

New Water Monitoring Tools

Charles Kovatch

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OW/OWOW

Mid Atlantic Volunteer Monitoring
Conference

August 9, 2013

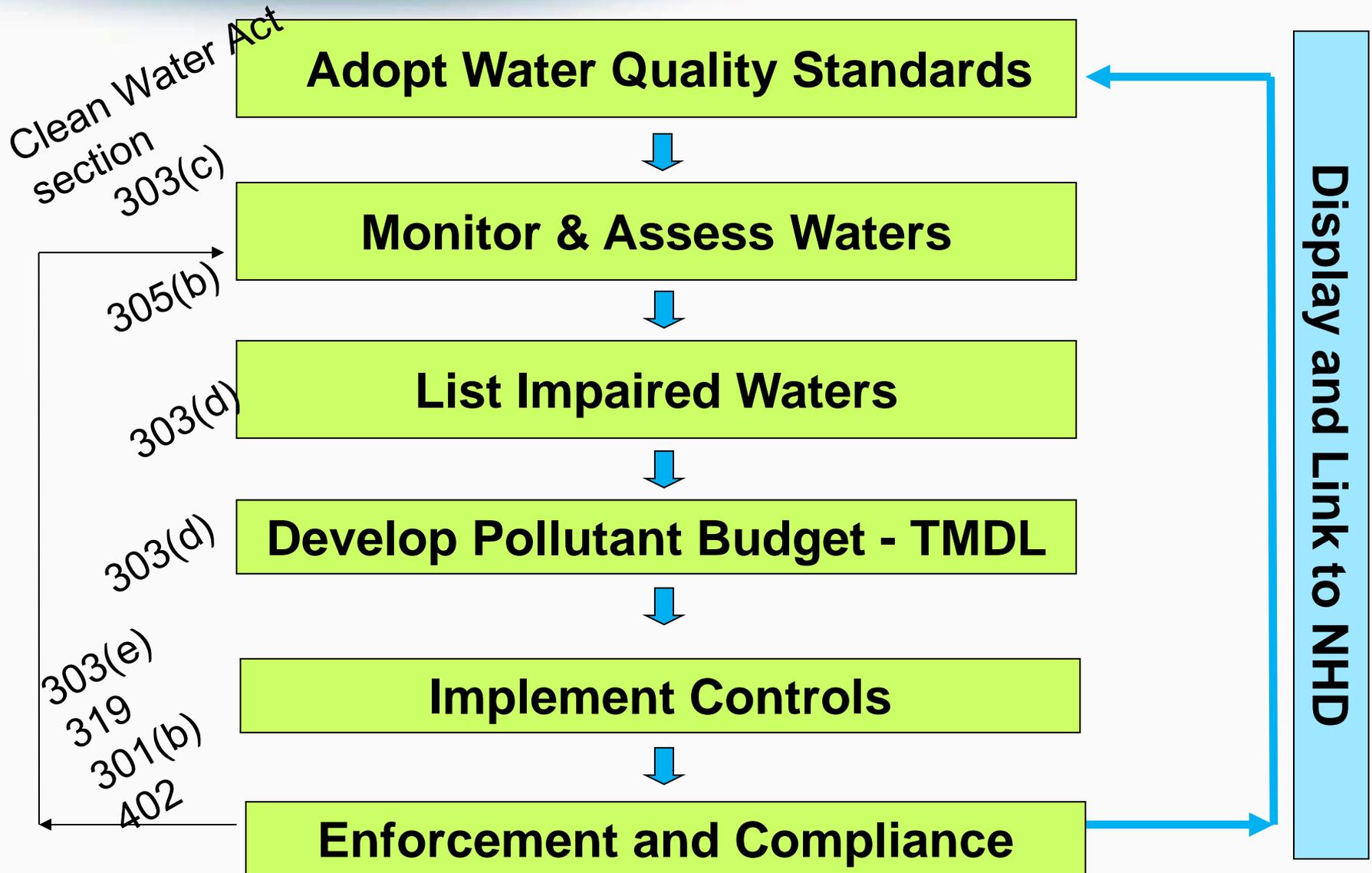


Monitoring Data Needs

- Need to show the value of data
- Need to help managers see “the big picture”
- Need to show the benefit of the tools in decision making
- Need to show how issues are addressed holistically rather than program by program



Clean Water Act Framework





Overview

- Data discovery with Water Quality Portal
- Sharing water data with Water Quality Exchange (WQX)
- Geospatial analysis using National Hydrography Data Set *Plus* v2.0
- My Waterway Mobile App





Water Quality Portal



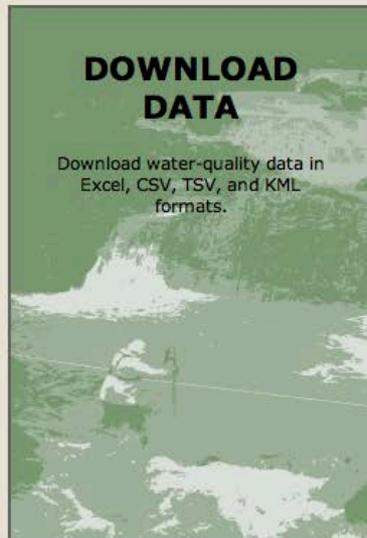
WQP

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

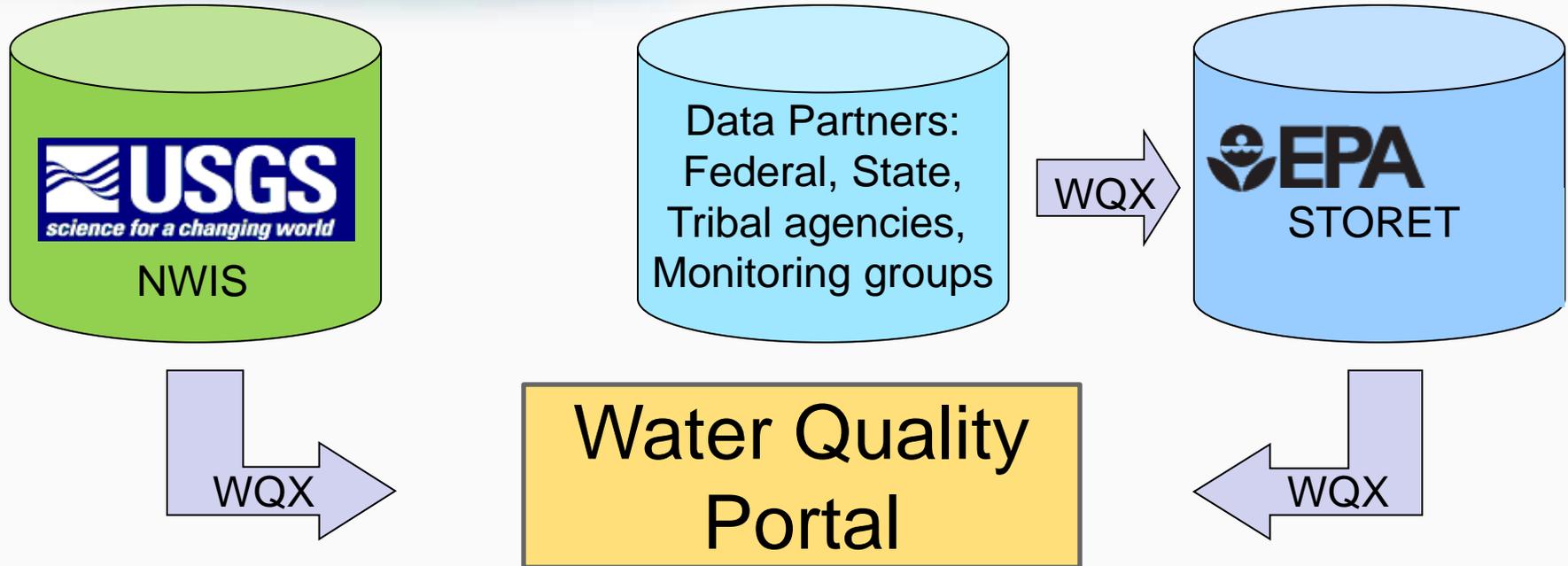
Water-quality data in your state.



ABOUT THE WQP

What is the WQP?
Contributing organizations
Comments



The Water Quality Portal integrates publicly available water-quality data from:

- USGS National Water Information System (**NWIS**)
- EPA STOrage and RETrieval (**STORET**) Data Warehouse
- using the Water Quality eXchange (**WQX**) data format.



[WQP Home](#)
[Download Data](#)
[How to use the WQP](#)

[User Guide](#)
[Web Services Guide](#)
[FAQs](#)
[Upload Data](#)

[National Results Coverage](#)
[About the WQP](#)

[What is the WQP?](#)
[Contributing organizations](#)
[Contact us](#)

DISPLAY OPTIONS

Display by:

- State
- County
- HUC 8

Date:

- Last 12 months
- Last 5 years
- All

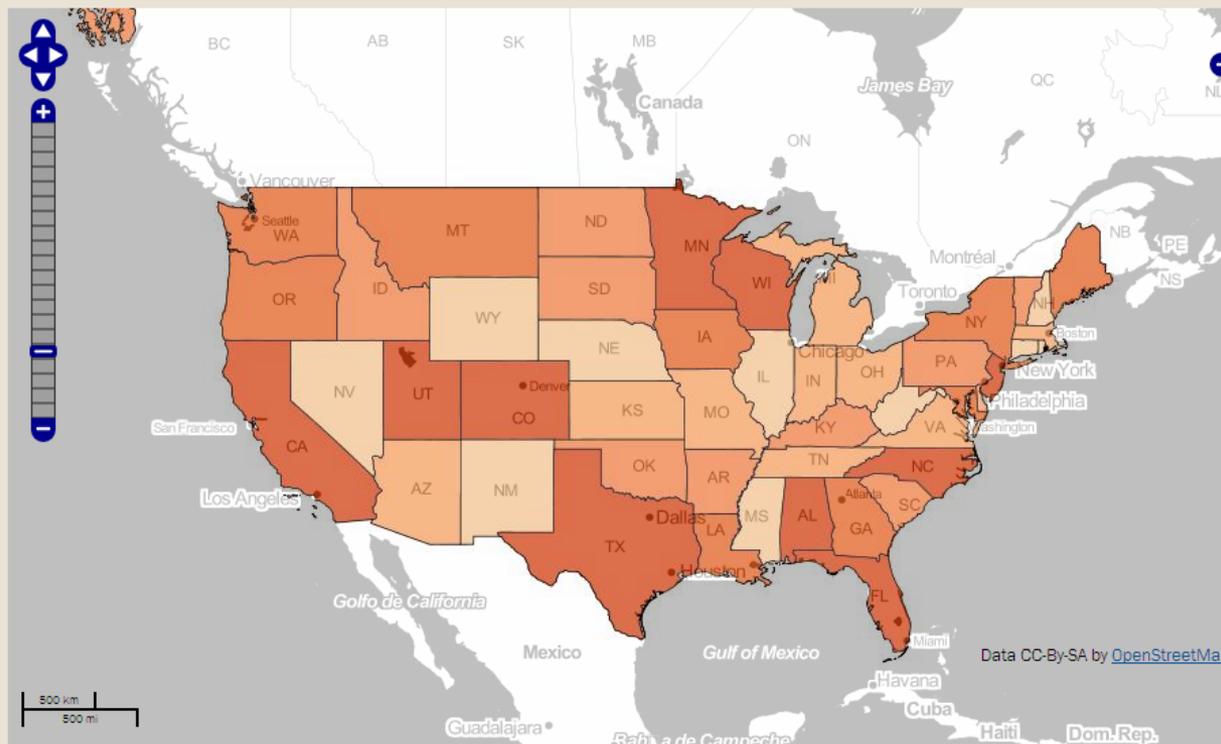
Source:

- EPA Storet
- NWIS
- All

MAP LEGEND

Number of all discrete samples

- 11491 - 139584
- 139585 - 189741
- 189742 - 289551
- 289552 - 442190
- 442191 - 7067969
- Boundary



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

Point location: ?

Within: miles from:
Lat:
[my loca](#)

Bounding box: ?

North:

SITE PARAMETERS

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

DOWNLOAD

Select database: All databases USGS
Select data: Sites only Sample results

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

[Show RESTlike queries ?](#)

Select siteType

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

Check the box to select all items

- Aggregate groundwater use (NWIS only) [select](#)
- Aggregate surface-water-use (NWIS only) [select](#)
- Atmosphere [select](#)
- 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

Sample 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

Sample Result Retrieval

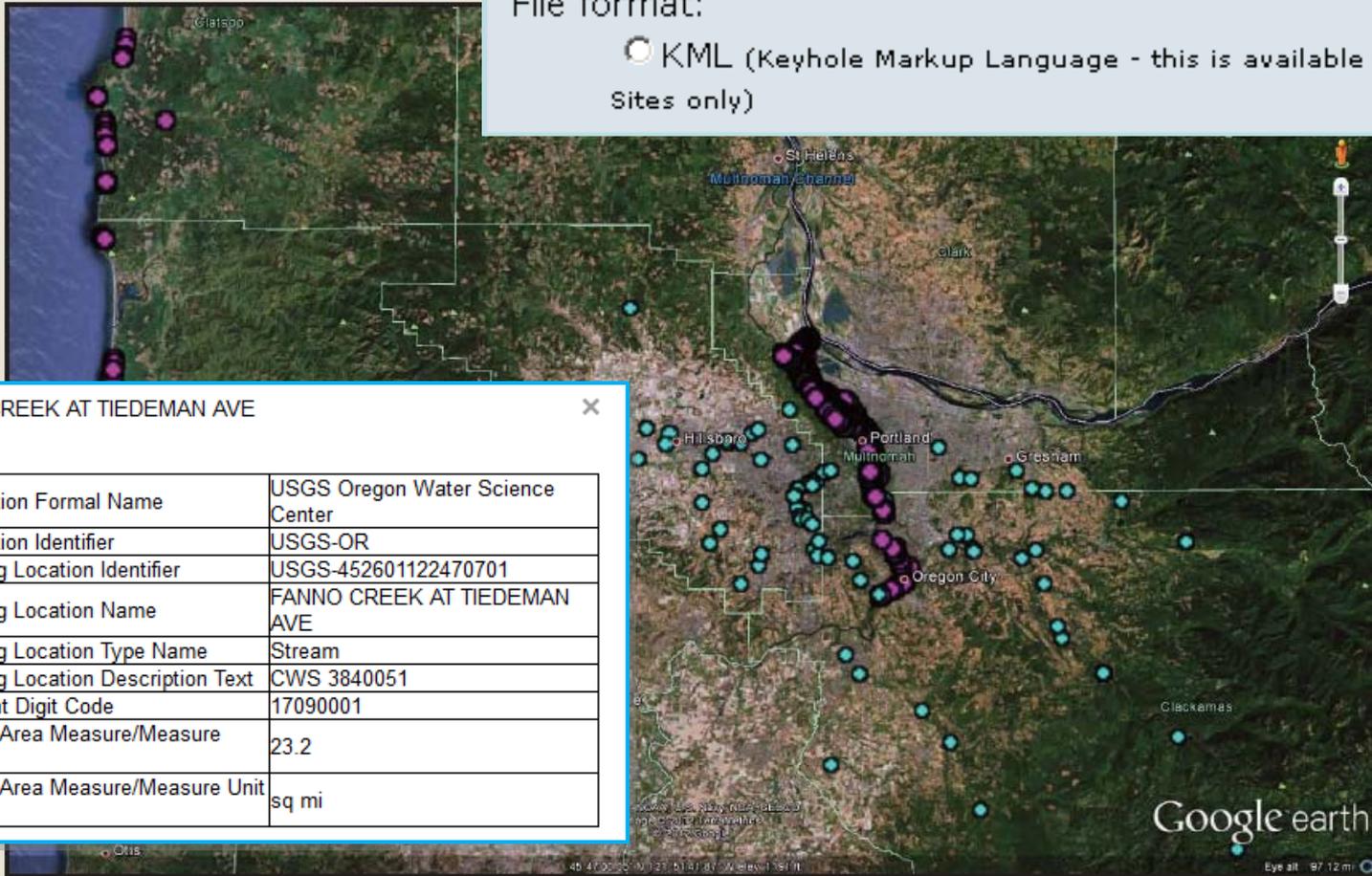


ActivityMediaName	Water
ActivityStartDate	4/25/2011
ActivityStartTime/Time	16:15:00
ActivityStartTime/TimeZoneCode	PDT
ProjectIdentifier	97119H6TU
ActivityConductingOrganizationText	U.S. Geological Survey-Water Resources Discipline
MonitoringLocationIdentifier	USGS-452601122470701
ActivityCommentText	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

Download map data:

File format:

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



Map output from the Water Quality Portal for all sites in the Portland, OR area that have been sampled since 2005. The WQP portal was used to query for all sites (NWIS and STORET) in Clatsop, Columbia, Tillamook, Washington, Yamhill, Multnomah, and Clackamas counties. The pink dots represent STORET and the blue dots represent NWIS sites.



Portal Benefits

- 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 hotspots
 - Develop protection and restoration plans
 - Modeling expected changes



Water Quality Exchange



What does WQX 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 Water Quality 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





How does WQX 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 methods¹⁹



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



WQX Web Data Entry and Formatting

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, NOWHERE	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 Station						



Data Entry with WQX Web: Results Fields

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Project ID	Monitoring Location ID	Activity Type	Activity Media Name	Activity Start Date	Activity Start Time	Sample Collection Method ID	Sample Collection Equipment Name	Characteristic Name	Result Value	Result Unit	Result Sample Fraction	Result Analytical Method ID	Result Analytical Method Context
1														
2	SL_MONIT	TWPK01	Field Msr/Obs	Water	2001-10-03	10:03:00			Temperature, water	49.46	deg F		2550	APHA
3	SL_MONIT	TWPK01	Field Msr/Obs	Water	2001-10-03	10:03:00			Turbidity	43	NTU		2130	APHA
4	SL_MONIT	LOPK01	Sample-Routine	Water	2001-09-10	9:48:00	STNDRD_SCP	Water Bottle	Ammonia-nitrogen	0.9022	mg/l	Dissolved	4500-NH3(C)	APHA
5	SL_MONIT	TWPK01	Sample-Routine	Water	2001-09-10	9:48:00	STNDRD_SCP	Water Bottle	Nitrate	7.2	mg/l	Dissolved	353.3	USEPA
6														
7														
8														
9														
10														
11														
12														
13														
14														



Converting Spreadsheet Data to WQX Web Compatible Format

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

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

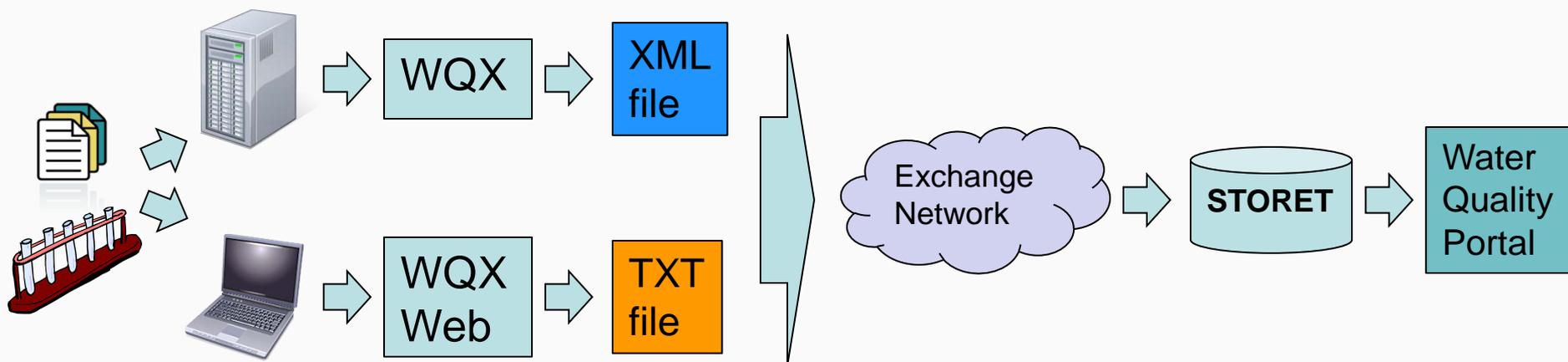
Notes:

- 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

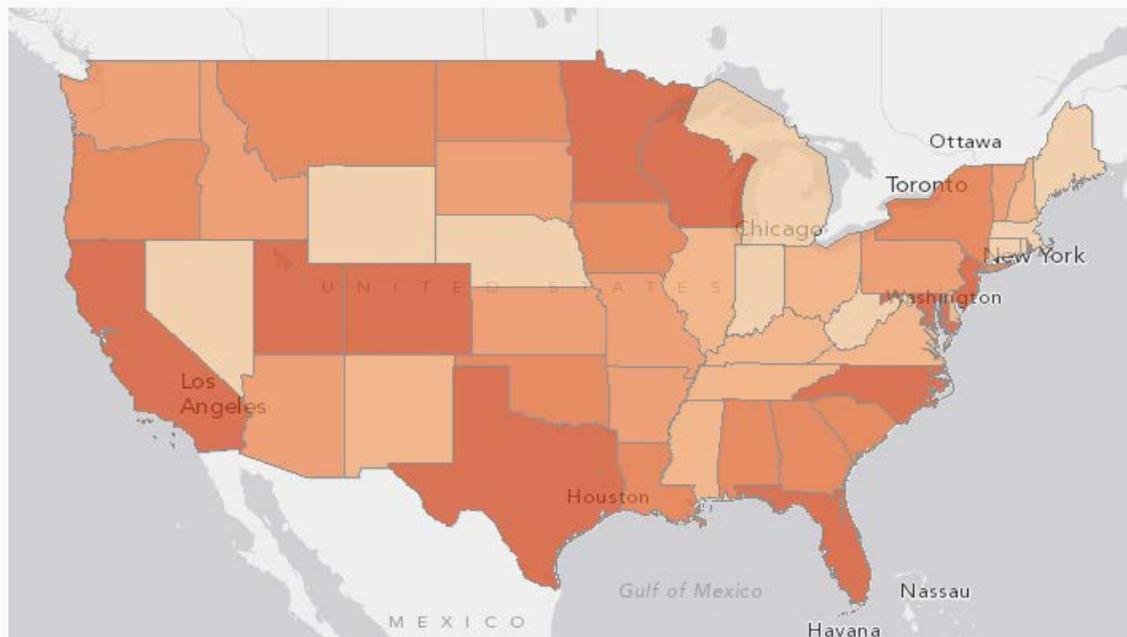
What do the tools do? - Review



- 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



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

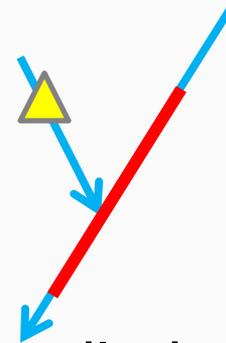


NHD *Plus* V2.0



What is NHD and why is it important?

- National Hydrography Dataset (NHD) is a network of stream addresses based upon concepts from EPA Reach File 1 (RF1) (1982)
- NHD was developed by EPA and USGS (2000)
 - EPA water applications expertise
 - USGS mapping & maintenance infrastructure
- Success of initial NHD led to development of more detailed version by USGS-Mapping, USFS and states (2007)
- NHD currently maintained through USGS-led state stewardship program





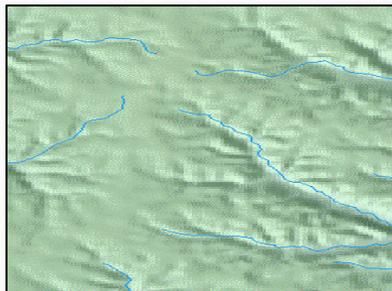
National Hydrography Dataset *Plus* (NHD*Plus*)

- Developed by EPA and USGS-Water (2006) to provide flow volume and velocity estimates for pollution dilution modeling
 - Builds upon NHD stream network – integrated with elevation and HUC12s
 - Additional stream attributes (stream order, flow, etc)
 - Catchments and attributes (precipitation, temperature, land cover)
- Success of initial version led to just-completed Version 2

NHDPlus Geospatial Framework



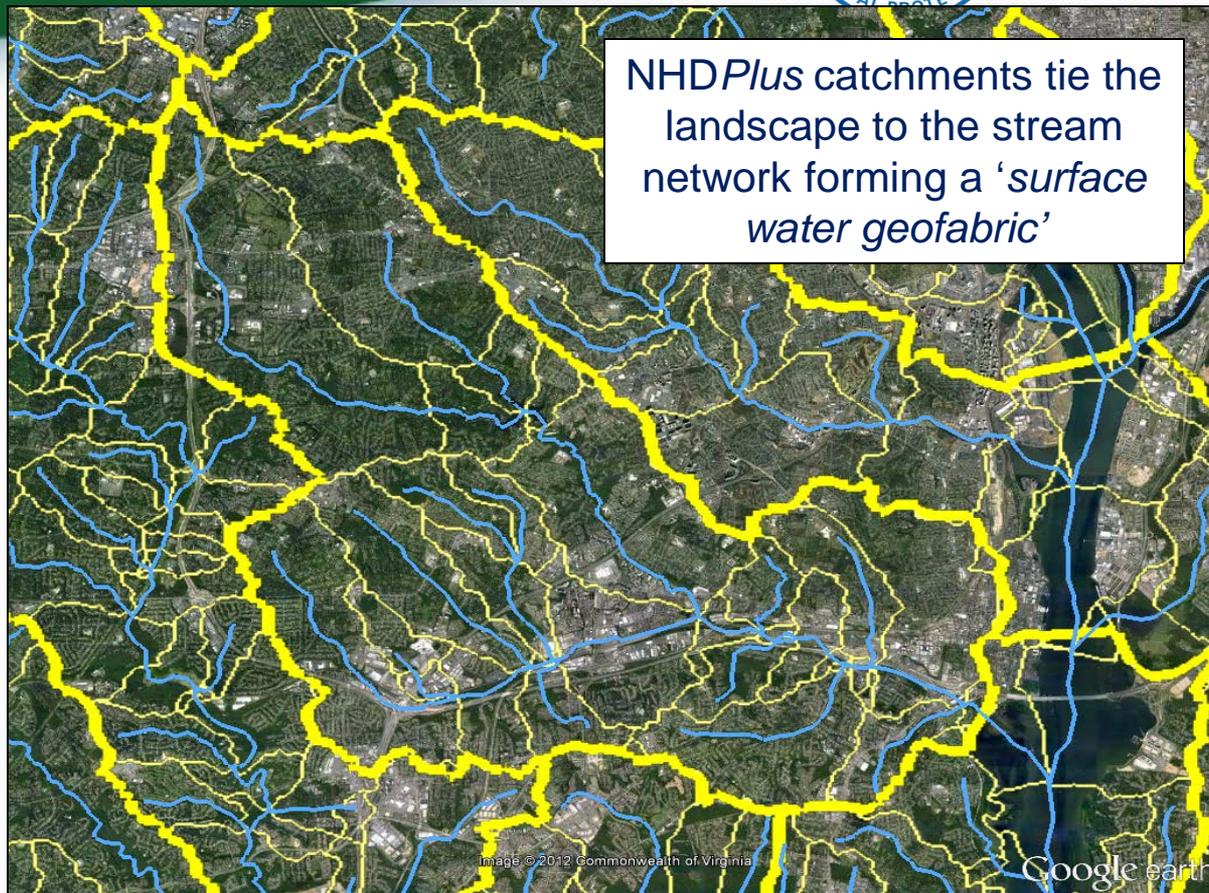
Elevation (30m)



Hydrologic Units (HUC12)



Stream Network



NHDPlus catchments tie the landscape to the stream network forming a 'surface water geofabric'

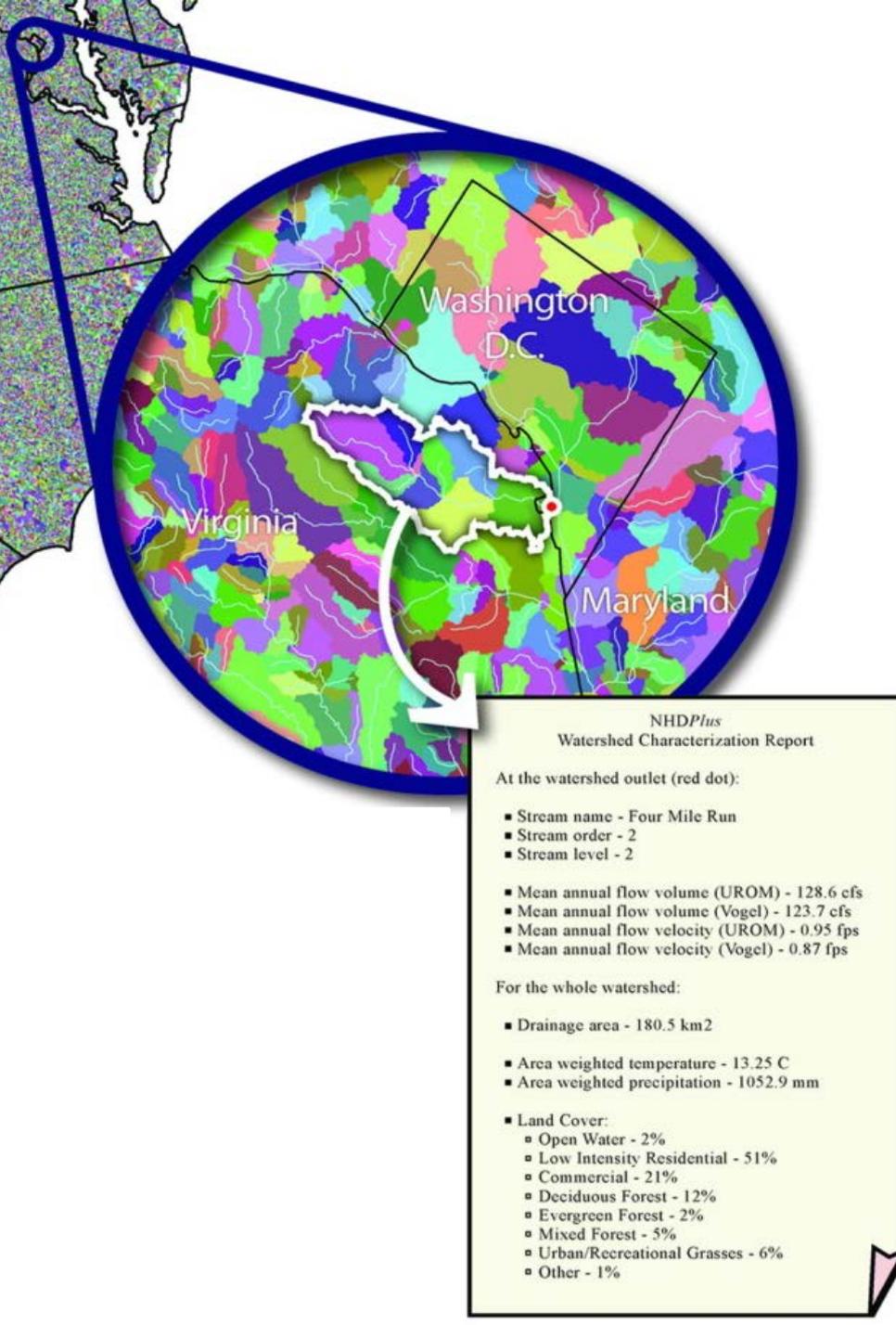
Stream Network	Map Scale	Map Accuracy	Total Stream Miles (mi)	# of Stream Segments	Stream Segment Average Length (mi)	# of Lakes	Catchment Average Area (sq mi)
Reach File Version 1 (RF1)	1:500K	+/- 254m	600,000	60,000	10	4,100	50
Medium Resolution NHD	1:100k	+/- 50m	3,200,000	2,600,000	1.2	38,000	1.1
High Resolution NHD	1:24K or better	+/- 12m	7,500,000	20,000,000	0.37	537,000	do not exist

(These figures are approximations (+/- 10%) provided for purposes of comparison.)

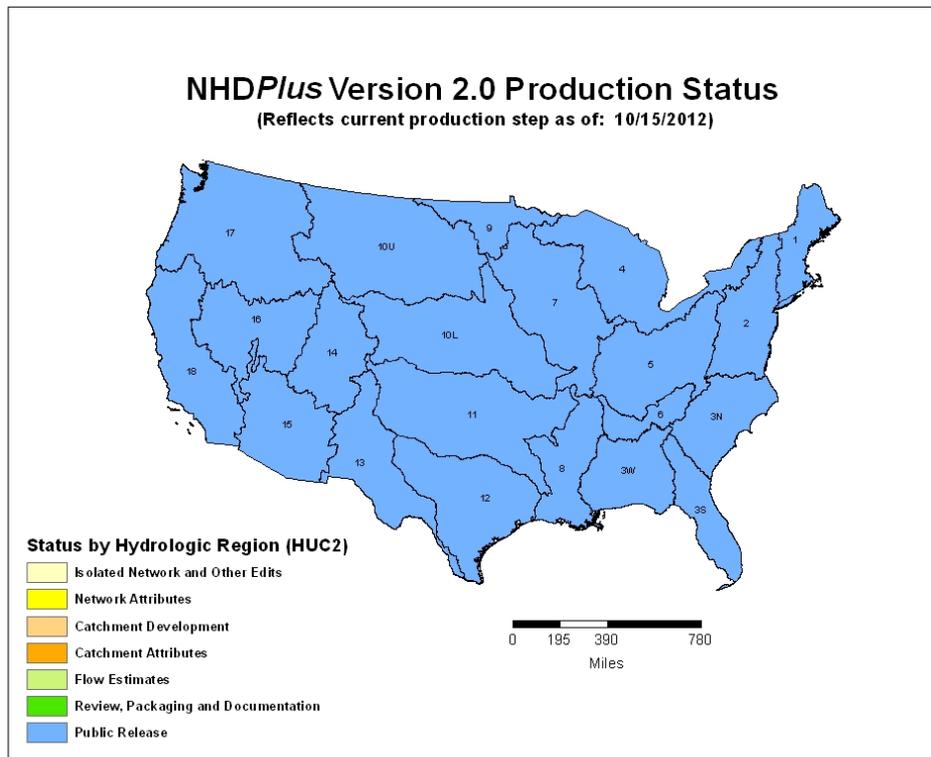


NHDPlus

The inset map shows the watershed (white boundary) defining the drainage area upstream from the mouth of Four Mile Run (red dot) and a report of associated watershed characteristics – both produced using NHDPlus.



NHDPlus V2.0 Benefits

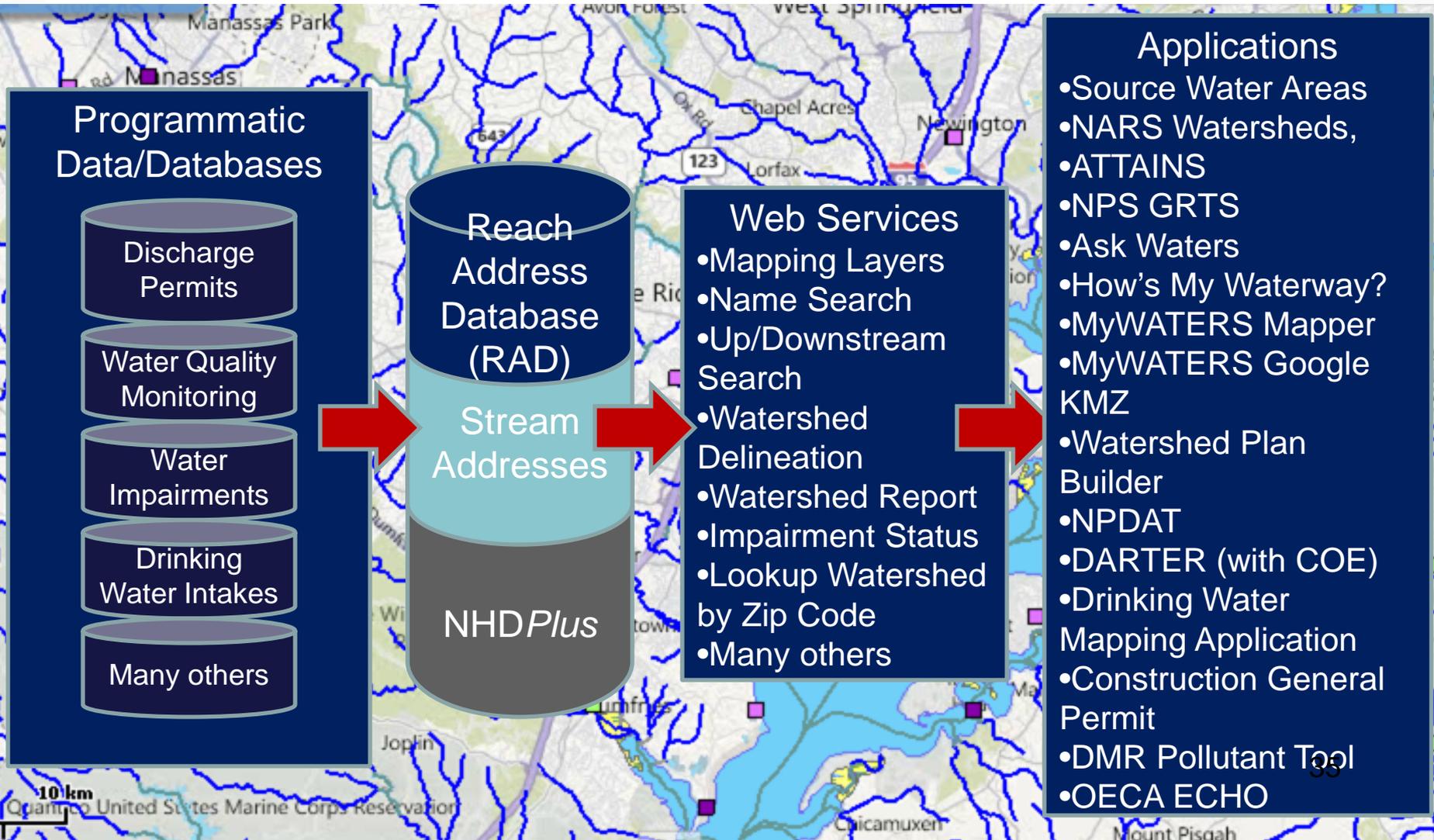


Significant V2.0 improvements:

- Several 1000 isolated networks connected
- Over 50% enhanced elevations nationally
- Now-completed national HUC12s
- More robust flow estimation method
 - Runoff (USGS water balance model)
 - Excess evapotranspiration
 - Flow additions and removals
 - Adjustment using gaged flows

EPA/OW Geospatial Architecture

Watershed Assessment Tracking and Environmental Results (WATERS)



EPA WATERS

The screenshot displays the EPA MyWATERS web application interface. The main map shows the Potomac River watershed area, including the District of Columbia and Arlington. The interface includes several key components:

- Places Panel (1):** A search bar at the top left with the text "Fly to e.g., New York, NY". Below it is a "Places" panel with a search icon and a list of categories including "MyWATERS" and "Surfacewater Features".
- Legend (4):** A legend titled "EPA Water Program Features" with a color-coded key:
 - 303(d) Listed Impaired Waters (Red)
 - 305(b) Assessed Waters (Blue)
 - Beaches (Yellow)
 - Clean Watersheds Needs Survey (Light Blue)
 - Combined Sewer Overflows (Green)
 - CWSRF Benefits Reporting (Light Green)
 - Facilities that Discharge to Water (Pink)
 - Fish Consumption Advisories (Light Orange)
 - Fish Tissue Data (Light Purple)
 - Impaired Waters with TMDLs (Orange)
 - No Discharge Zones (Magenta)
 - Nonpoint Source Projects (Purple)
 - Water Quality Standards (Dark Green)
- Feature Information Window (3):** A pop-up window for the "22340563 Potomac River" showing a table of flow line data:

Field Name	Field Value
GNS_NAME	Potomac River
REACHCODE	02070010000047
F_CODE	Artificial Path
F_MEAS	0
T_MEAS	100
- Report Window (5):** A window titled "NHDPlus Watershed Characterization Report" displaying data for the watershed outlet:
 - Stream Name: Potomac River
 - Stream Order: 7
 - Stream Level: 1
 - Mean annual flow volume (UROM): 13050.3 cfs
 - Mean annual flow volume (Vogel): Not Applicable
 - Mean annual flow velocity (UROM): 1.5 fps
 - Mean annual flow velocity (Vogel): Not Applicable
- MyWATERS Panel (2):** A panel on the right side of the map providing introductory text and links:
 - Discover information about your waters through a collection of geospatial data and tools, known as WATERS (Watershed Assessment, Tracking and Environmental Results System), provided by the U.S. Environmental Protection Agency (EPA).
 - First-time users are encouraged to review the MyWATERS Tutorial which describes how to access these geospatial data and tools. In addition to those accessible directly below, others are accessed by interacting with individual features on the map.
 - Links: Search by surfacewater feature name, Total waters report for level-4 Hydrologic Unit (HUC) or State, Download WATERS data, Contact the WATERS Support Team.
- Layers Panel:** A panel at the bottom left showing a list of map layers including "Primary Database", "Borders and Labels", "Places of Interest", "Panorama", "Roads", "3D Buildings", and "Ocean".



How's My Waterway

Have you ever wondered:

“Is our local lake clean and healthy?”

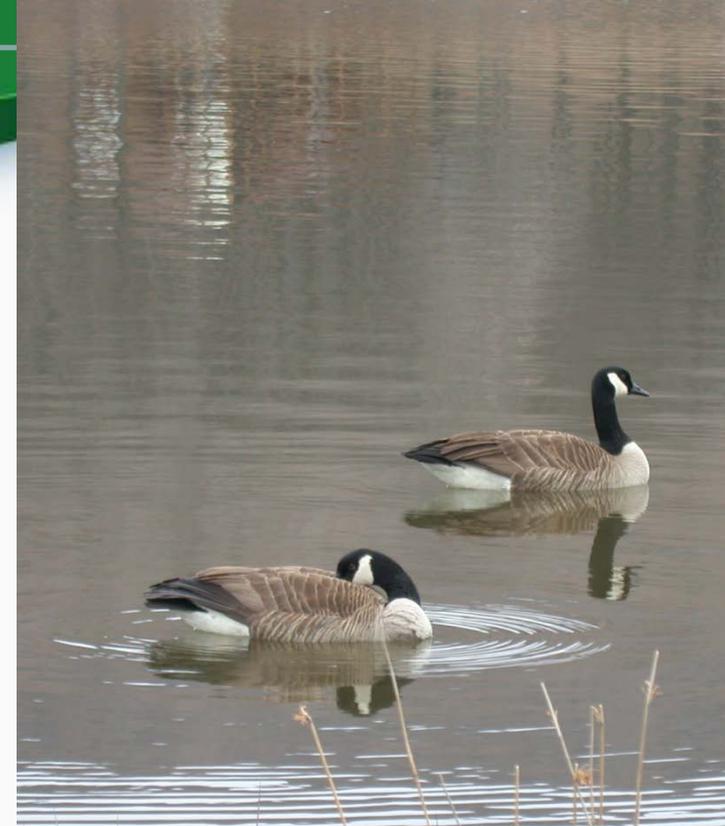
“Have the streams in my neighborhood ever been tested for pollution?”

“If my dog drinks from this pond, can that be harmful to him?”

“Is there any risk to my kids if they play in the creek?”

“How can water pollution damage human health or harm the economy?”

“Is anyone doing anything to fix water pollution problems?”

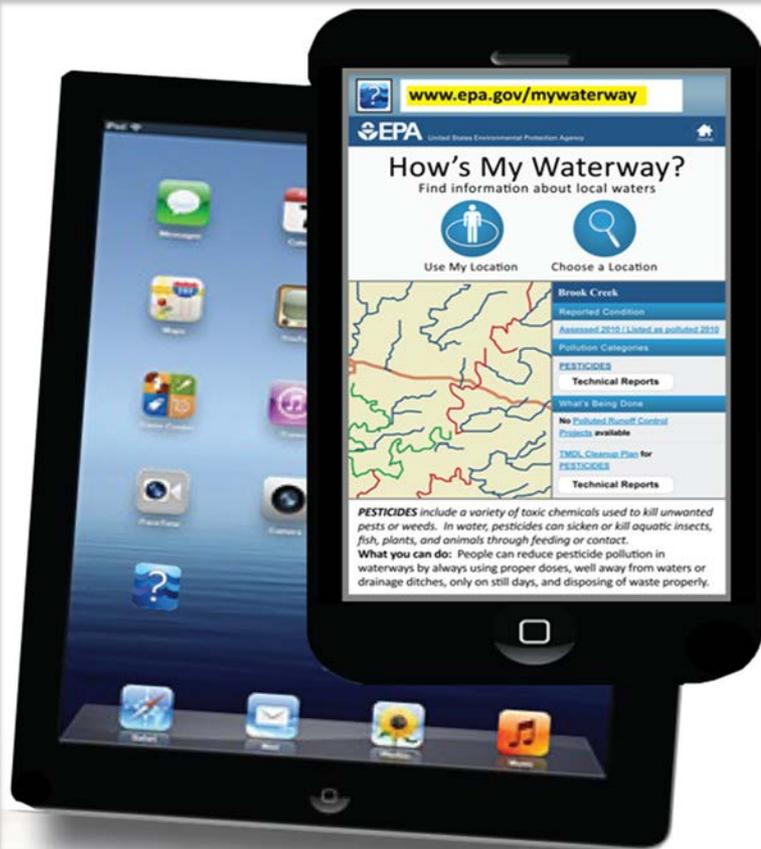




How's My Waterway helps the public get their answers:

- an easy to use web tool
- focus on local waters
- instant results
- map or list format
- plain-English descriptions
- uses, but clarifies, the same scientific data States report to EPA.

see how it works...



How's My Waterway?

Mobile website and app



How's My Waterway?

Find information about local waters



Use My Location



Choose a Location

Learn the condition of local streams, lakes and other waters anywhere in the US... quickly and in plain language. See if your local waterway was checked for pollution, what was found, and what is being done. The source of this information is a US Environmental Protection Agency (EPA) database of State water quality monitoring reports provided under the Clean Water Act.

About How's My Waterway

Related Links

Help

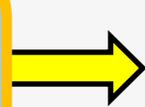


How's My Waterway?

Find information about local waters

SMART PHONES OR TABLETS start here:

Tap this symbol. In a few seconds a list of the lakes, rivers and streams within about 5 miles will appear along with basic information on their condition.



Use My Location



Choose a Location

and other waters anywhere in the US... quickly and in plain language. See if your local waterway and what is being done. The source of this information is a US Environmental Protection Agency drinking reports provided under the Clean Water Act.

About How's My Waterway

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How's My Waterway?

Find information about local waters



Use My Location



Choose a Location



COMPUTERS, SMART PHONES, TABLETS start here:

Click on this symbol to start a search for the condition of local waterways anywhere in the U.S.

About How's My Waterway

Related Links

Help

Learn the condition of local streams, lakes and other waters anywhere in the US... quickly and in... was checked for pollution, what was found, and what is being done. The source of this information (EPA) database of State water quality monitoring reports provided under the Clean Water Act.

Enter a zipcode or city/state for the condition of waterways within five miles of its center.

 >>

About How's My Waterway

Related Links

Help

SEARCH PAGE:

Enter any zip code or place name and state to get information about the condition of waterways within a five mile radius of its center.

How's My Waterway?
Waters Nearest 40289, KY

Show Map

South Fork Beargrass Creek

0.70Mi

ASSESSED 2008 / POLLUTED 2008

Unnamed Waters

1.09Mi

UNASSESSED / CONDITION UNKNOWN

Middle Fork Beargrass Creek

3.32Mi

ASSESSED 2008 / POLLUTED 2008

Unnamed Waters

3.56Mi

ASSESSED 2008 / POLLUTED 2008

Fern Creek

4.99Mi

ASSESSED 2008 / POLLUTED 2008

Weicher Creek

5.30Mi

UNASSESSED / CONDITION UNKNOWN

Beargrass Creek

5.30Mi

ASSESSED 2008 / POLLUTED 2008

Unnamed Waters

5.48Mi

ASSESSED 2008 / POLLUTED 2008

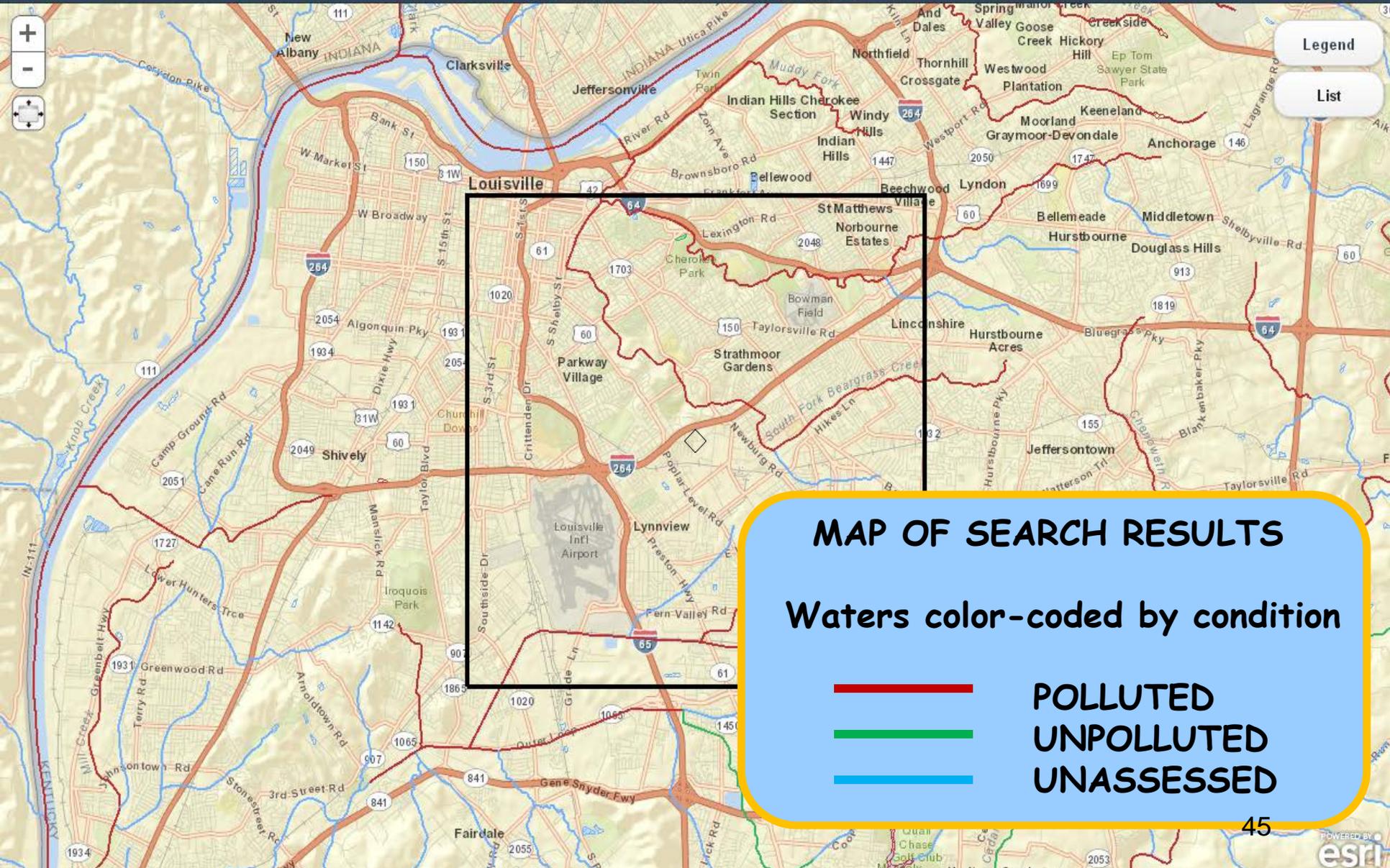
Show Map

SEARCH RESULTS:
Waters within your search area, including

reporting dates, condition, and when tested

CLICK FOR MAP VIEW OF SAME SEARCH AREA...

How's My Waterway? Waters Nearest 40289, KY



MAP OF SEARCH RESULTS

Waters color-coded by condition

- POLLUTED**
- UNPOLLUTED**
- UNASSESSED**

Reported Condition

[Assessed 2010 / Listed as polluted 2010](#)

Technical Reports

Pollution Categories

[METALS](#)

Technical Report

[BACTERIA AND OTHER MICROBES](#)

Technical Reports

[NITROGEN AND PHOSPHORUS](#)

Technical Reports

What's Being Done

No [Polluted Runoff Control Projects](#) available

[TMDL Cleanup Plan](#) for [BACTERIA AND OTHER MICROBES](#)

Technical Report

Map

WATERWAY-SPECIFIC DETAILS

STATUS: when last assessed, condition reported

POLLUTION: types of pollutants reported at problem levels (with plain-English descriptions)

PROGRESS: clean-up plans and projects done by States and EPA

* Links to the technical reports are available for advanced users

Notice: Some links on this page contain content that has not been

Bacteria and Other Microbes (Pathogens)

BACTERIA AND OTHER MICROBES (pathogens) are potentially disease-causing organisms from human or animal wastes that enter waters through septic tank leaks or sewage discharges, farm and feedlot manure runoff after rain, boat discharges, and pet and wildlife waste. People can become ill by eating contaminated fish or shellfish or swimming in waters with high levels of these microbes.

What you can do: People can help reduce pathogen contamination by never dumping animal or boat waste in a waterway, fixing leaky septic tanks, picking up pet waste, and avoiding manure application close to shorelines or drainage ditches. Read more about [pathogens in waterways](#) and [drinking water and health risks](#) from pathogens.

Summary: Disease-causing bacteria and other microbes (viruses and protozoa) are called pathogens, and they usually come from human or animal waste. They are the most commonly reported cause of water pollution nationwide, with over 10,300 waters identified. These microbes enter US waterways from both man-made and natural sources, and can affect human and animal health as well as several beneficial uses. They reach the water directly in urban and suburban areas from wastewater treatment plants, sewer overflows, failing sewer lines, slaughterhouses and meat processing facilities, tanning, textile, and pulp and paper factories; fish and shellfish processing facilities; sewer treatment plants; and other sources. Natural sources include livestock manure from barnyards, pastures, rangelands, and wildlife. Pathogen contamination can also occur from manure application, poorly maintained manure storage, and wildlife sources. Pathogens can cause a variety of health problems, and thus the health risks they represent, can change rapidly due to changes in the environment. Life-threatening illnesses are caused mainly by swallowing pathogens, or by direct contact with the water or eating contaminated fish or shellfish. Living in areas with contaminated waterways can cause significant economic losses due to [beach closures](#). If you have access to raw drinking water sources, they can be treated but require advanced treatment.

Notice: Some links on this page contain

PLAIN-ENGLISH WATER POLLUTANT DESCRIPTIONS for non-technical users:

- What it is
- Where it usually comes from
- Human health and economic effects
- How it harms the environment
- What people can do to help



Watershed Assessment, Tracking & Environmental Results

Share

Recent Additions | Contact Us Search: All EPA This Area Go

You are here: [EPA Home](#) » [Water](#) » [WATERS](#) » [Water Quality Assessment and TMDL Information](#) » Waterbody Quality Assessment Report

[Return to home page](#)

On This Page

- [Causes of Impairment](#)
- [TMDLs That Apply to This Waterbody](#)
- [Previous Causes of Impairment Now Attaining All Uses](#)

State: [Kentucky](#)

Waterbody ID: KY503905_01

Location: Mouth To Concrete Section

State Waterbody Type: Stream/Creek/River, River

EPA Waterbody Type: Rivers and Streams

Water Size: 2.7, 2.7

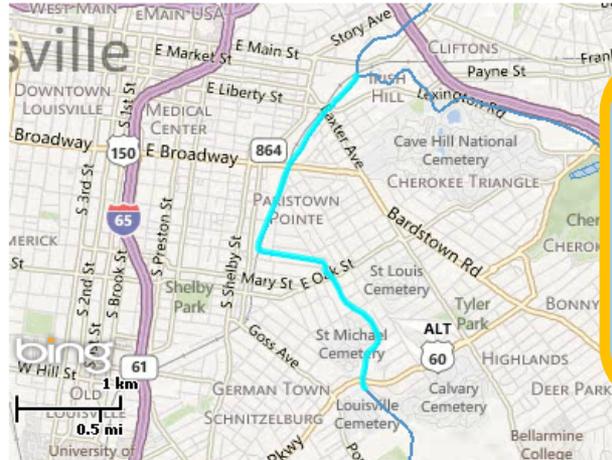
Units: miles

Watershed Name: [Silver-Little Kentucky](#)

[Waterbody History Report](#)

Data are also available for these years: [2010](#) [2006](#) [2004](#) [2002](#)

2008 Waterbody Report for South Fork Of Beargrass Creek 0.0 To 2.7



Click on the waterbody for an interactive map

Frequent Questions

- [About This Database \(Integrated Report\)](#)
- [Assessing Water Quality \(Questions and Answers\)](#)
- [Integrated Reporting](#)

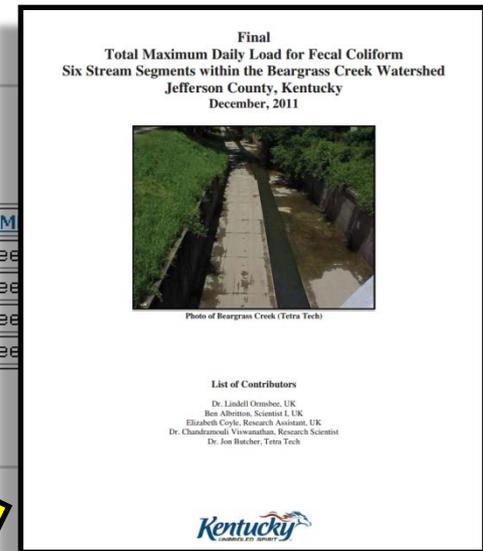
TECHNICAL REPORTS buttons lead you into the technical databases online for much greater detail (e.g., the TMDL document)

Causes of Impairment for Reporting Year 2008

[Description of this table](#)

Cause of Impairment	Cause of Impairment Group	State TMDL
Cadmium	Metals (other than Mercury)	TMDL need
Fecal Coliform	Pathogens	TMDL need
Nutrient/Eutrophication Biological Indicators	Nutrients	TMDL need
Organic Enrichment (Sewage) Biological Indicators	Organic Enrichment/Oxygen Depletion	TMDL need

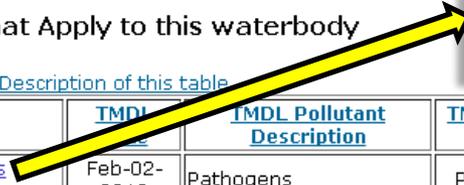
[↑Top of page](#)



TMDLs That Apply to this waterbody

[Description of this table](#)

TMDL Document Name	TMDL Date	TMDL Pollutant Description	TMDL Pollutant Source Type	Cause(s) of Impairment Addressed
Development Of Fecal Coliform Tmdls, Six Stream Segments Within The Beargrass	Feb-02-	Pathogens	Point/Nonpoint Source	Fecal Coliform; Pathogens



Related Links

The following links to other websites provide more detailed information about the condition of your local waters and some of the actions taken to restore or protect them. Additional information also exists beyond these EPA sources.

Notice: Some links on this page contain content that has not been formatted for mobile devices.

About How's My Waterway

What the Pollutants Mean

Assessed and Polluted Waters Database

Pollutant Discharges With Permits

Beach Closings

Drinking Water

NARS National Water Monitoring

Healthy Waters and Watersheds

Fish Advisories

Polluted Runoff Control Projects

National Fish Habitat Partnership

What You Can Do

RELATED LINKS TO OTHER POPULAR WATER TOPICS

- Beach closure information
- Drinking water quality information
- Fish habitat improvement projects
- Fish consumption advisories
- How to contact water pollution programs

Waters Nearest Selected Location

How's My Waterway went public on
October 18, 2012

40th Anniversary of the Clean Water Act

One month later, a Google Search
on "*How's My Waterway*" returns
over 1 million results

Visit *How's My Waterway* at: www.epa.gov/mywaterway

For questions or comments, contact: <http://water.epa.gov/contactus.cfm>.





References

- Water Quality Portal (WQP)
 - www.waterquality.us
- Water Quality Exchange (WQX, WQX Web)
 - www.epa.gov/storet
- National Hydrography Dataset (NHD Plus)
 - www.epa.gov/waters
 - www.horizon-systems.com/nhdplus
- How's My Waterway
 - www.epa.gov/mywaterway



Questions



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