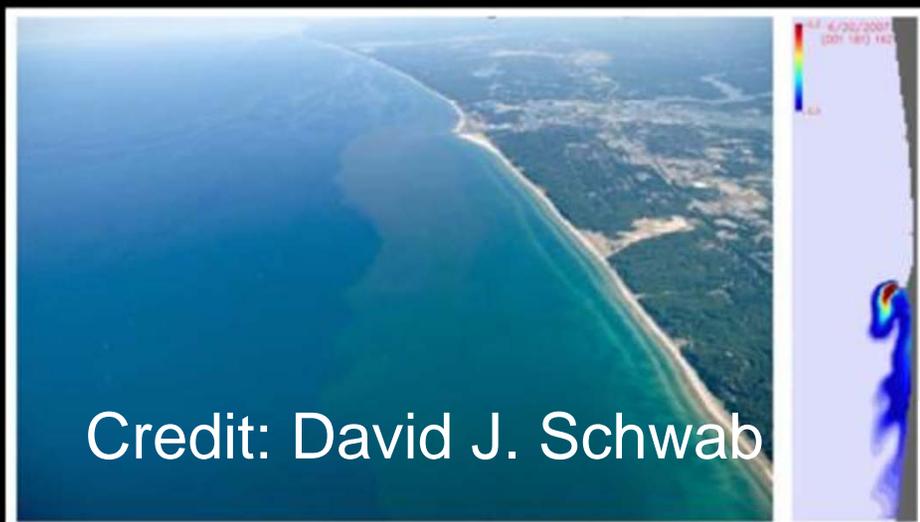
June 10, 2007



June 6, 2007



June 20, 2007



Credit: David J. Schwab



Nearshore Modeling Support

EnDDaT

cida.usgs.gov/enddat/dataDiscovery.jsp

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

Environmental Data Discovery and Transformation - Beta Service Version 1.3.0

Access and Integrate Environmental Observations for Coastal Decision Support

Choose Data Create Project Location EnDDaT Information

USGS Time Series (NWIS, [Plotting Tool](#))
 National Data Buoy Center (NDBC)
 6-hr Quantitative National Precipitation
 Great Lakes Coastal Forecasting System (GLCFS)
 National Climate Data Center (NCDC)
 1-hr Quantitative North Central Precipitation
 USGS Water Quality (Water Quality)
 Surface Summary of Day Data (SOD)

Search within a mile bounding box from selected project (click marker to identify)

CIDA
Center for Integrated Data Analytics

Map Satellite Hybrid Terrain

NWIS GLCFS **Water Quality** NDBC NCDC SOD Precipitation

Overview **Active Stations**

Clear list: Uncheck All:

MANITOWOC RIVER AT MANITOWOC, WI

MANITOWOC RIVER AT MANITOWOC, WI
 Station ID: USGS-04085427
 Approximate distance to active beach: 3.508 miles

Property	Units	Start Date	End Date
<input type="checkbox"/> Temperature, water	deg C	1972-11-30	2008-09-16
<input type="checkbox"/> Suspended sediment concentration (SSC)	mg/l	1972-11-30	2002-10-16
<input type="checkbox"/> Stream flow, instantaneous	cfs	1972-11-30	2011-09-08
<input type="checkbox"/> Suspended sediment discharge	tons/day	1972-11-30	2011-09-08

Display a menu

Statistical Models in R

The image shows a composite view of an R development environment and the source code for the dataRetrieval package. On the left, an R IDE window displays the source code for the package, which includes library calls, variable assignments, and data retrieval functions. The console window below shows the execution of these functions, resulting in a warning message and the successful retrieval of data. On the right, a browser window shows the GitHub repository page for dataRetrieval, featuring the package name, a description, and download options for tar.gz and .zip files. The introduction section explains the package's purpose and provides installation instructions. A calendar graphic at the bottom right indicates the publication date.

```
1 library(dataRetrieval)
2 library(EGRET)
3
4 siteNumber <- '09522000'
5 ParameterCd <- '00631' #Nitrate
6
7 StartDate <- ''
8 EndDate <- ''
9
10 Sample <- getSampleData(siteNumber, ParameterCd, StartDate, EndDate)
11 StartDate <- as.character(min(Sample$Date))
12 EndDate <- as.character(max(Sample$Date))
13 Daily <- getDWDData(siteNumber, '00060', StartDate, EndDate)
14 INFO <- getMetaData(siteNumber, "00631", interactive=FALSE)
15 INFO$shortName <- INFO$station.nm
16 boxConcMonth()
17
```

```
> ParameterCd <- '00631' #Nitrate
> StartDate <- ''
> EndDate <- ''
> Sample <- getSampleData(siteNumber, ParameterCd, StartDate, EndDate)
Warning message:
In reshapeWide(data, idvar = idvar, timevar = timevar, var
multiple rows match for USGSPCode=00631: first taken
> StartDate <- as.character(min(Sample$Date))
> EndDate <- as.character(max(Sample$Date))
> INFO <- getMetaData(siteNumber, "00631", interactive=FALSE)
> INFO$shortName <- INFO$station.nm
> boxConcMonth()
>
```

dataRetrieval
R package source for USGS data retrieval

tar.gz .zip

Introduction

The dataRetrieval package was created to simplify the process of getting hydrologic data in the R environment. It has been specifically designed to work seamlessly with the [EGRET package](#): Exploration and Graphics for RivEr Trends (EGRET)

Download and Installation Options

The easiest way to install the dataRetrieval package is to first install the package 'devtools', along with a set of LaTeX tools, and anything else required to build R packages. Those tools can be found [here](#) for a Mac, or [here](#) for Windows. Carefully follow the directions on the Windows page, and note that you need to install Rtools, as well as [MikTeX](#).

Once you have the required tools for building R packages, you can simply type the following commands in R to build the dataRetrieval package on your system:

```
install.packages('devtools') #if not already installed
library('devtools')
```

Once that is installed, you can use the function `install_github` to install this package directly from

J F M A M J J A S O N D

Hirsch, DeCicco 2012

Available Documentation & Resources

- Portal and Web Services Guide
- FAQs
- Materials for new data providers
- Training materials available

HOW TO USE THE WQP

User Guide

Web Services Guide

FAQs

Upload Data



Future Enhancements

- **Data Integration**
 - Linking with a common river network (NHD)
 - Standardized analytical method metadata (NEMI)
- **Community Support**
 - Highlighting new community tools
 - Monitoring marketplace
- **Other Data Sources**
 - Additional data partners
 - Real-time monitoring
 - Biological and habitat data
- **Geospatial**
 - Mapping Interface
 - NHD based search

Questions?



Using WQX and WQX Web Tools to Share Data through the Water Quality Portal

Charles Kovatch

OW/OWOW

October 23, 2012





Overview

- We have a tool to help you to share water quality data and participate on the Portal.
- Combined, the tool and Portal will increase the value of your data by making it available to multiple users.
- The tool lays out a community standard water data fields to improve water data sharing.



What does the tool do for you?

- Enables you to share data in one format
- Improves interoperability of data systems through the use of standard water monitoring data fields
- Enables you to publish data at a national level
- Increases your ability to use OTHERS data in conjunction with your data, as available in the Portal, for analysis and modeling
- Enables you to manage data in the format that best serves your program needs

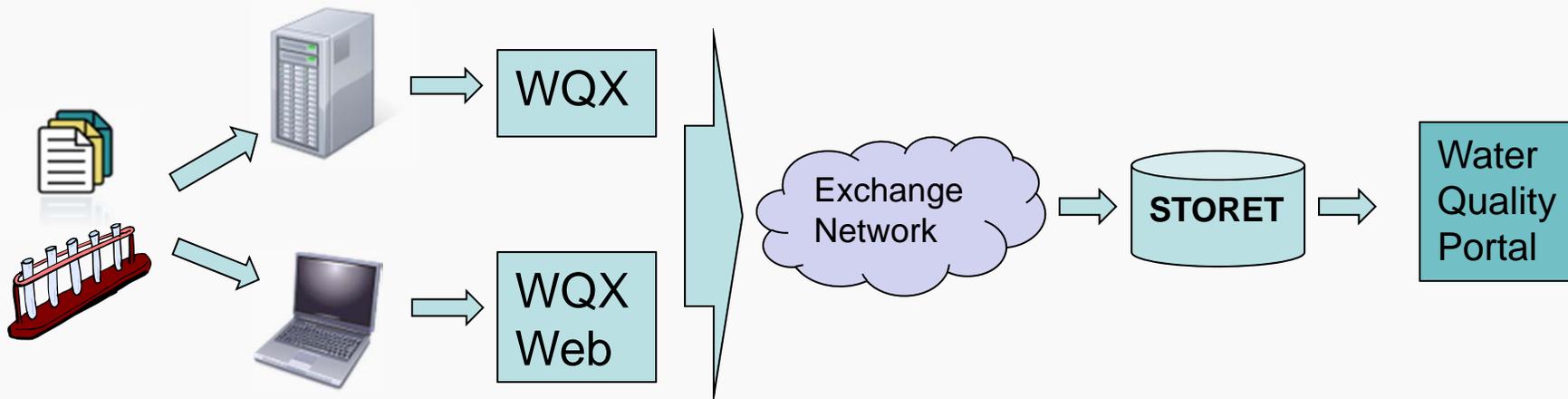


What are the Tools?

- WQX
 - Water Quality Data eXchange
 - XML Schema that provides standard data elements and file format
 - Intended for high volume data users
- WQX Web
 - Water Quality Data eXchange Web Template
 - Is based in MS Excel
 - If you can use a spreadsheet, this is for you



What do the tools do?



- The tools benefit you by:
 - Enabling you to share data in one format
 - Enabling you to publish data at a national level
 - Allowing you to manage data in the format that best serves your program needs



How do the tools work?

Question	Description	Data Field
WHO collected the sample?	Organization Name	Friends of the Potomac River
WHAT was collected?	Chemical Name	Copper
WHY was it collected?	Project Name	Quarterly Sample
WHERE was it collected?	Location Name Lat/Long	Memorial Bridge 40.594, -98.721
WHEN was it collected?	Date	July 24, 2012
HOW was it analyzed?	Method Name	USEPA 123ABC
WHAT were the results?	Result Value Result Units	5 ppm

- The tool benefits you by providing:
 - Structure to capture required data fields
 - A pick-list of common names for chemicals and analytical methods



How does the WQX XML Schema work?

- Establishes the structure to document a water monitoring sample through standard data fields
- Allows a data owner to use their existing database
- Requires a cross-walk between the database and WQX data standard
- Requires you to review the domain values or pick-list to match your database fields to the WQX schema
- Is designed for a high volume data owner
- Requires coding to generate the XML schema
- Allows for automated machine-to-machine data submission
- Is a high front end investment and high long term ROI



WQX XML Example

```
<?xml version="1.0" encoding="UTF-8" ?>
- <WQX xmlns="http://www.exchangenetwork.net/schema/wqx/2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.exchangenetwork.net/schema/wqx/2 http://www.exchangenetwork.net/schema/wqx/2/index.xsd">
- <Organization>
  - <OrganizationDescription>
    <OrganizationIdentifier>WQXTEST</OrganizationIdentifier>
    <OrganizationFormalName>Test Organization</OrganizationFormalName>
    <OrganizationDescriptionText>Here is a description of the organization.</OrganizationDescriptionText>
    <TribalCode>001</TribalCode>
  </OrganizationDescription>
- <Activity>
  - <ActivityDescription>
    <ActivityIdentifier>RDC-4</ActivityIdentifier>
    <ActivityTypeCode>Sample-Routine</ActivityTypeCode>
    <ActivityMediaName>Water</ActivityMediaName>
    <ActivityStartDate>2010-07-19</ActivityStartDate>
    <ProjectIdentifier>SHARK</ProjectIdentifier>
    <MonitoringLocationIdentifier>NJDEP-ML1</MonitoringLocationIdentifier>
  </ActivityDescription>
- <SampleDescription>
  - <SampleCollectionMethod>
    <MethodIdentifier>10366-C</MethodIdentifier>
    <MethodIdentifierContext>WQXTEST</MethodIdentifierContext>
    <MethodName>HOBO? U22 Water Temp Pro v2</MethodName>
    <MethodDescriptionText>Depending on water conditions and desired measurement location, the logger should be appropriately weighted, secured,
      and protected. Some monitoring applications require precise placement of the temperature sensor, such as measuring the temperature of a flow
      at the bottom of a stream or river. Ensure that the logger is appropriately secured so that the temperature sensor is in the desired measurement
      location.</MethodDescriptionText>
  </SampleCollectionMethod>
  <SampleCollectionEquipmentName>Miscellaneous (Other)</SampleCollectionEquipmentName>
</SampleDescription>
</Activity>
+ <Activity>
```



How does the WQX Web Tool work?

- Establishes the structure to document a water monitoring sample through standard data fields
- Allows a data owner to use their existing database
- Requires a cross-walk between the database and WQX data standard
- Requires you to review the domain values or pick-list to match your database fields to the WQX Web template
- Is designed for a lower volume data owner
- Requires no coding to generate the XML schema
- Allows for manual user-to-machine data submission
- Is a lower front end investment and short term ROI



Data Entry and Data Formatting with WQX Web

Clipboard Font Alignment Number Styles Cells Editing

E2 Domain values last updated: 03/02/2012 10:38:00 AM

USEPA WQXWeb Physical Chemistry Template Domain values last updated: 03/02/2012 10:38:00 AM
Version 1.04

- This template is a data entry spreadsheet that guides data owners through organizing water quality data into a format that meets WQX data validation requirements.
- This template is intended to be paired with the WQXWeb Import Configuration - Import PhysChem Results.bin. Changes to the order of columns or the data format in this WQX Web template spreadsheet also need to be applied to the WQXWeb Import Configuration.
- Please refer to the latest version of the "WQXWeb Template Dictionary" for a detailed explanation of the contents within each data entry worksheet, in addition to a complete list of WQX Allowable Values. The dictionary also contains a list of all the columns available in each Data Entry worksheet.

Worksheets are color coded by function. The single pink tab contains buttons used to export data, the three yellow tabs are used to enter data, and the green tabs are reference lists for data columns that allow only specific values.

Group Name	Use	Worksheet Name	Description
Export	Use buttons on this tab convert Data Entry Worksheets (yellow tabs) to .txt files	Export	The Export tab contains buttons to automatically export data from each of the data entry worksheets into tab delimited files ready to be imported into WQXWeb.
Data Entry Worksheets	A template for submission of water quality monitoring data. Projects, Monitoring Locations and Results templates are provided for users	Projects	The Project tab contains information about the water quality data collection program
		Monitoring Locations	The Monitoring Locations tab contains information about the sites where water quality data is being collected
		Results	The Results tab contains the field and laboratory water quality data collected.
Allowable Values/ Look-up Lists/ Domain Values	Tables of allowable values for specific columns in the Data Entry worksheets. All green-colored cells contain the values that should be used in the worksheets. Others cells are included for additional reference.	Allowed Values - Monitoring Locs	This tab contains multiple tables of listing the values that can be entered in particular columns in the Monitoring Locations tab.
		Allowed Values - Results	This tab contains multiple tables of listing the values that can be entered in particular columns in the Results tab
		Characteristics	This tab contains a table of all Characteristics in STORET that can be used in the Characteristic Name field in the Results tab. The table also has fields to indicate if a particular Characteristic requires a Sample Fraction or Field/Lab Analytical Procedure (or both) for a particular characteristic.
		Analytical Methods	This tab contains a list of all nationally available result analytical methods. Additional methods can be defined by an organization in the "Analytical & Collection Methods" tab
		Units of Measure	This tab contains a single table listing all result units of measure available in WQX.
		Analytical & Collection Methods	This tab can be used to record organization specific Result Analytical Methods and Sample Collection Methods. Data entered in this tab is not exported to WQXWeb.

For assistance with using this template, please refer to the US EPA STORET/WQX online resources at <http://www.epa.gov/storet/>
The most recent copy of this template and corresponding dictionary can be downloaded from http://www.epa.gov/storet/wqx/wqxweb_downloads.html
If you have questions or comments about this template, please send email to the STORET Help Desk at STORET@epa.gov

Instructions Export Projects Monitoring Locations Results Allowed Values - Monitoring Loc Allowed Values - Results Characteristics Analytical Methods UR



Data Entry with WQX Web: Monitoring Location Fields

	A	B	C	D	E	F	G	H	I
	Monitoring Location ID	Monitoring Location Name	<u>Monitoring Location Type</u>	HUC Eight-Digit Code	Monitoring Location Latitude	Monitoring Location Longitude	Monitoring Location Source Map Scale	<u>Monitoring Location Horizontal Collection Method</u>	<u>Monitoring Location Horizontal Coordinate Reference System</u>
1									
2	WQXTEST16465	WQXTEST 16465 POTOMAC RIVER NEAR	River/Stream	02070008	38.94978	-77.12764	2400	Interpolation-Map	NAD83
3	WQXTEST27576	WQXTEST 27576 FAKE RIVER, NOWHE	River/Stream	02070008	38.94978	-77.12764	2400	Interpolation-Map	NAD83
4			River/Stream						
5			River/Stream Ephemeral						
6			River/Stream Intermittent						
7			River/Stream Perennial						
8			Riverine Impoundment						
9			Seep						
10			Spring						
11			State/Local Air Monitoring St.						



Converting Spreadsheet Data to WQX Web Compatible Format

USEPA WQXWeb Physical Chemistry Template Version 1.04

Domain values last updated: 03/02/2012 10:38:00 AM

Export Projects

Export Monitoring Locations

Export Results

These Export buttons will export data entered in the three yellow-colored Data Entry worksheets ('Projects', 'Monitoring Locations', and 'Results') into separate tab delimited text files. You will be prompted to choose a location where to save the file. The name of the most recent exported file will be saved in the 'Last Export Saved' table below.

The tab delimited text files exported using these buttons can be imported into WQXWeb using unique import configurations for each file.

Last Export Saved:

Projects	C:\Documents and Settings\bisese\Desktop\ExportProject20120302.txt
Monitoring Locations	C:\Documents and Settings\bisese\Desktop\ExportMonitoringLocations20120302.txt
Results:	C:\Documents and Settings\bisese\Desktop\ExportPchemResults20120302.txt

Notes:

- Project and Monitoring Locations need to be submitted before Results can be submitted for the first time.
- The "Export Monitoring Location" button converts the County Name into a County Code as required by WQXWeb
- Once Projects and Monitoring Locations have been submitted then do not need to be resubmitted except to update information about them.
- Users can manually export data by saving any one of the Data Entry worksheets in 'Text-file tab-delimited' format. For the 'Monitoring Locations' worksheet this will not convert the County Name into a code

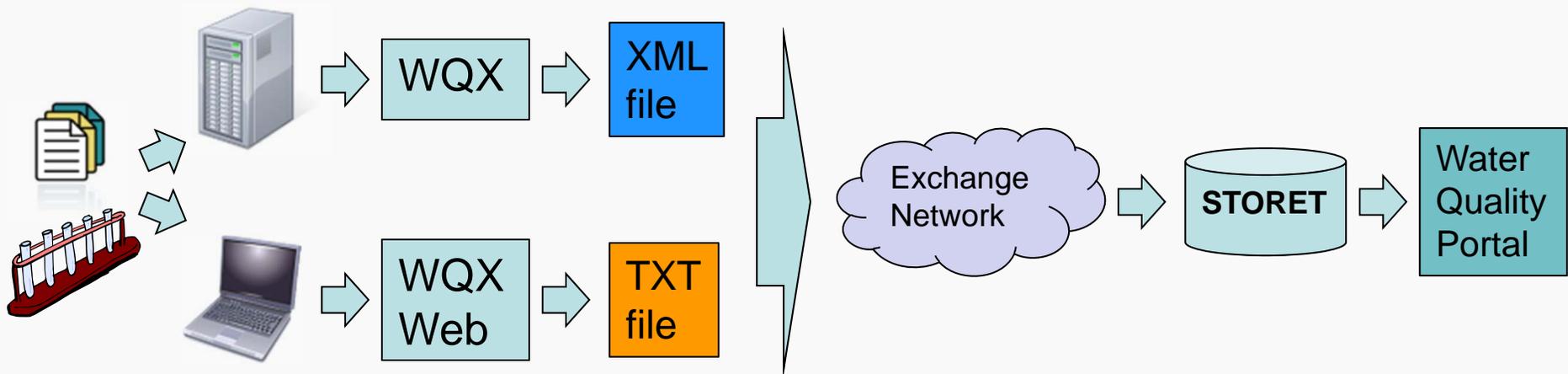
Security Note: In order to use the export buttons on this page you must enable macros for this Excel spreadsheet, or set the macro security to 'Medium.' For more information on how to change macro security settings see the following articles:

[Change Macro Security](#)
[About Macro Security](#)

For assistance with using this template, please refer to the US EPA STORET/WQX online resources at <http://www.epa.gov/storet/>
The most recent copy of this template and corresponding dictionary can be downloaded from http://www.epa.gov/storet/wqx/wqxweb_downloads.html
If you have questions or comments about this template, please send email to the STORET Help Desk at STORET@epa.gov

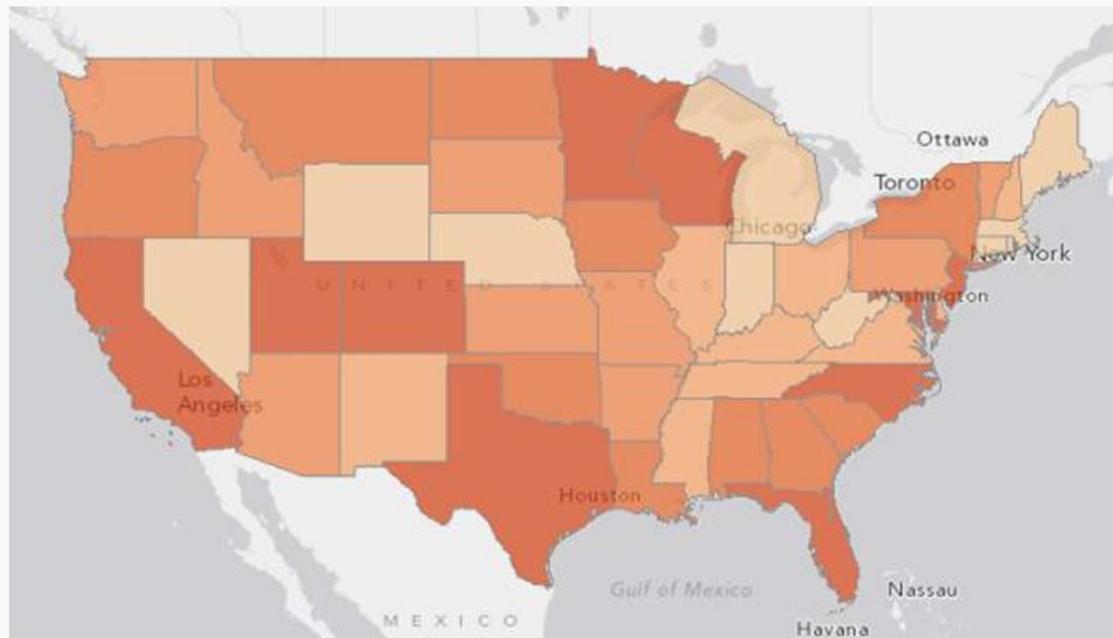


What do the tools do? - Review





What do WQX and WQX Web do for you?



- Join 390 federal, states, and tribal, agencies and watershed organizations already using the WQX and WQX Web file formats
- Enable quick access to your data in one format and the Water Quality Portal for access to over 150 million records nationally



What do WQX and WQX Web do for you?

- Improve interoperability of data systems through the use of standard water monitoring data fields
- Increase the value of your data by making it available to multiple users through the Water Quality Portal
- Increase your ability to use OTHERS data in conjunction with your data for analysis and modeling



What do WQX and WQX Web do for you?

- Enable you to manage data in the format that best serves your program needs and share data based on common data elements
- Assure that your water data results contain the critical pieces of information to increase the utility of your data for analysis and modeling
- Provide a pick-list of common names for chemicals and analytical methods



User Support and Technical Assistance

- STORET Help Desk
 - 1-800-424-9067
 - STORET@epa.gov
- Monthly User Calls
- STORET List Serve
- Website www.epa.gov/storet





Questions?



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WQX/STORET Team Leader
Monitoring Branch,
US EPA, Office of Wetlands, Oceans, and Watersheds

Next Watershed Academy Webcast



Check back in November for the next Webcast:

**“How's My Waterway” and
Other Water Quality Apps**

Information will be posted at
www.epa.gov/watershedwebcasts

Participation Certificate

If you would like to obtain participation certificates type the link below into your web browser:

[http://water.epa.gov/learn/training/wacademy/
upload/wawebcast_certificate_102312.pdf](http://water.epa.gov/learn/training/wacademy/upload/wawebcast_certificate_102312.pdf)

You can type each of the attendees names into the PDF and print the certificates.