

WEST VIRGINIA WATER RESOURCES MANAGEMENT PLAN

SUBMISSION TO THE JOINT LEGISLATIVE OVERSIGHT COMMISSION ON STATE WATER RESOURCES

West Virginia Department of Environmental Protection

December 9, 2013

By:

**Brian A. Carr, P.G.
Program Manager
Water Use Section**



Today's Agenda

- **A Short History of the Water Resources Management Plan Development**
- **Interesting Water Facts**
- **Some Key Studies Performed**
- **Introduction of the New Water Use Web Page**
- **Filing of the WV Water Resources Management Plan**
 - **Future Pursuits and Recommendations**
- **Questions from the Commission**

Plan History

The Water Resources Protection Act was originally passed on March 13, 2004.

In 2006 the first Large Quantity User Survey was completed.

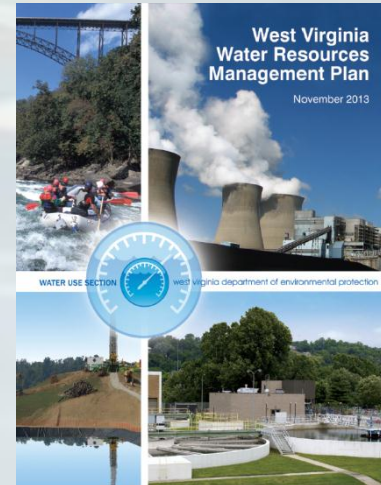
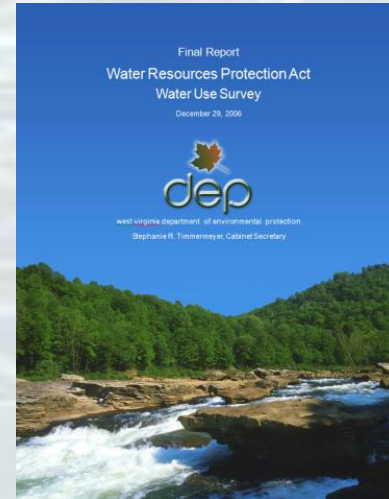
On March 8, 2008, Senate Bill 641 was passed amending the Act and renaming it the Water Resources Protection and Management Act.

Requiring:

- **Continued LQU Surveys**
- **Annual reporting to the Commission**
- **Submission of a Water Resources Management Plan by November 30, 2013.**

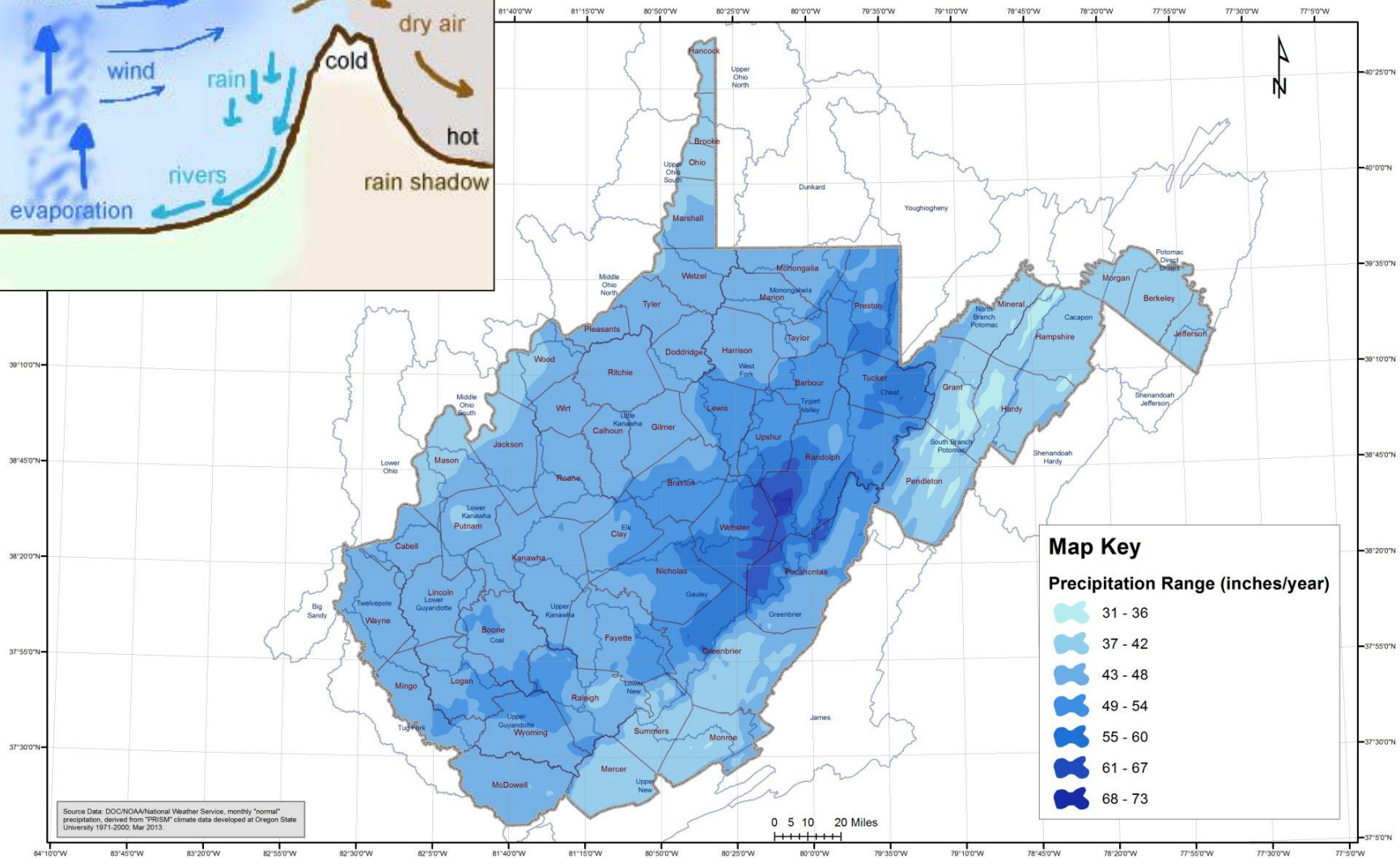
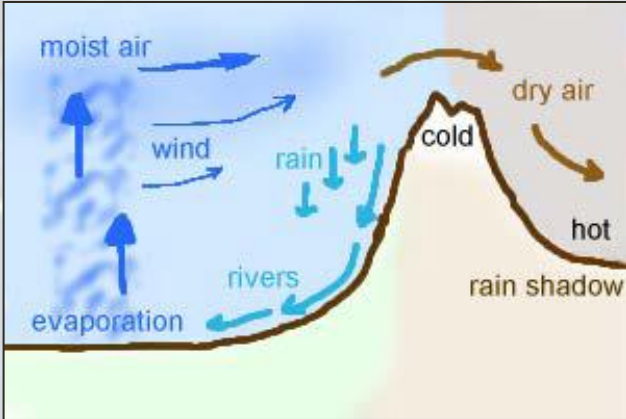
Water Use Section created July 2008 to accomplish the additional requirements of the Act.

The West Virginia Water Resources Management Plan was submitted on November 22, 2013.



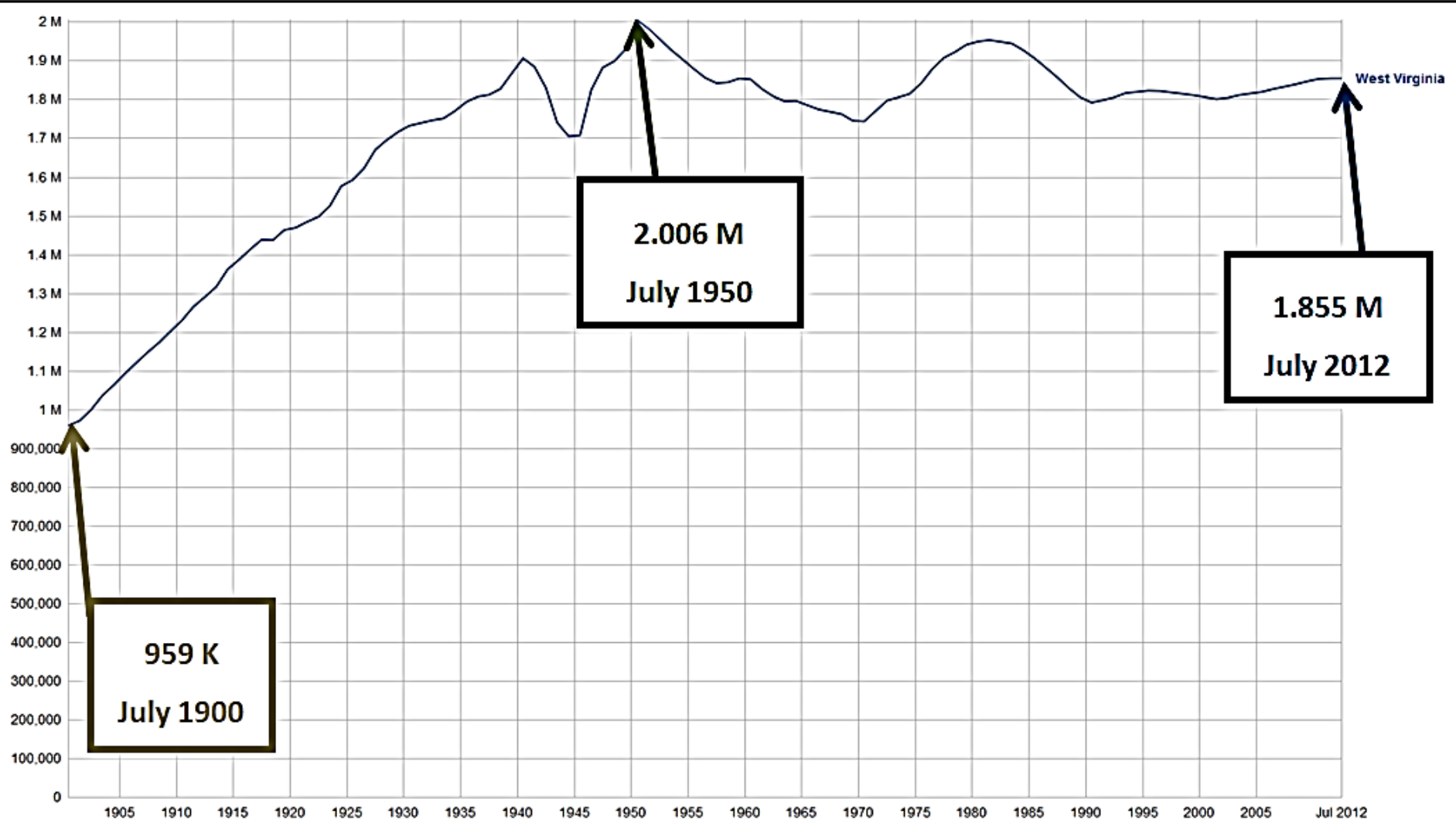
Water Facts

Annual Precipitation Map and the Rain Shadow



Water Facts

West Virginia Population 1900 - 2012



Water Facts

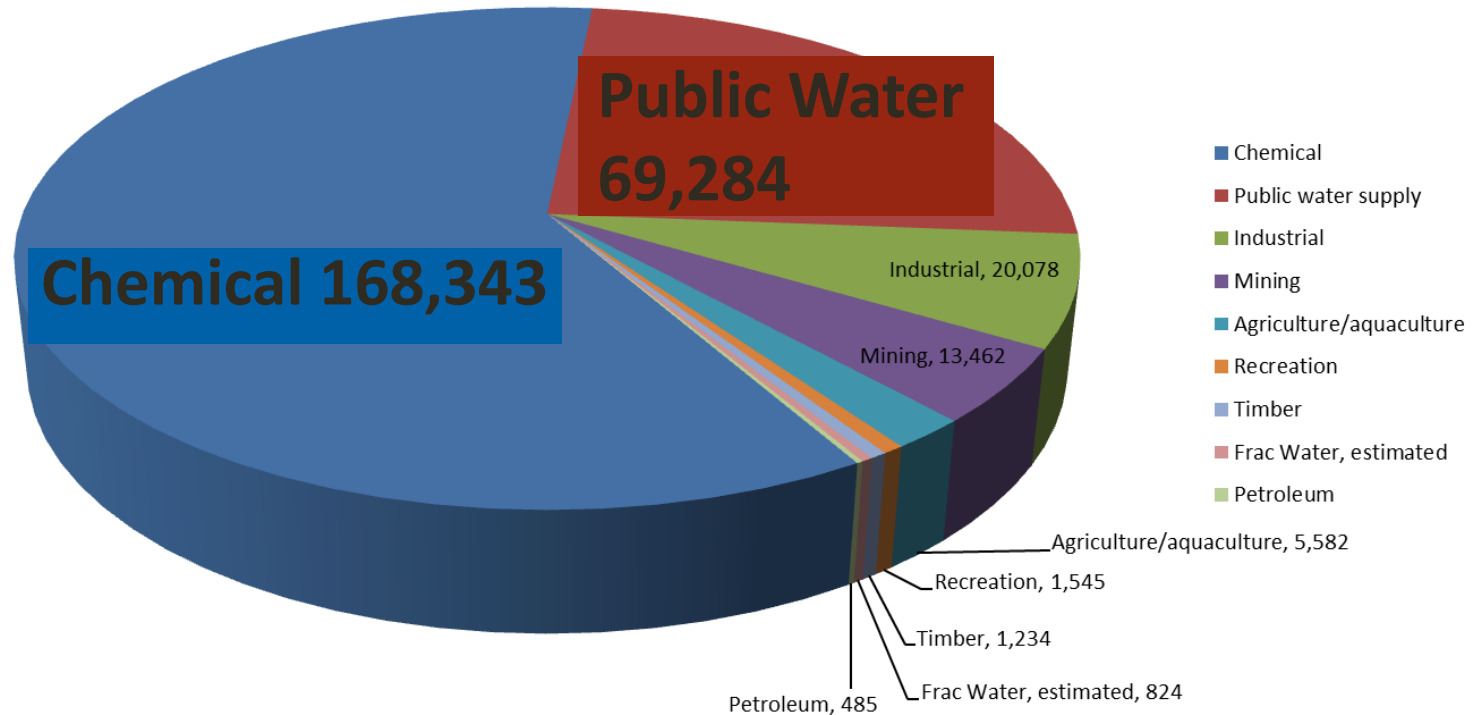
- **19.32 trillion gallons of precipitation – based on 44 in/year**
- **The record precipitation event in West Virginia is 19.5 inches of rain in two hours and 10 minutes at Rockport in July of 1889**
- **1.07 trillion gallons – maximum storage of dams/lakes**
- **388.7 billion gallons - normal storage of dams/lakes**
- **1.48 trillion gallons –potential mine pool storage**

Water Facts

- **1.2 trillion gallons - withdrawn by Large Quantity Users annually (excluding Hydroelectric users)**
- **~6% or 72 billion gallons/year estimated consumptive use**
- **54,961 – total stream miles statewide.**
- **≥ 42 billion gallons per day - average additional available water from our rivers and streams.**

LQU - Excluding Hydro and Thermoelectric Use.

**3 Year Average Water Use in 2011 by SIC Group (millions of gallons)
(excluding Hydroelectric and Thermoelectric Facilities)**



Some key studies performed enabling data collection necessary for development of the Plan.

Annual Certification-Large Quantity Users

NOTE: NOT TO BE USED FOR FRAC WATER REPORTING



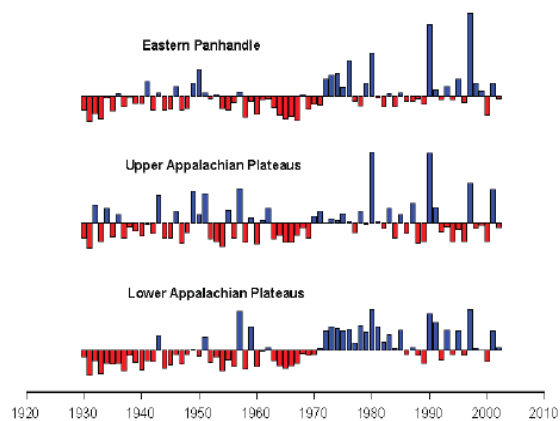
If you are a large quantity user, and are required to complete an annual user certification, please click the button below to be directed to the appropriate forms and instructions.

User Certification

Currently, any user who withdrawals more than 750,000 gallons per month.

In cooperation with the West Virginia Department of Environmental Protection,
Division of Water and Waste Management

**Low-Flow Analysis and Selected Flow Statistics
Representative of 1930–2002 for Streamflow-Gaging
Stations In or Near West Virginia**

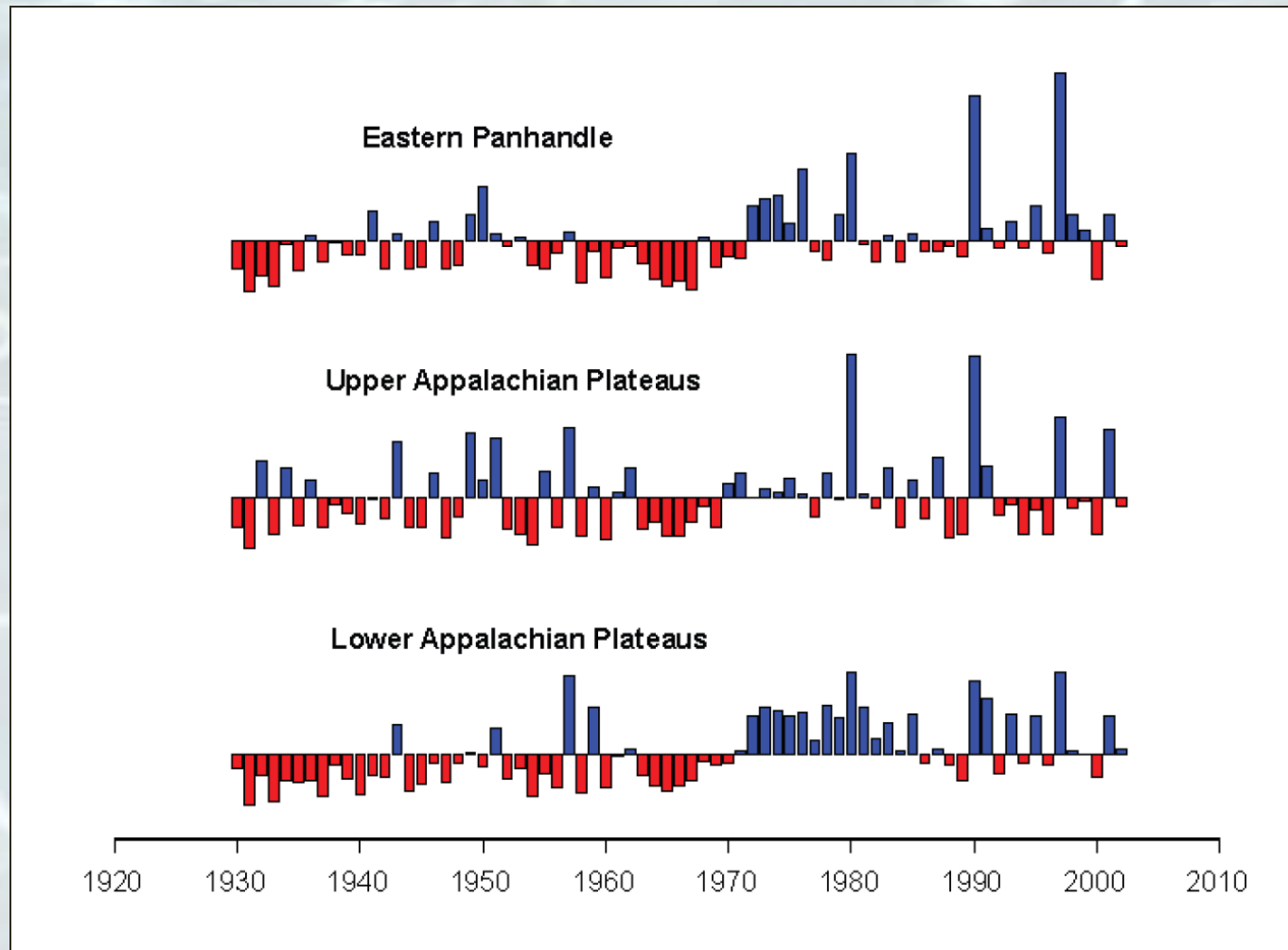


Scientific Investigations Report 2006–5002

U.S. Department of the Interior
U.S. Geological Survey

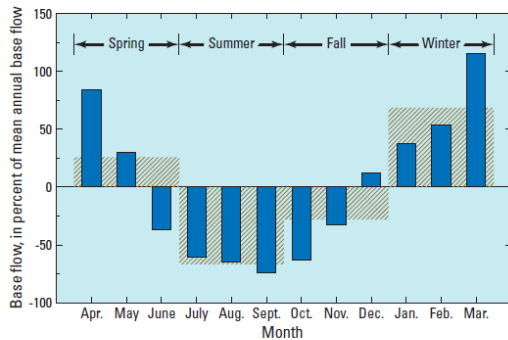
Stream flow
statistics at gage
locations on
unregulated
streams across
the state were
updated.

Flooding and Drought are discussed in detail in the Plan.



Prepared in cooperation with the West Virginia Department of Environmental Protection,
Division of Water and Waste Management

Comparison of Base Flows to Selected Streamflow Statistics Representative of 1930–2002 in West Virginia



Scientific Investigations Report 2012–5121

U.S. Department of the Interior
U.S. Geological Survey

A study to equate stream flow statistics to base flow of the streams to identify the inter-connection of surface and groundwater.

West Virginia
Geological Survey

West Virginia Mine Pool Atlas

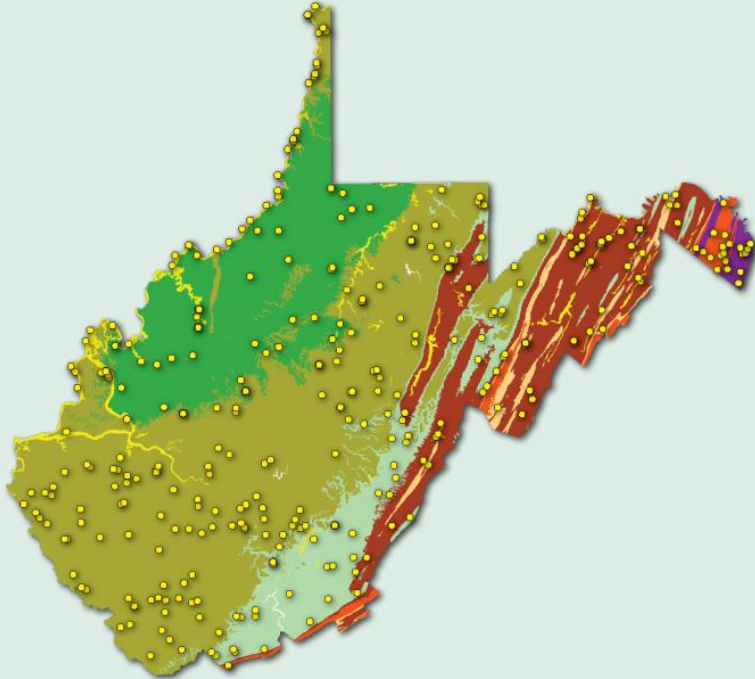


West Virginia
WEST VIRGINIA

A mine pool atlas was produced by documenting the location and potential storage capacity of mapped mines in the state.

Prepared in cooperation with the West Virginia Department of Environmental Protection,
Division of Water and Waste Management

Groundwater Quality in West Virginia, 1993–2008



Scientific Investigations Report 2012–5186

U.S. Department of the Interior
U.S. Geological Survey

A study of the
groundwater
quality of
selected
wells across
the state.



In cooperation with the West Virginia Department of Environmental Protection Division of Water and Wastewater, Water Use Section

Correlations of daily flows at streamgages in and near West Virginia, 1895-2011, and implications for managing withdrawals from ungaged streams

Scientific Investigations Report 2013-XXXX

U.S. Department of the Interior
U.S. Geological Survey

A new study (under final review) which will better predict flows on un-gaged streams. (improved WMP for Horizontal well industry)



WEST VIRGINIA

WATER LAWS WATER REGULATIONS AND WATER RIGHTS



WV department of environmental protection – Promoting a healthy environment

By:

West Virginia Department of Environmental Protection

Office of Legal Services

2013

The DEP Office of Legal Services put together a collection of legal facts concerning ownership and regulation of the states waters.

WVWRMP Mapping Tool

Google search: wvwaterplan and click the Blue Button

west virginia State Agency Directory | Online Services Search WV DEP

dep west virginia department of environmental protection - Promoting a Healthy Environment

DEP Offices | Agency History | News | Outlook Web Access | Text size A A A

Home > Water and Waste Management > Water Use Section > WV Water Resources Management Plan

West Virginia Water Resources Management Plan

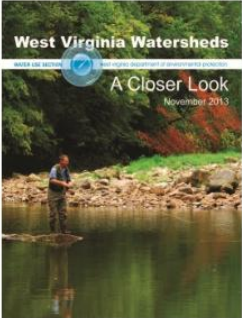

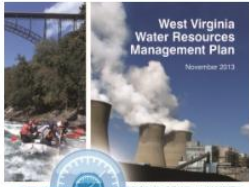
Welcome to the WVDEP Water Use Section Public Information Portal. This website was developed in cooperation with the Center of Environmental, Geotechnical, and Applied Sciences (CEGAS) at Marshall University. It serves as a public information portal for data related to water use in West Virginia. The Water Use Section of the WV DEP was developed as a result of the Water Resources Protection and Management Act of 2008. On this site, you have access to reports from the Large Quantity User and Marcellus Shale Frac Water databases. Additionally, there are many other related datasets displayed for the West Virginia Water Plan Mapping Tool.

Please click the button below to proceed to the mapping tool:

WV Water Resources Management Plan Mapping Tool

To view the "West Virginia Water Resources Management Plan", the "West Virginia Watershed Atlas", or the "West Virginia Watersheds: A Closer Look" documents please click on the corresponding image below.
**Please note that the files are quite large and may take several minutes to load into your browser.*

Water Withdrawal Guidance Tool
WV Water Resources Management Plan
Progress Reports - Water Resources Protection & Management Act
State Rules and other related documents
Frac Water Reporting Form
Annual Certification-Large Quantity Users
Mine Pool Atlas
WV Water Laws, Regulations, and Rights
Helpful Links



Filetype: PDF (45 MB) Link to Watershed Maps Filetype: PDF (30 MB)

west virginia dep

Mapping Tool Instructions

Instructions

WV Water Use Mapping Tool

This document includes instructions on using the WV Water Use Mapping Tool.

9/14/2017

I. Map Viewer Overview

The layout of the map viewer is shown below.



Map Viewer Overview

II. Navigation

This section describes how to navigate. Below is a picture of the navigation widget. It is found on the left side of the map viewer. It becomes transparent when the cursor is not hovering over a navigation control.



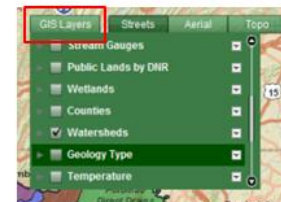
In addition to using the "Zoom slider" on the navigation widget, you can also roll the mouse wheel forward or backwards to zoom in or out respectively.

III. View GIS Layers

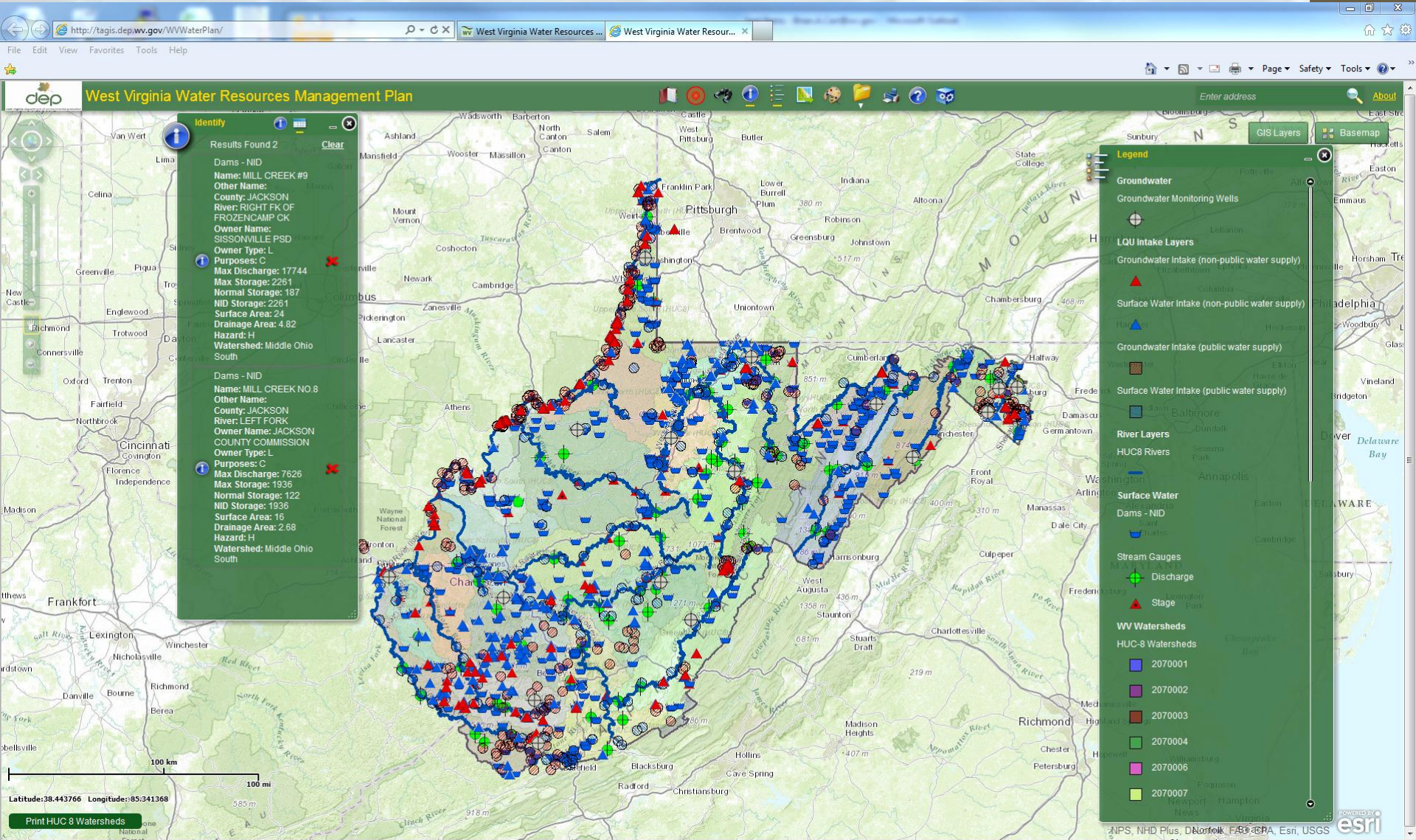
Switch between base layers by selecting one of the buttons labeled "Streets", "Aerial" or "Topo". Base layers are used in the viewer to display background imagery and street data.



Additional layers can be displayed in the viewer by selecting the "GIS Layers" button and then selecting the checkbox beside the layer to display. Note: not all layers will be displayed at all scales/zoom levels.



Water Data, DEM, Aerial Photography, Demographics & Links to much more



Locate Widget (address or Lat and Long)

The image displays two screenshots of the WV Water Use Mapping Tool interface, demonstrating the 'Locate' widget's functionality.

Left Screenshot: The 'Find an address' widget is active, showing the input field containing the address '601 57th street se charleston wv'. The 'Locate' and 'Clear' buttons are visible. The map background shows a topographic view of the Charleston area.

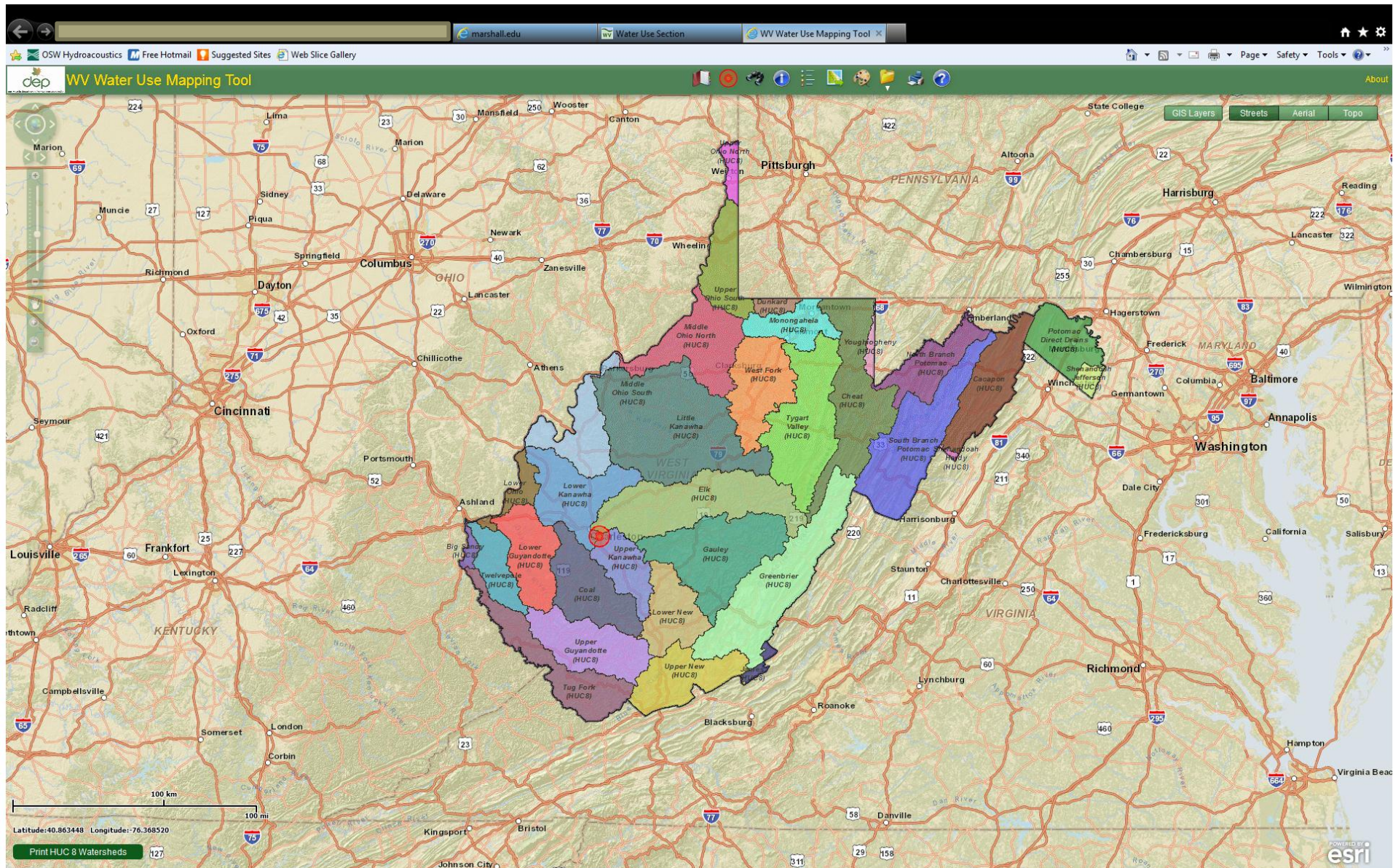
Right Screenshot: The 'Find an address' widget displays search results for the entered address. The results list includes:

- 601 57th St SE, Charleston, WV, 25304 (Score: 100)
- 602 57th St SE, Charleston, WV, 25304 (Score: 79)
- 57th St SE, Charleston, WV, 25304 (Score: 100)
- Charleston, WV (Score: 100)
- South Charleston, WV (Score: 95.5)

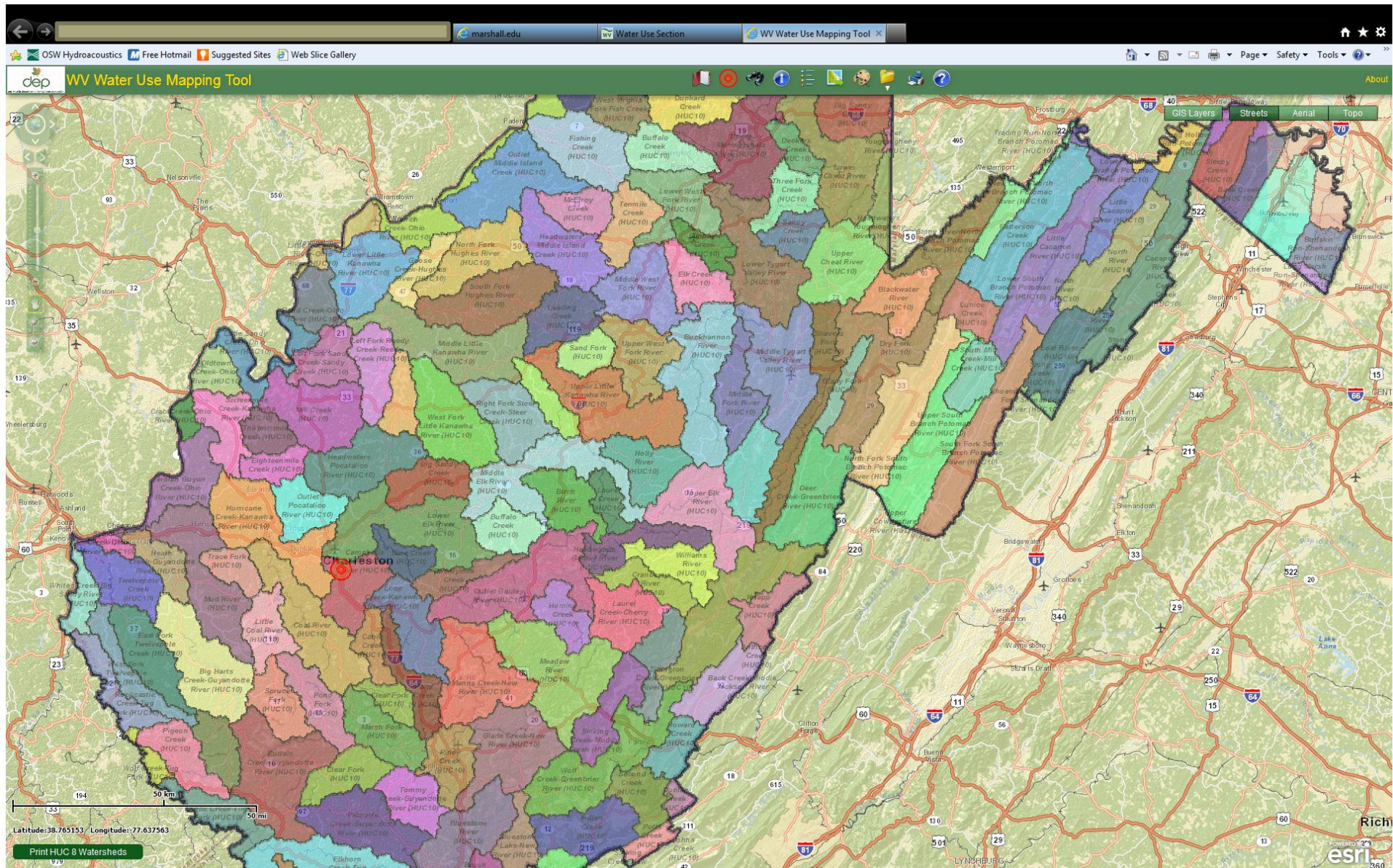
The map shows a red pin placed on the location corresponding to the first result. The map view is set to 'Streets'.

Both screenshots show the browser address bar with 'marshall.edu' and the application title 'WV Water Use Mapping Tool'. The bottom of each screenshot displays the coordinates: Latitude: 38.325617 Longitude: -81.413413 (left) and Latitude: 38.312655 Longitude: -81.528211 (right).

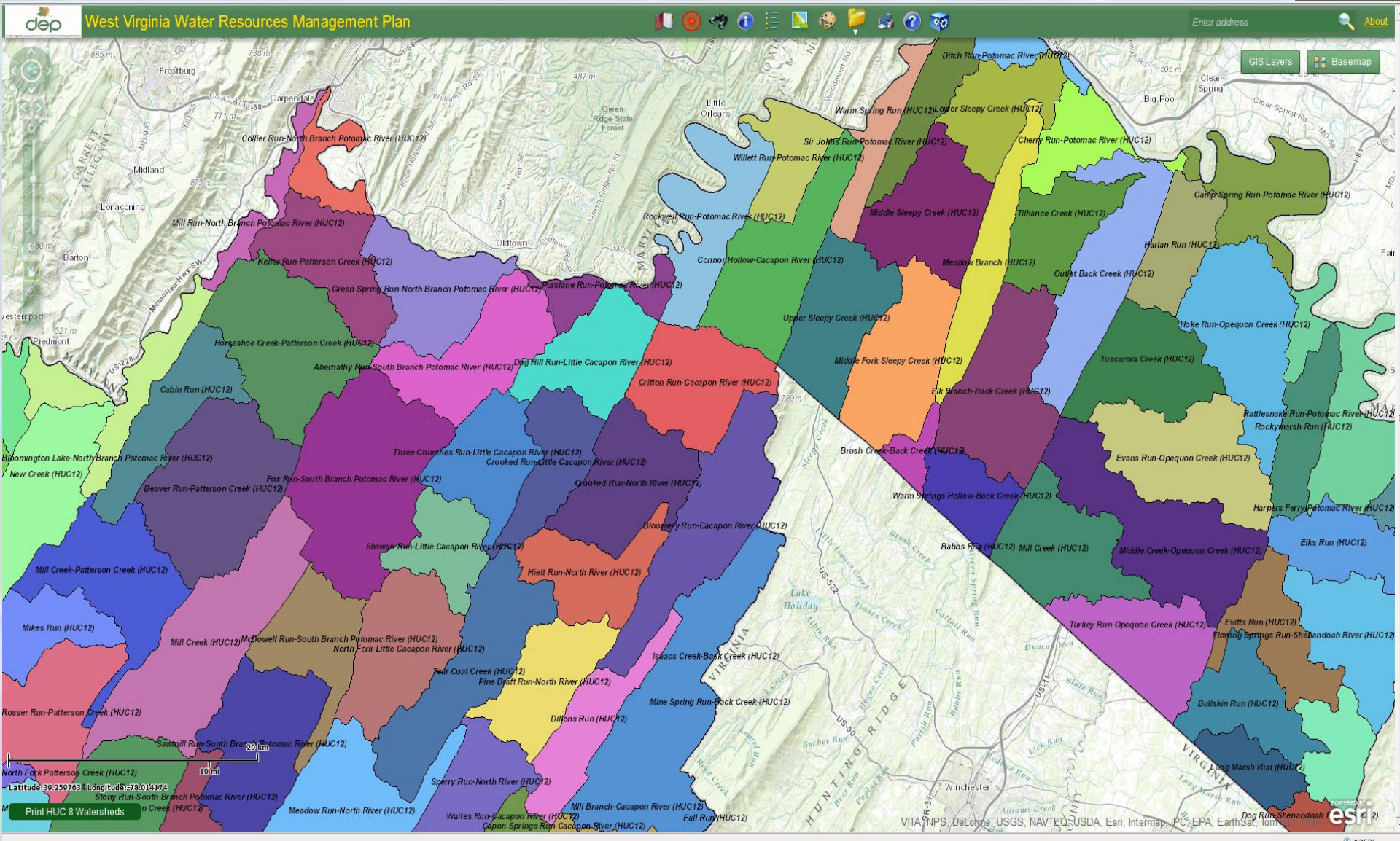
HUC 8 Watersheds



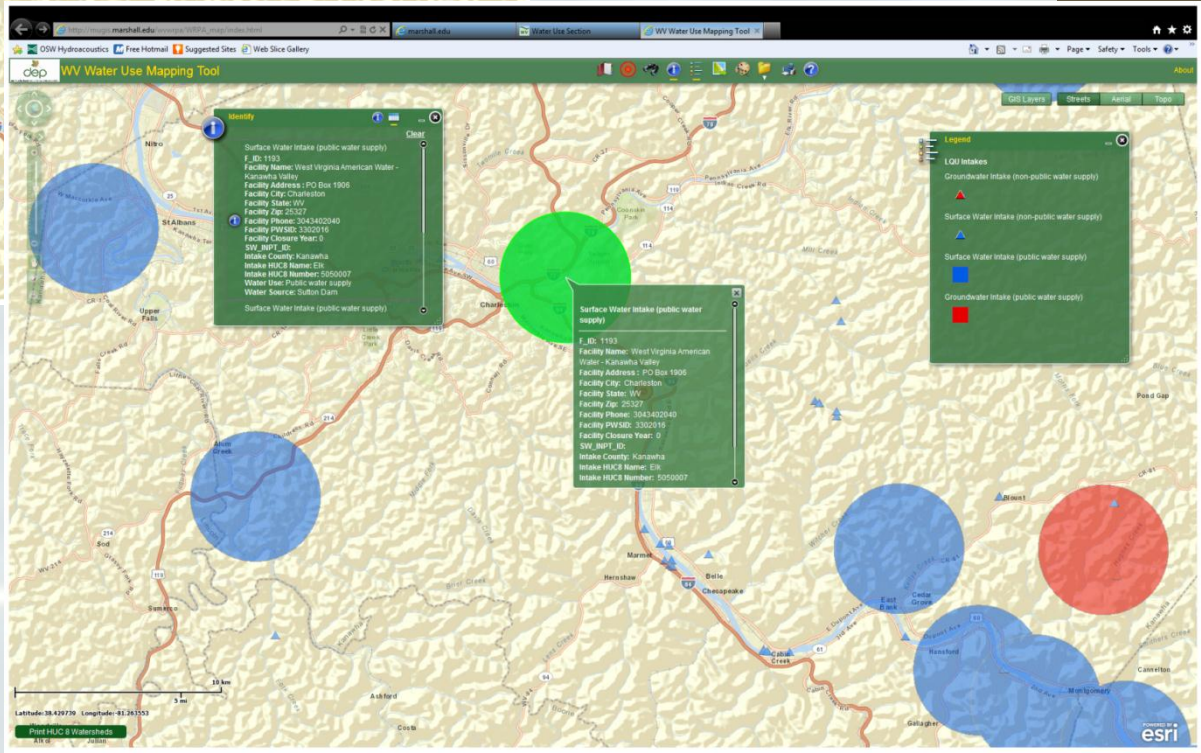
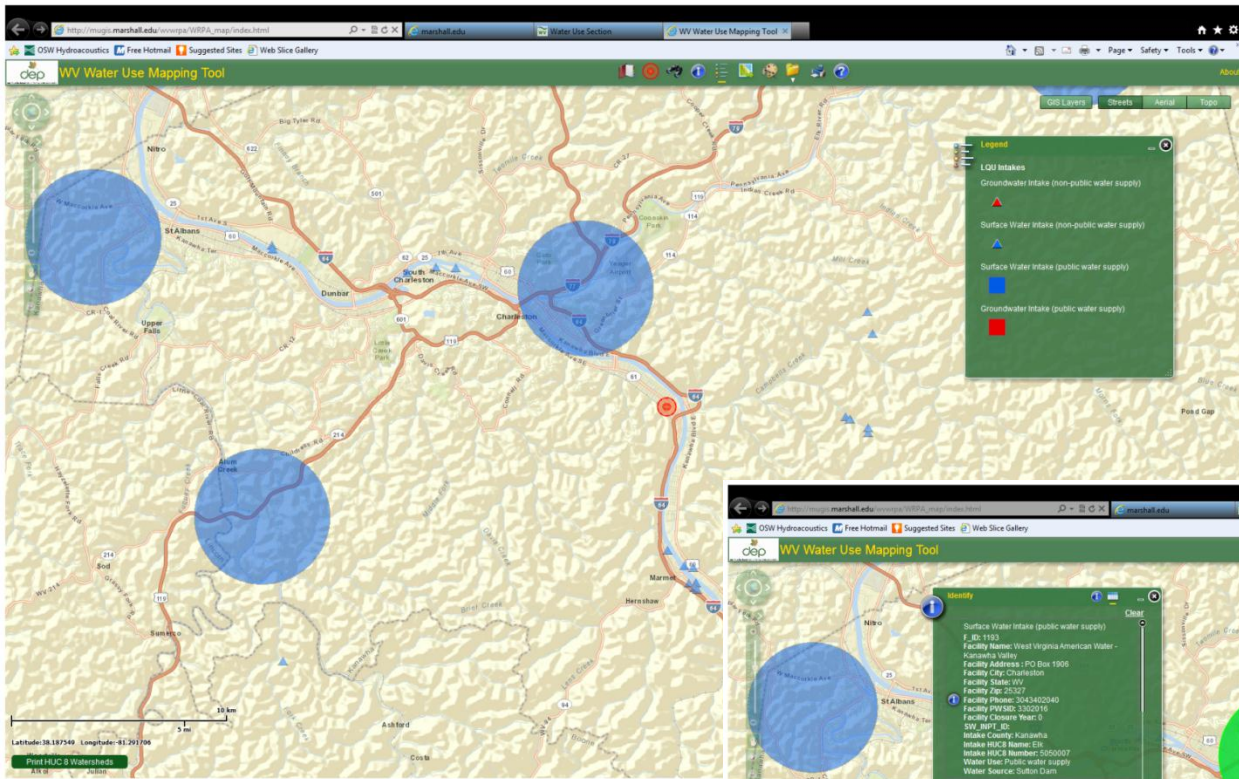
HUC 10 Watersheds



HUC 12 Watersheds



LQU Locations



LQU Search Widget

The screenshot displays the WV Water Use Mapping Tool interface. The map shows various watersheds in West Virginia, with red circles highlighting selected areas and blue circles representing other watersheds. The search widget is active, showing the following filters:

- Search Layer:** Surface Water Intake (non-public water supply)
- County:** Marion
- Watersheds:**
 - Available Watersheds
 - All watersheds listed below
 - Monongahela
 - Tygart Valley
- Water Uses:** All water uses

The search results are displayed in a panel on the right, listing three facilities:

Search: LQU Intake Locations
 Features Selected: 6
 Facility City: Fairview
 Facility County: Marion
 Facility State: WV
 Facility Zipcode: 26570
 Facility Phone: 3046621214
 Facility PWSID:
 Facility Closure Year: 0
 County: Marion
 Water Use: Mining
 HUC-8 Code: 5020003
 Watershed Name(HUC-8): Monongahela
 Water Source Name: Paw Paw Creek at Sugar Run

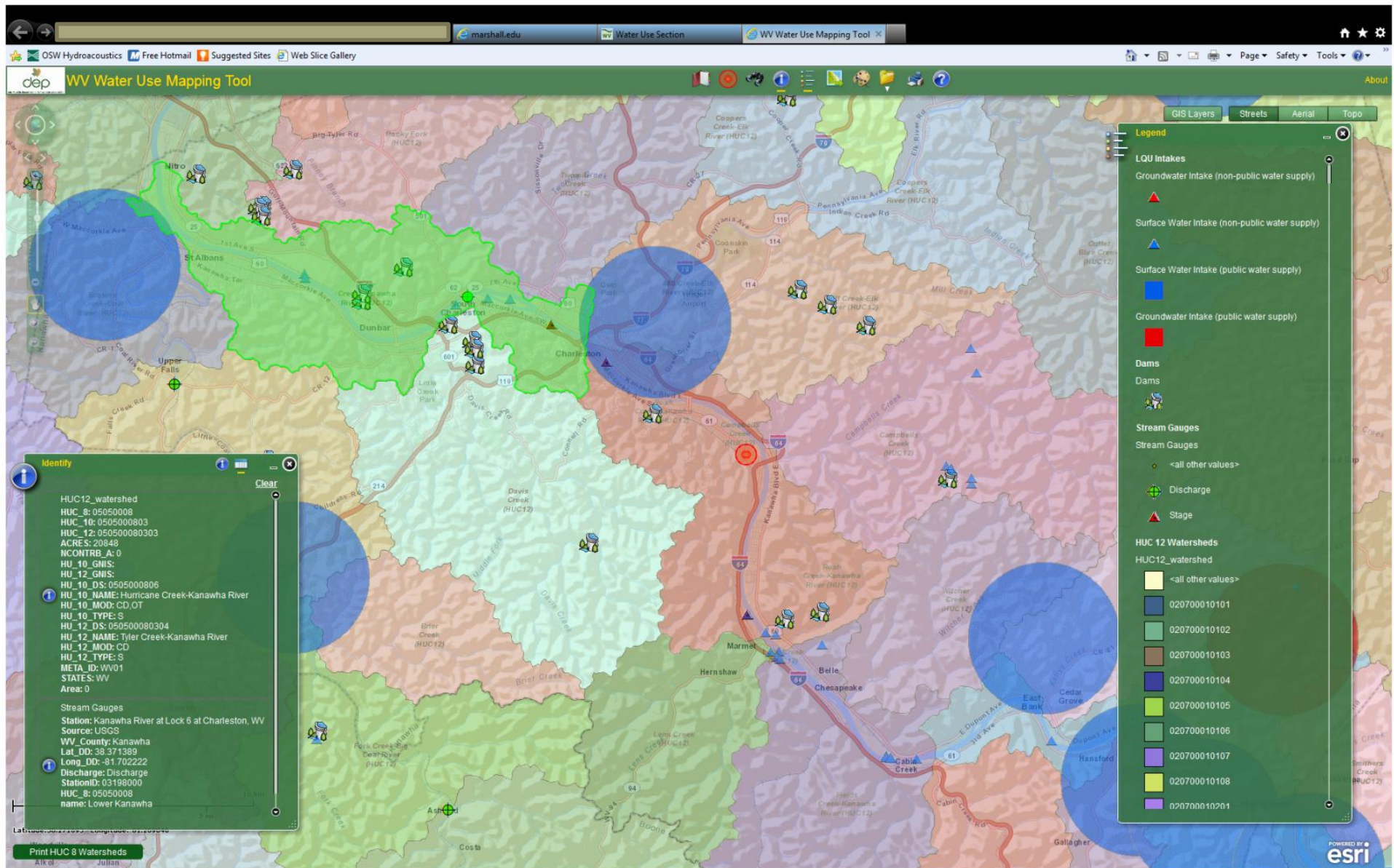
Consol Energy - Loveridge
 Facility ID: 77
 Facility Address: PO Box 40
 Facility City: Fairview
 Facility County: Marion
 Facility State: WV
 Facility Zipcode: 26570
 Facility Phone: 3046621214
 Facility PWSID:
 Facility Closure Year: 0
 County: Marion
 Water Use: Mining
 HUC-8 Code: 5020003
 Watershed Name(HUC-8): Monongahela
 Water Source Name: Plant Freshwater System

Consol Energy - Loveridge
 Facility ID: 78
 Facility Address: PO Box 40
 Facility City: Fairview
 Facility County: Marion
 Facility State: WV
 Facility Zipcode: 26570
 Facility Phone: 3046621214
 Facility PWSID:
 Facility Closure Year: 0
 County: Marion
 Water Use: Mining
 HUC-8 Code: 5020005
 Watershed Name(HUC-8): Dunkard
 Water Source Name: Miracle Run Freshwater

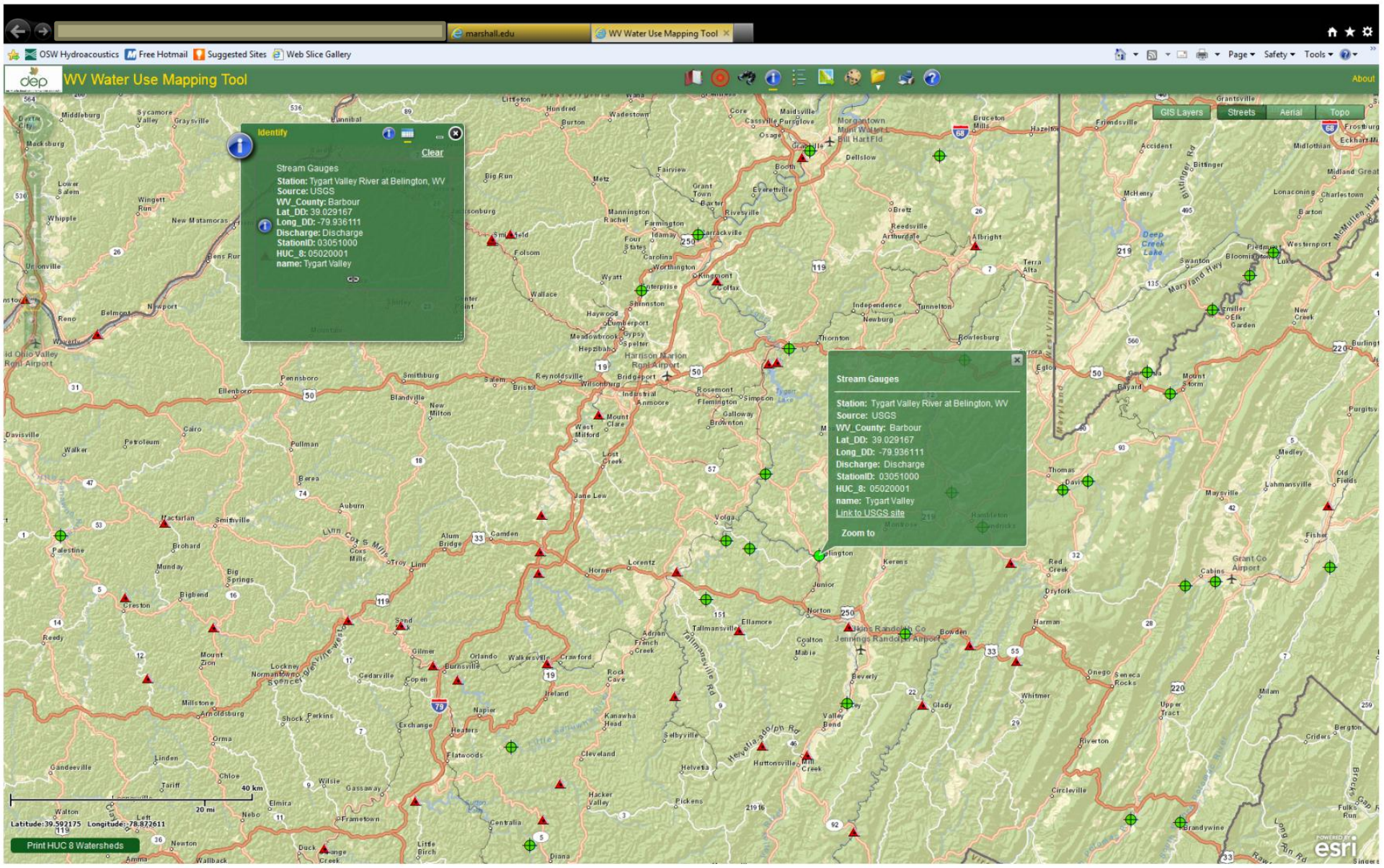
Consol Energy - Loveridge
 Facility ID: 79
 Facility Address: PO Box 40
 Facility City: Fairview
 Facility County: Marion
 Facility State: WV
 Facility Zipcode: 26570
 Facility Phone: 3046621214
 Facility PWSID:
 Facility Closure Year: 0
 County: Marion
 Water Use: Mining
 HUC-8 Code: 5020003
 Watershed Name(HUC-8): Monongahela
 Water Source Name: Hibbs Run Pump

Latitude: 39.859830 Longitude: -80.530245
 Print HUC 8 Watersheds

Overlap multiple GIS Layers



Stream Gauge Layers



USGS Stream Gauge Link

OSW Hydroacoustics | Free Hotmail | Suggested Sites | Web Slice Gallery

National Water Information System: Web Interface

USGS Water Resources (Cooperator Access)

News - updated September 2012

Data Category: Surface Water | Geographic Area: United States | GO

USGS 03051000 TYGART VALLEY RIVER AT BELINGTON, WV

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site | Time-series: Daily data | GO

LOCATION.--Lat 39°01'45", long 79°56'10", referenced to North American Datum of 1927, Barbour County, WV, Hydrologic Unit 05020001, on left bank opposite mouth of Mill Creek, 0.2 mi downstream from highway bridge at Belington, and at mile 62.4.

DRAINAGE AREA.--406 mi², excluding that of Mill Creek.

PERIOD OF RECORD.--June 1907 to current year (daily discharge and peaks). Prior to October 1960, published as Tygart River at Belington.

REVISED RECORDS.--WSP 953: 1933(M), 1941(M). WSP 1335: 1912, 1914-15, 1916(M), 1921-22(M), 1925(M), 1928, 1933. WSP 1385: 1909(M), 1913-15(M), 1917-18, 1924(M), 1928(M), 1932, 1934, 1936, 1938-39, 1948-49. WDR WV-97-1: Drainage area. WDR-US-2009: 1926(M).

GAGE.--Water-stage recorder with satellite telemeter. Datum of gage is 1,679.62 ft above MVD 88 (1,680.35 ft above NGVD 29, 1,679.49 ft above COE 12). Prior to Apr. 25, 1939, nonrecording gage at site 0.2 mi upstream at same datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1888, reached a stage of 21.7 ft, from floodmarks at former site, discharge, 21,200 ft³/s.

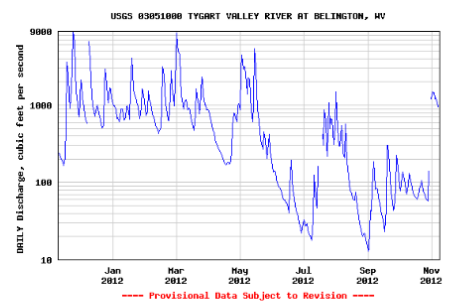
This gaging station is maintained in cooperation with:
[U.S. Army Corps of Engineers, Pittsburgh District](#)
[State of West Virginia](#)

This station managed by the Charleston Field Office.

Available Parameters	Period of Record	Output format	Days (365)
<input type="checkbox"/> All 1 Available Parameters for this site		<input checked="" type="radio"/> Graph	-- or --
<input checked="" type="checkbox"/> 00060 Discharge(Mean)	1907-06-05 2012-11-07	<input type="radio"/> Graph w/ stats	Begin date
		<input type="radio"/> Graph w/ meas	2011-11-08
		<input type="radio"/> Table	End date
		<input type="radio"/> Tab-separated	2012-11-07

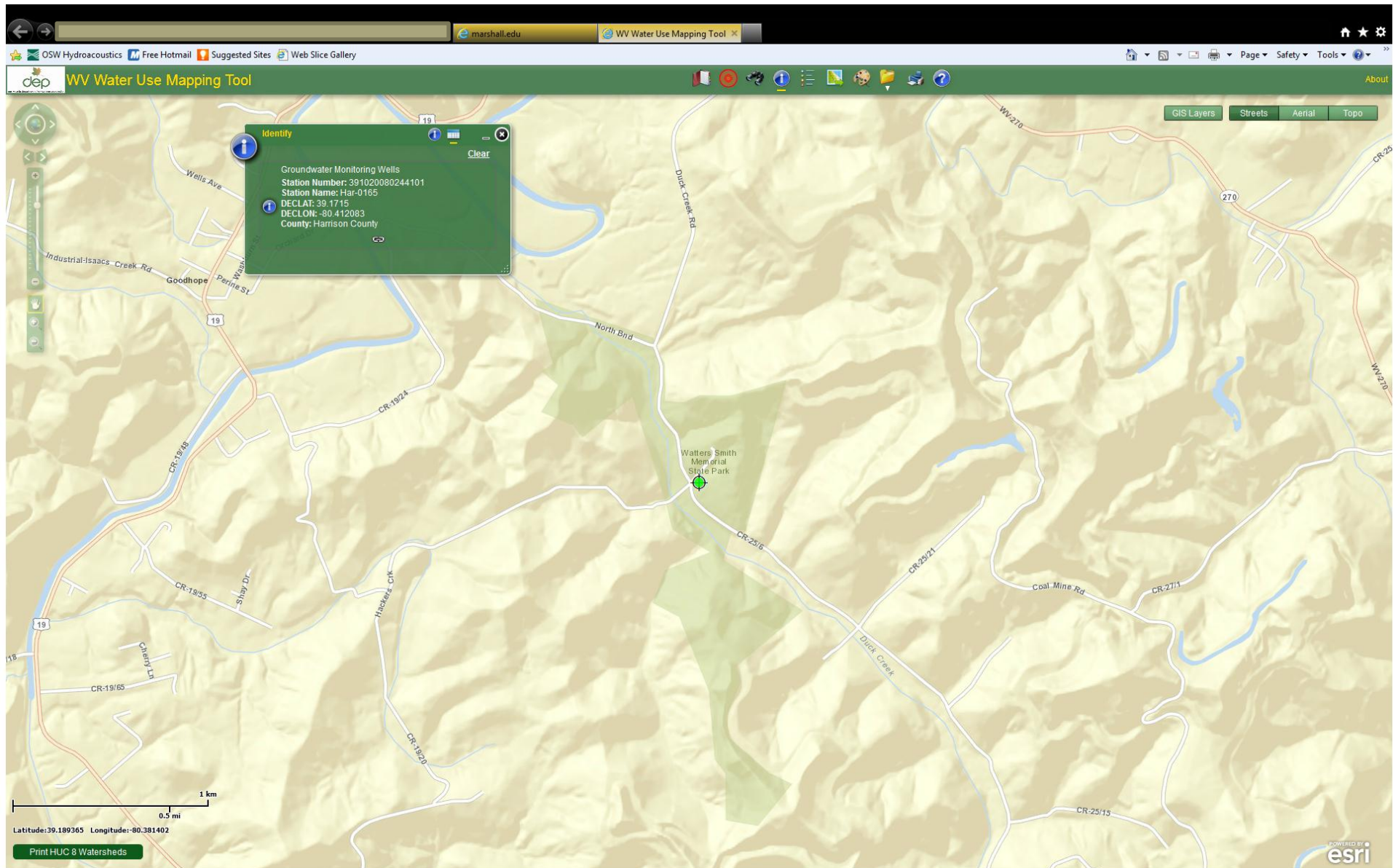
[Summary of all available data for this site](#)
[Instantaneous-data availability statement](#)

Discharge, cubic feet per second



Create [presentation-quality](#) graph. P00060 0001

GW Well Layer



USGS GW Well Link



Groundwater Watch

Latest News...

Site Number: 391020080244101 - Har-0165



DESCRIPTION:
 Latitude 39°10'17.4", Longitude 80°24'43.5" NAD83
 Harrison County, West Virginia, Hydrologic Unit 05020002
 Well depth: 218. feet
 Hole depth: 218. feet
 Land surface altitude: 1,048.42feet above NAVD88.
 Well completed in "Pennsylvanian aquifers" (N300PNSLVN) national aquifer.
 Well completed in "Conemaugh Formation" (321CNMG) local aquifer

AVAILABLE DATA FROM NWISWeb:

	2008	2012
Current / Historical Observations	-10-	-07-
	07	22

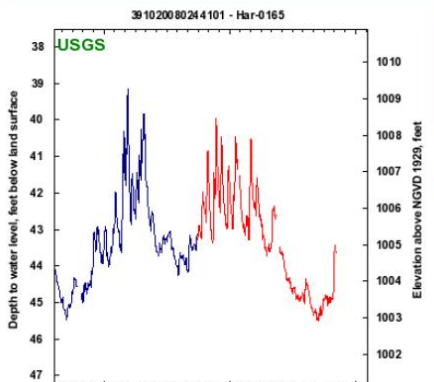
Daily Data
 Field groundwater-level measurements
 Field/Lab water-quality samples

Additional Data Sources	Begin Date	End Date	Count
Annual Water-Data Report (pdf) **offsite**	2009	2010	2
Groundwater Watch **offsite**	2008	2012	1281

OPERATION:
 Record for this site is maintained by the USGS West Virginia Water Science Center
 Email questions about this site to West Virginia Water Science Center Water-Data Inquiries

[Groundwater Watch Help Page](#)

Daily Groundwater Data



Most recent **Provisional** daily data value: **43.65** on 11/07/12

Summary for Period of Continuous Record
 Depth to water level, feet below land surface
Approved Daily Values Data Used in Analysis

Begin Date	End Date	Days	% Complete
10/07/08	09/30/11	986	90

- Daily Data Options**
- View latest data from NWISWeb
 - View data in calendar format
 - Download data in text format
 - View daily medians

Precipitation Sites

Identify

Identify from: <Top-most layer>

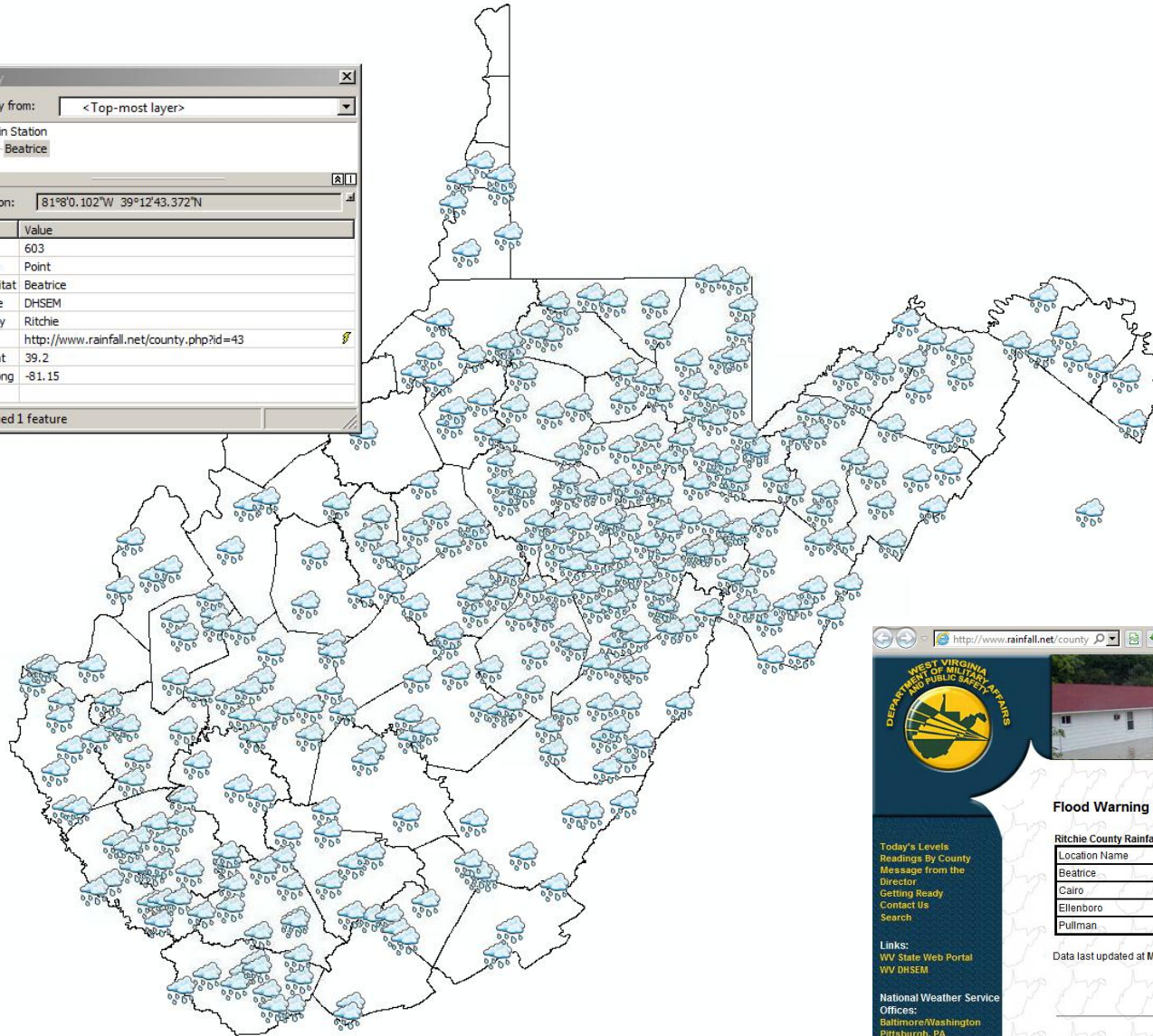
Rain Station

Beatrice

Location: 81°8'0.102"W 39°12'43.372"N

Field	Value
FID	603
Shape	Point
Precipitat	Beatrice
Source	DHSEM
County	Ritchie
Link	http://www.rainfall.net/county.php?id=43
DD_Lat	39.2
DD_Long	-81.15

Identified 1 feature



http://www.rainfall.net/county | Flood Warning System | Internet Explorer 9 - Microsof...



Division of Homeland Security and Emergency Management

Flood Warning System

Ritchie County Rainfall Data (Units in Inches)

Location Name	15 Min.	30 Min.	1 Hr.	3 Hr.	6 Hr.	12 Hr.	24 Hr.
Beatrice	0.00	0.00	0.00	0.00	0.04	0.08	0.08
Cairo	0.00	0.00	0.00	0.00	0.00	0.12	0.12
Ellenboro	0.00	0.00	0.00	0.00	0.04	0.12	0.12
Pullman	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Data last updated at Monday, December 17, 2012 at 11:45 am EST.

[Printable Version](#)

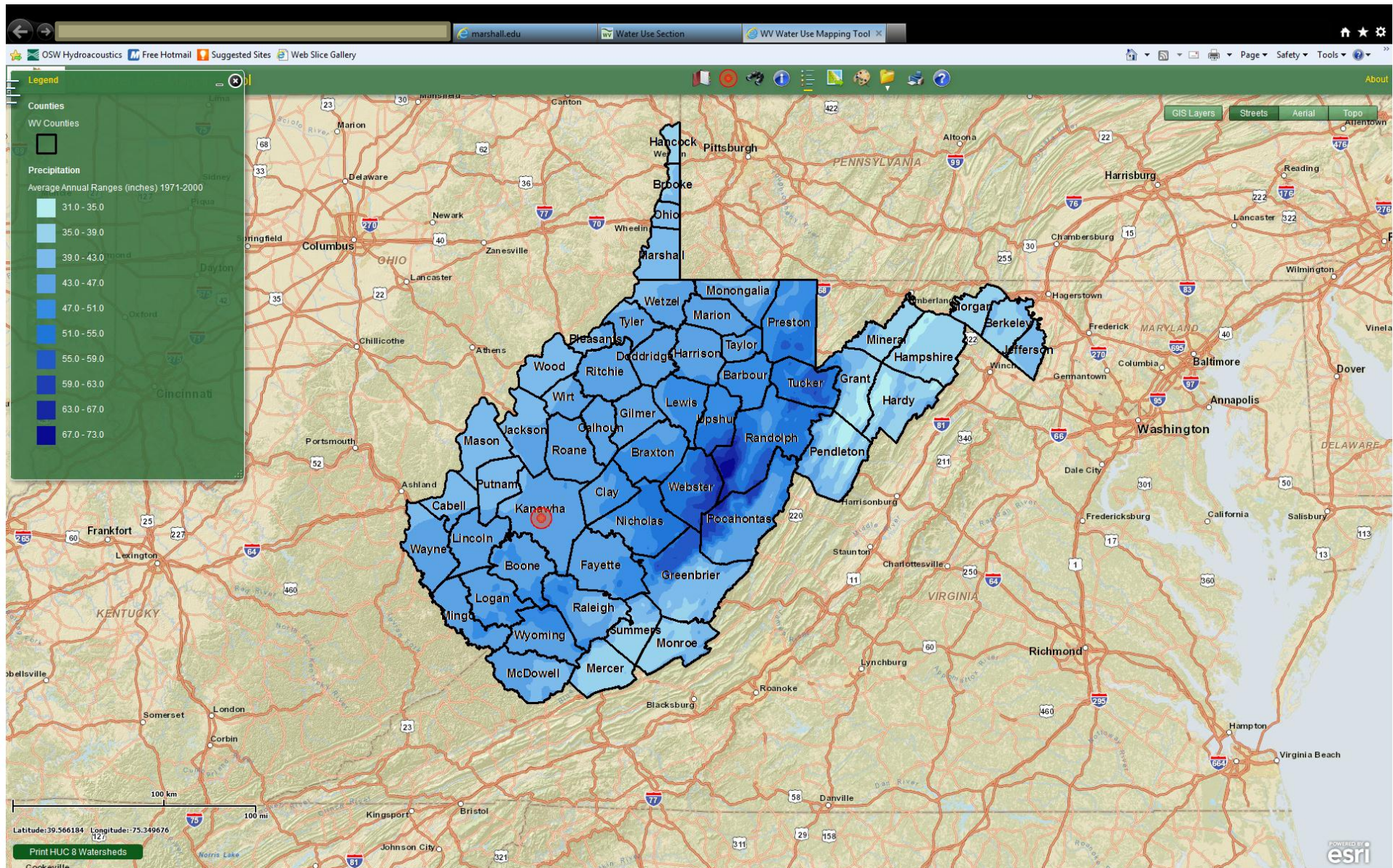
Today's Levels
Readings By County
Message from the
Director
Getting Ready
Contact Us
Search

Links:
WV State Web Portal
WV DHSEM

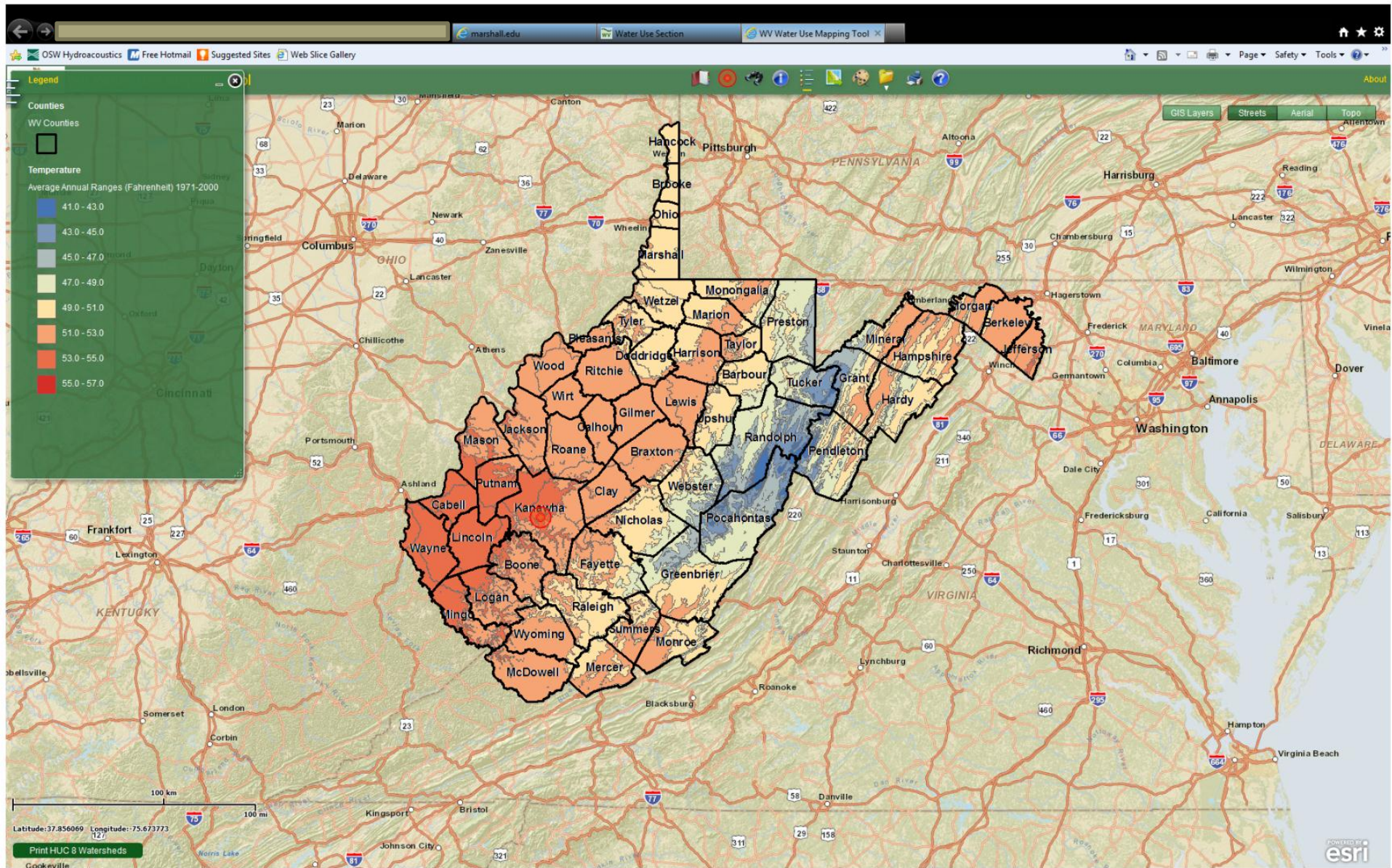
National Weather Service
Offices:
Baltimore/Washington
Pittsburgh, PA
Blacksburg, VA
Charleston, WV



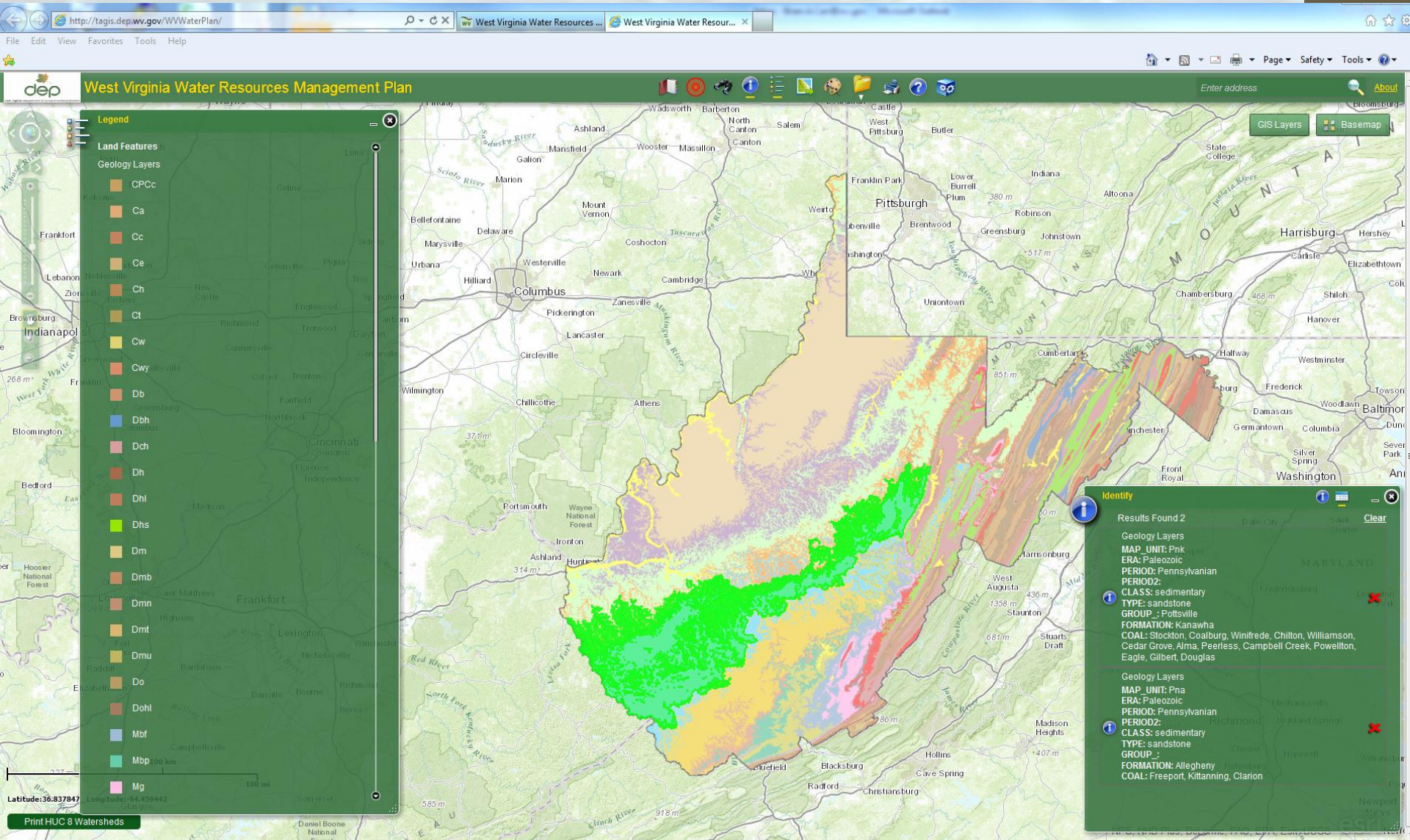
GIS Layers – Annual Precipitation



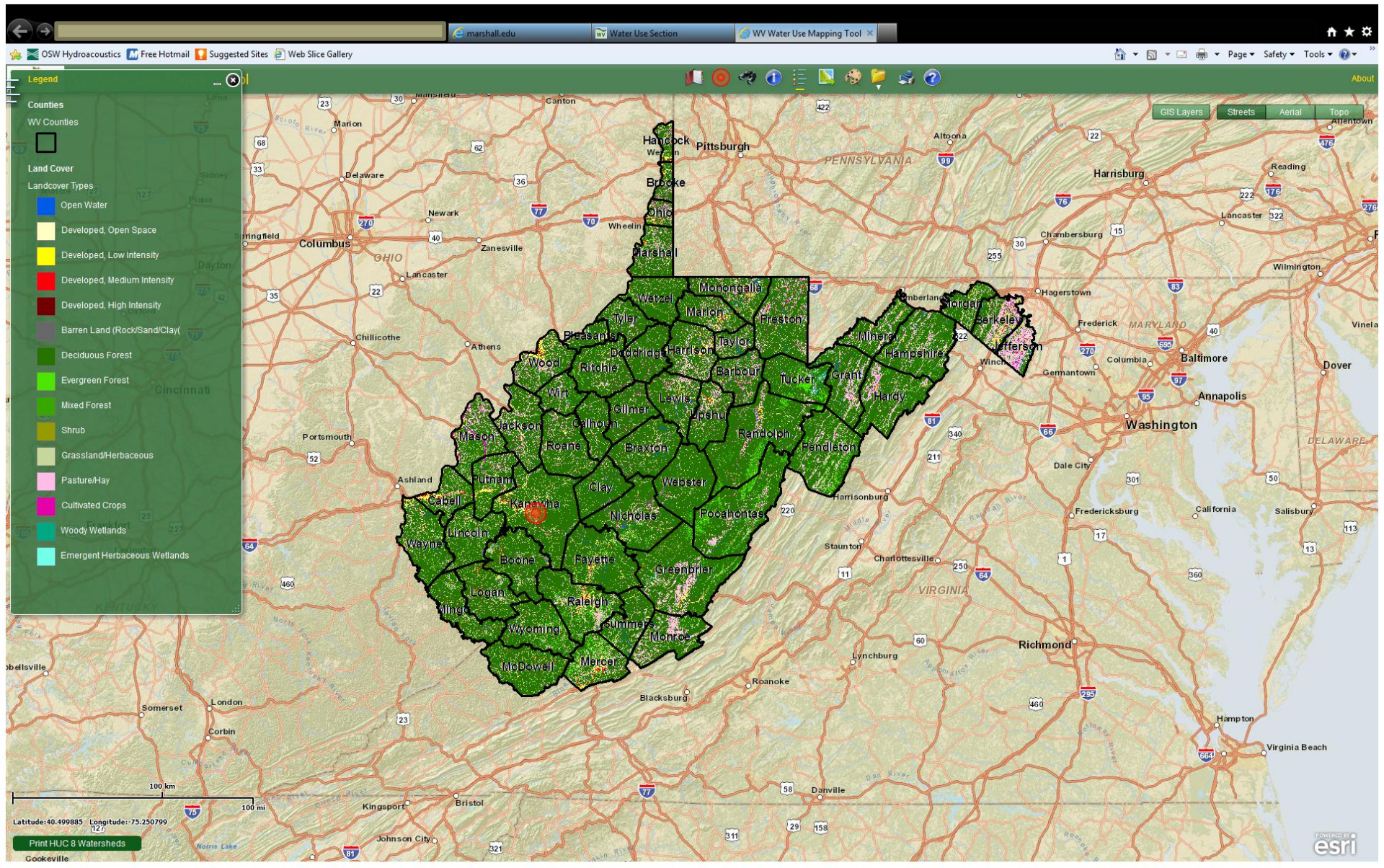
GIS Layers – Annual Temperature



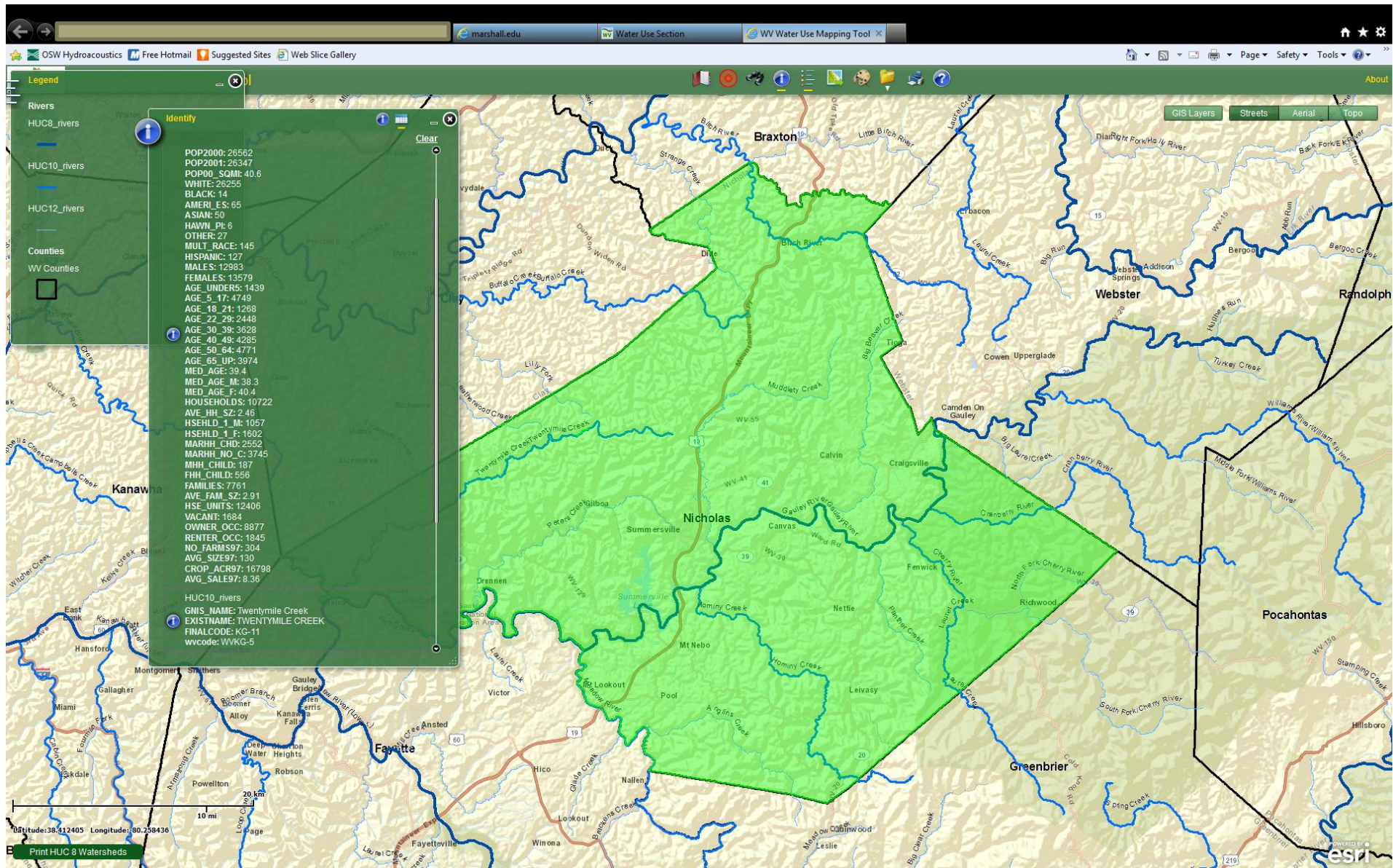
GIS Layers – Surface Bedrock



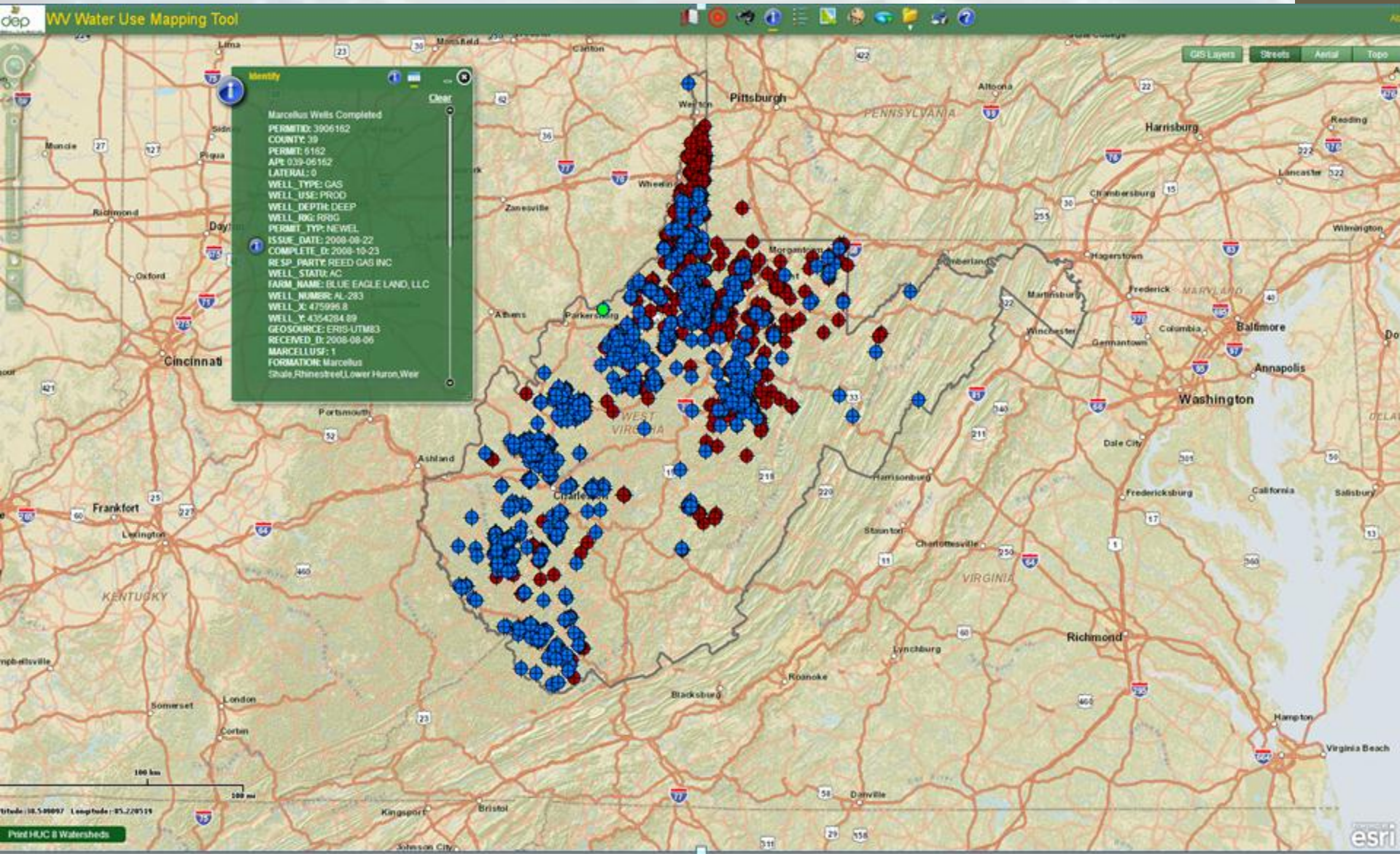
GIS Layers - Landcover



GIS Layers – 2010 Census Data



GIS Layers - Marcellus Wells



Link to WVGES O&G Well Pipeline



File Edit View Favorites Tools Help

Page Safety Tools



Select County: (103) Wetzel Select datatypes: (Check All)

Enter Permit #: 2439

Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Btm Hole Loc

- [Table Descriptions](#)
- [County Code Translations](#)
- [Permit-Numbering Series](#)
- [Usage Notes](#)
- [Contact Information](#)
- [Disclaimer](#)
- [WVGES Main](#)
- ["Pipeline-Plus" New](#)

WV Geological & Economic Survey:

Well: County = 103 Permit = 2439

Report Time: Friday, December 07, 2012 10:33:42 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4710302439	Wetzel	2439	Proctor	Wileyville	Littleton	39.70032	-80.647649	530207.7	4394555.9

Bottom Hole Location Information:

API	EP	FLAG	UTME	UTMN	LON_DD	LAT_DD
4710302439	1	As Proposed	531364	4394403	-80.634169	39.698901

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR	PROP_VD	PROP_TRGT_FM
4710302439	3/10/2010	Dvtd Orgnl Loc	Completed	Chesapeake Appalachia LLC	10H	627258	Brogan	26759/26451/1245772/1243544/1243545	Chesapeake Appalachia LLC	Chesapeake Appalachia, LLC	7200	Marcellus Sh

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF	G_AFT	O_BEF	O_AFT	P_BEF	P_AFT	TL_AFT
4710302439	3/10/2010	4/4/2009	1379	Ground Level	Kausooth	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Gas	Rotary Acid+Frac	5860	11707	11707	2790							4727

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4710302439	3/10/2010	Water	Fresh Water	Vertical			358	Pennsylvanian System					
4710302439	3/10/2010	Pay	Gas	Deviated	8029	Marcellus Sh	8191	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	8269	Marcellus Sh	8431	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	8509	Marcellus Sh	8684	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	8749	Marcellus Sh	9071	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	9149	Marcellus Sh	9471	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	9549	Marcellus Sh	9871	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	9949	Marcellus Sh	10271	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	10349	Marcellus Sh	10671	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	10749	Marcellus Sh	11071	Marcellus Sh					
4710302439	3/10/2010	Pay	Gas	Deviated	11149	Marcellus Sh	11471	Marcellus Sh					

Production Gas Information:

API	OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4710302439	Chesapeake Appalachia, LLC	2010	273014	0	0	31251	34433	46092	39814	49362	52771	0	0	0	19291
4710302439	Chesapeake Appalachia, LLC	2011	804558	83892	64628	66892	69614	57331	32047	87064	73224	74156	71974	50829	72907

Production Oil Information:

API	OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4710302439	Chesapeake Appalachia, LLC	2010	694	0	0	112	7	40	6	134	102	0	288	0	5
4710302439	Chesapeake Appalachia, LLC	2011	3744	254	311	412	502	339	93	436	326	315	256	203	297

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4710302439	Dvtd Orgnl Loc	Maxton	Well Record	2200	Reasonable	50	Reasonable	1379	Ground Level
4710302439	Dvtd Orgnl Loc	Big Lime	Well Record	2259	Reasonable	16	Reasonable	1379	Ground Level
4710302439	Dvtd Orgnl Loc	Big Injun (undiff)	Well Record	2275	Reasonable	225	Reasonable	1379	Ground Level
4710302439	Dvtd Orgnl Loc	Tully Ls	Well Record	7096	Reasonable	24	Reasonable	1379	Ground Level
4710302439	Dvtd Orgnl Loc	Hamilton	Well Record	7120	Reasonable	89	Reasonable	1379	Ground Level
4710302439	Dvtd Orgnl Loc	Marcellus Sh	Well Record	7209	Reasonable			1379	Ground Level

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

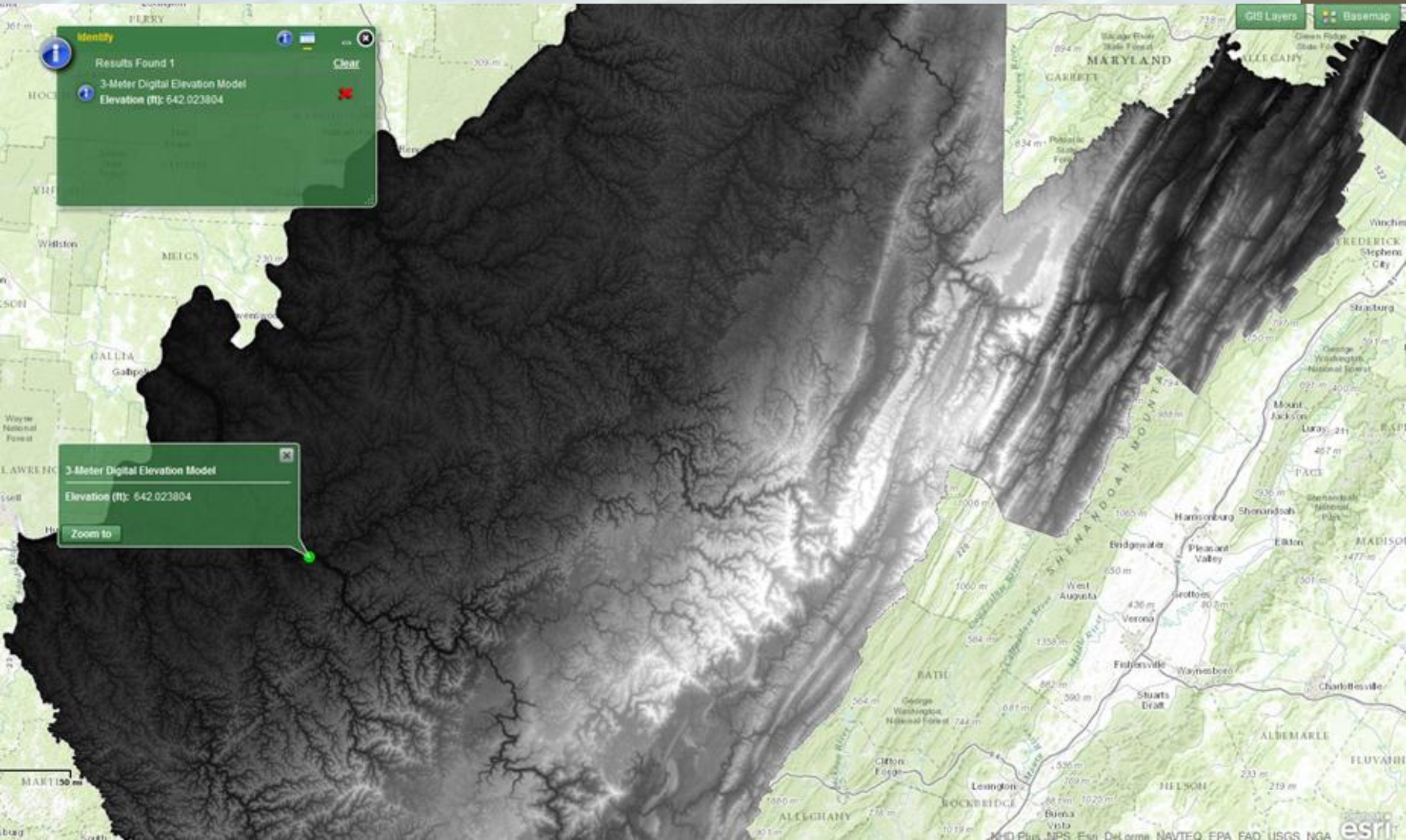
Draw Tool

The screenshot displays the WV Water Use Mapping Tool interface. The main map shows a topographic view with two highlighted areas:

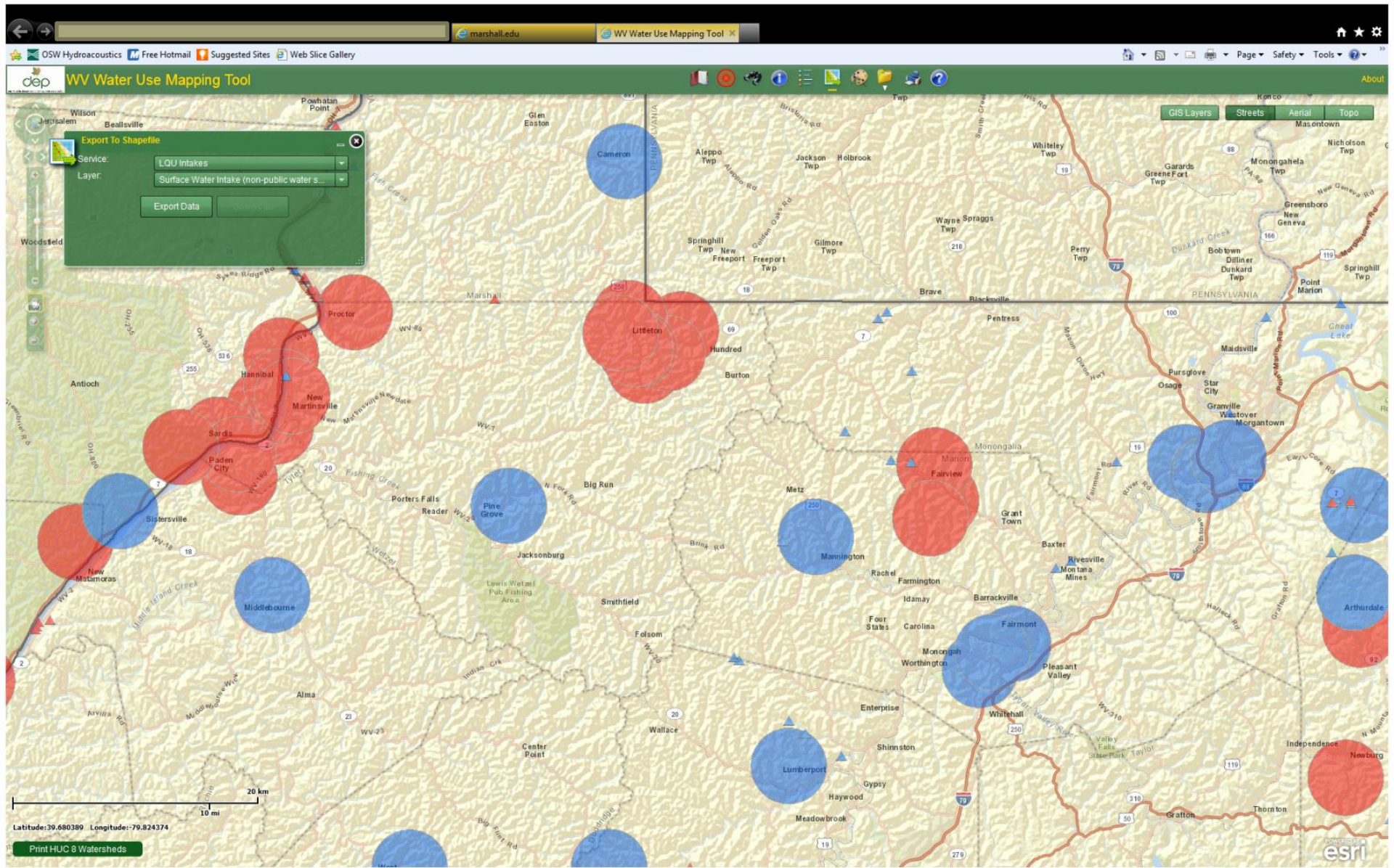
- IMPACT ZONE:** A circular area with an area of 1,548.98 ac and a perimeter of 29,123.26 ft.
- TARGET AREA:** A polygonal area with a total area of 2,838.61 ac and a perimeter of 50,919.58 ft. It contains a smaller rectangular area of 36.37 ac with a perimeter of 5,162.50 ft.

The interface includes a 'Draw and Measure' panel on the left with various drawing tools and text input fields. The text 'IMPACT ZONE' is entered in the text field. The browser window shows the URL 'marshall.edu' and the page title 'WV Water Use Mapping Tool'. The bottom of the screen displays coordinates (Latitude: 38.281286, Longitude: -81.581746) and a 'Print HUC 8 Watersheds' button.

3 Meter Digital Elevation Model



Export/Print



Web Site Links



Air

[Division of Air Quality Home](#)
[Air Quality Index](#)
[Open Burning Regulations](#)
[Air Monitoring Data](#)
[Permit Application Forms](#)
[Policies](#)

[See More](#)



Land

[REAP](#)
[Abandoned Mine Lands and Reclamation](#)
[Division of Mining and Reclamation](#)
[Office of Oil and Gas](#)
[Special Reclamation of Industrial Lands](#)

[See More](#)



Water and Waste

[Water and Waste Home](#)
[2012 Draft 303\(d\) List](#)
[Water Withdrawal Guidance Tool](#)
[Permitting](#)
[Water Use](#)
[Special Studies](#)

[See More](#)



Inside DEP

[Environmental Advocate](#)
[Contact the Executive Office](#)
[Environmental Enforcement](#)
[Youth Environmental Program](#)
[Public Information Office](#)
[Agency Budget](#)

[See More](#)

Permitting

[Narrative Water Quality Permitting Guidance](#)
[e-Permitting/eDMR](#)

[See More](#)

How Do I...?

[Find a job with DEP](#)
[File a FOIA Request](#)
[Find a Public Notice](#)
[Report a Spill](#)
[Volunteer](#)

[See More](#)

Agency Geospatial Technologies

[GIS and ITO's TAGIS Unit](#)

[See More](#)

Events

[Special Reclamation Fund Advisory Council \(SRFAC\) ... 11/07/2012](#)

[WVDEP regulations for manufacturers seminar 11/08/2012](#)

[Public meeting on water quality standards 11/08/2012](#)

[See More](#)

IMPORTANT NOTICE: Upcoming vacancy announcements for Oil and Gas Inspectors

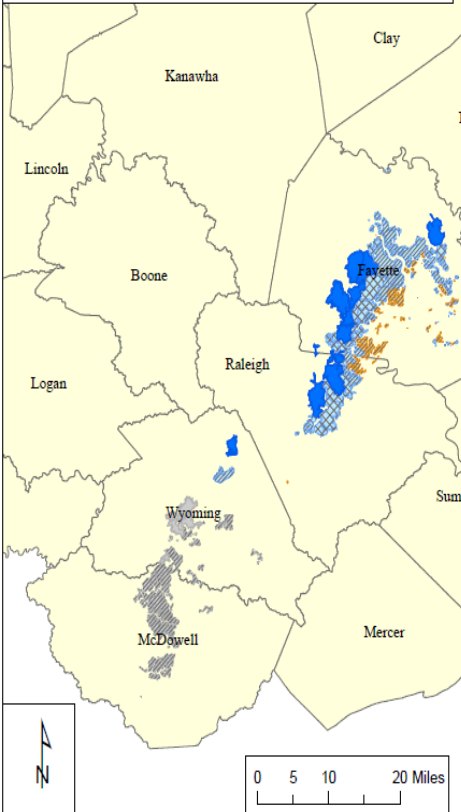
Due to recent legislative changes to the Oil and Gas statute, DEP has created class specifications for Oil and Gas Inspector, Oil and Gas Inspector Specialist, and Oil and Gas Inspector Supervisor. These class specifications have been approved by the State Personnel Board and are available on the Division of Personnel's (DOP) website.

Spotlight

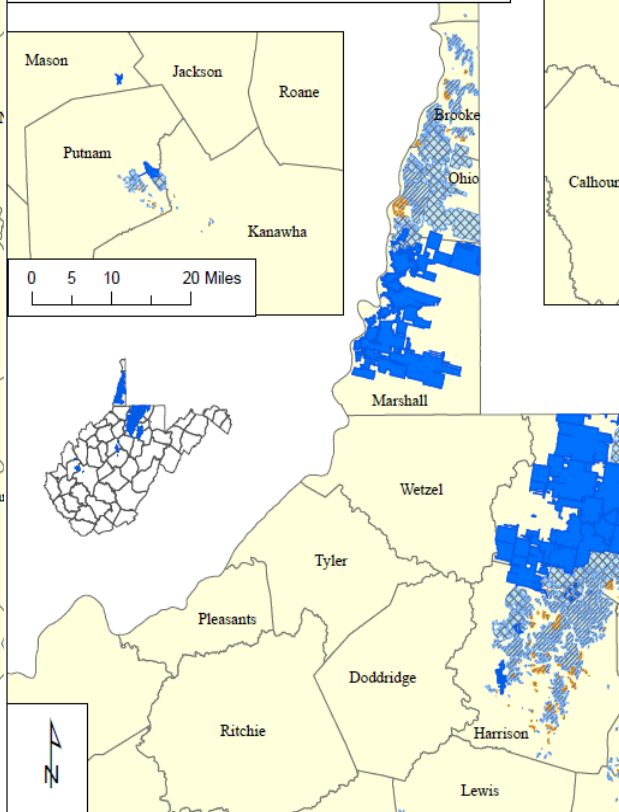


Mine Pool Atlas Link

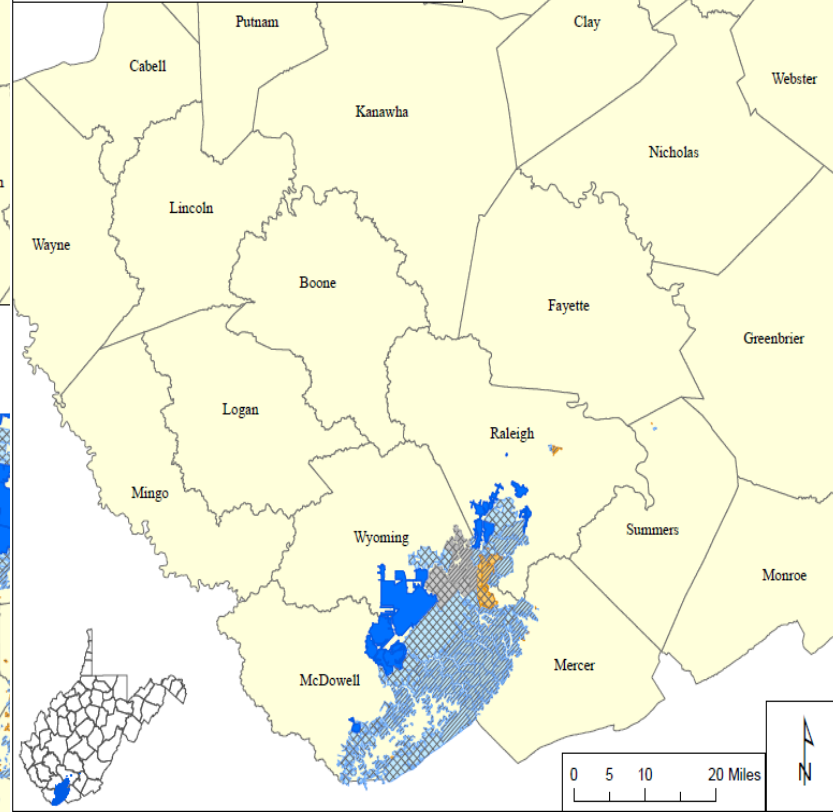
Sewell Mine Pools Seam Overview



Pittsburgh Mine Pools Seam Overview



Pocahontas No. 3 Mine Pools Seam Overview



Legend

- Position**
- Above Drainage
 - Near Drainage
 - Below Drainage
- Potential Extent of Flooding**
- Undetermined
 - Flooded areas unlikely
 - Partially flooded
 - Totally flooded

Sewell M

No. of Mines	
Mean coal thickness (feet)	
Min. foot print area (acres)	
Max. foot print area (acres)	
Mean foot print area (acres)	
Median foot print area (acres)	
Total foot print area (acres)	
Estimated void volume (acre feet)	
Max. potential storage (million gallons)	

Legend

- Position**
- Above Drainage
 - Near Drainage
 - Below Drainage
- Potential Extent of Flooding**
- Undetermined
 - Flooded areas unlikely
 - Partially flooded
 - Totally flooded

Pittsburgh Mine P

No. of Mines	0
Mean coal thickness (feet)	0.00
Min. foot print area (acres)	0.00
Max. foot print area (acres)	0.00
Mean foot print area (acres)	0.00
Median foot print area (acres)	0.00
Total foot print area (acres)	0.00
Estimated void volume (acre feet)	0.00
Max. potential storage (million gallons)	0.00

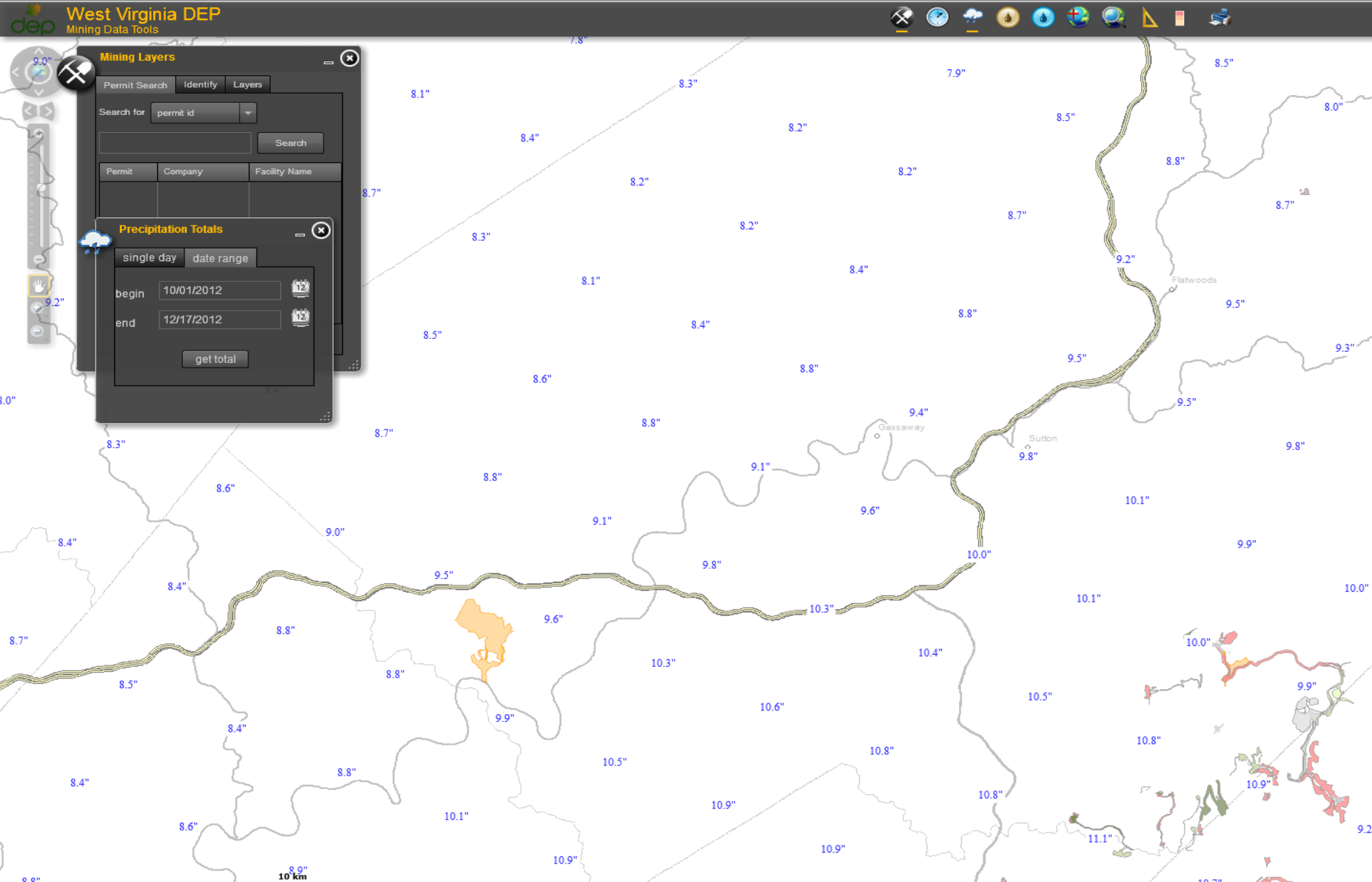
Legend

- Position**
- Above Drainage
 - Near Drainage
 - Below Drainage
- Potential Extent of Flooding**
- Undetermined
 - Flooded areas unlikely
 - Partially flooded
 - Totally flooded

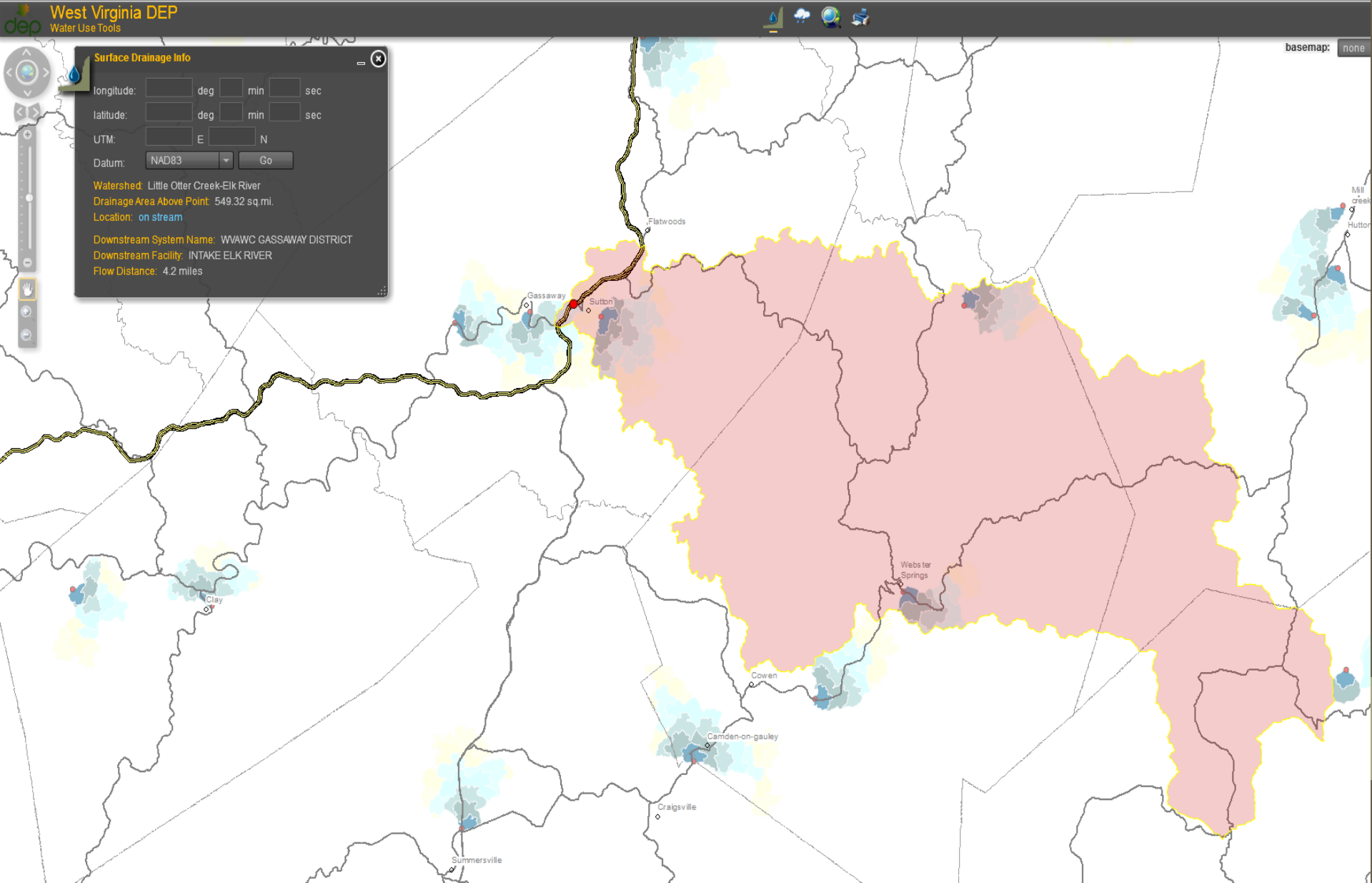
Pocahontas No. 3 Mine Pool Statistics

	Potentially flooded areas		Potentially partially flooded	
	Undetermined	unlikely	totally flooded	Potentially totally flooded
No. of Mines	19	56	211	13
Mean coal thickness (feet)	3.63	4.27	4.72	4.10
Min. foot print area (acres)	1.00	0.02	0.03	23.38
Max. foot print area (acres)	7,469.50	4,312.28	24,666.84	21,361.85
Mean foot print area (acres)	990.66	142.19	771.26	3,350.77
Median foot print area (acres)	174.18	0.73	168.10	1,247.45
Total foot print area (acres)	18,822.60	7,962.37	162,736.63	43,560.05
Estimated void volume (acre feet)	37,037.88	13,978.94	386,114.19	98,167.56
Max. potential storage (million gallons)	12,070.64	4,555.74	129,093.61	31,992.81

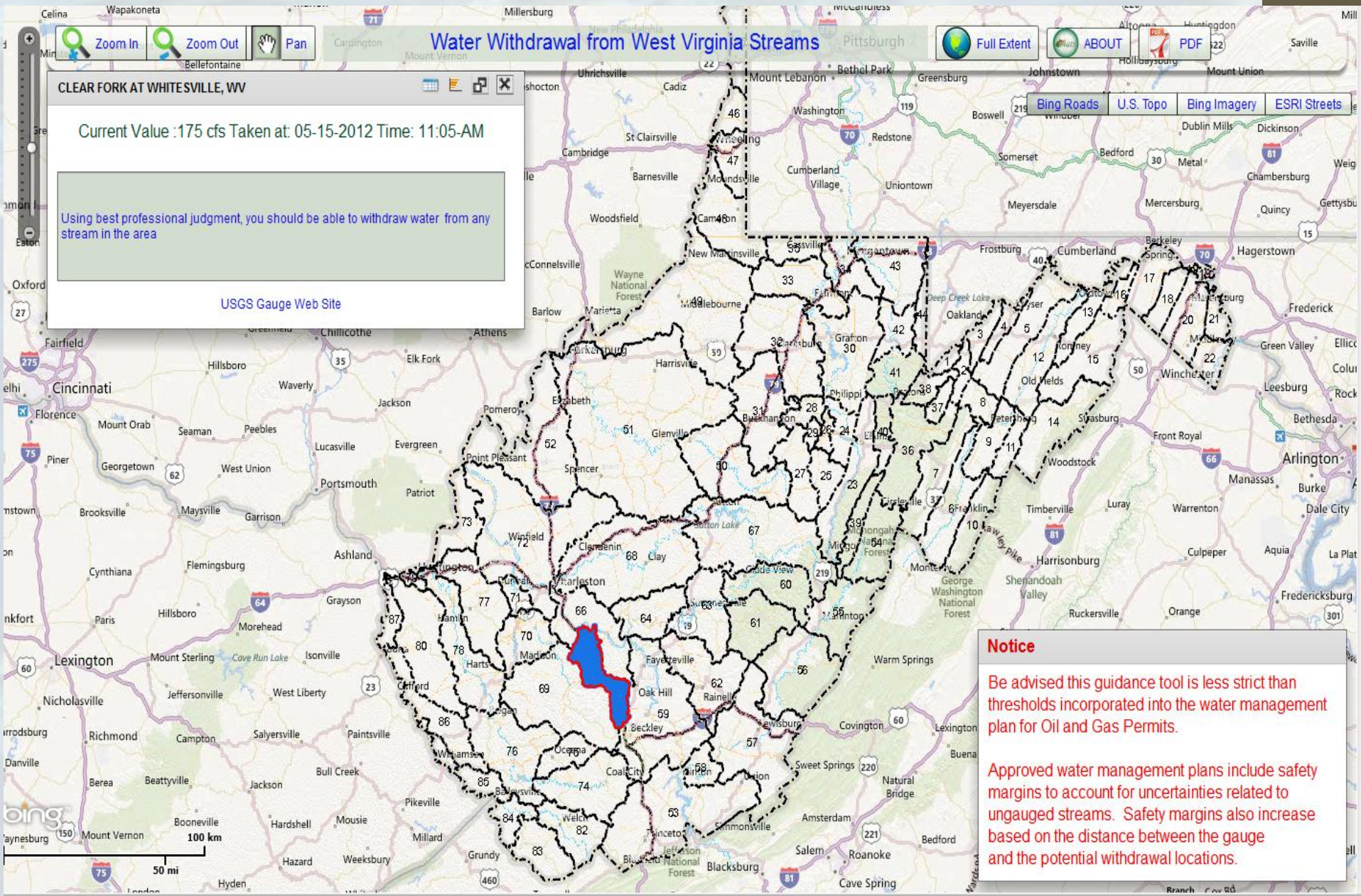
Precipitation - Total Over Date Range



Basin Size Widget



Water Withdrawal Tool



WV Flood Tool Site

The screenshot shows the landing page of the WV Flood Tool. At the top, there is a navigation bar with links for Home, Getting Started, FAQ, and User Manual. Below this is a large banner image of a flooded area with a house. The text on the banner reads "WV Flood Tool" and "Remember: When In Doubt, It's not Out!". A prominent red button labeled "Launch Tool" is positioned to the right of the banner. To the right of the banner is a box titled "Agency Information" which lists the Department of Homeland Security, FEMA, the West Virginia Division of Homeland Security and Emergency Management, and the West Virginia GIS Technical Center. At the bottom of the page, there is a navigation menu with links for Overview, Features, Contacts, Data Layers, Resources, and Glossary.

Data Layers

Data layers are divided into three major categories: (1) base map or background layers, (2) overlay reference layers, and (3) flood layers.

Base Map (Background) Layers

The WV Flood Tool provides access to 12 base map layers from commercial and governmental web services. Road base high resolution pictures of the earth's surface. The best leaf-off imagery layer includes high resolution imagery combined with a road network.

Reference Layers

Overlay reference layers consist of vector framework layers such as transportation, hydrography, elevation contours, and flood layers.

Flood Layers

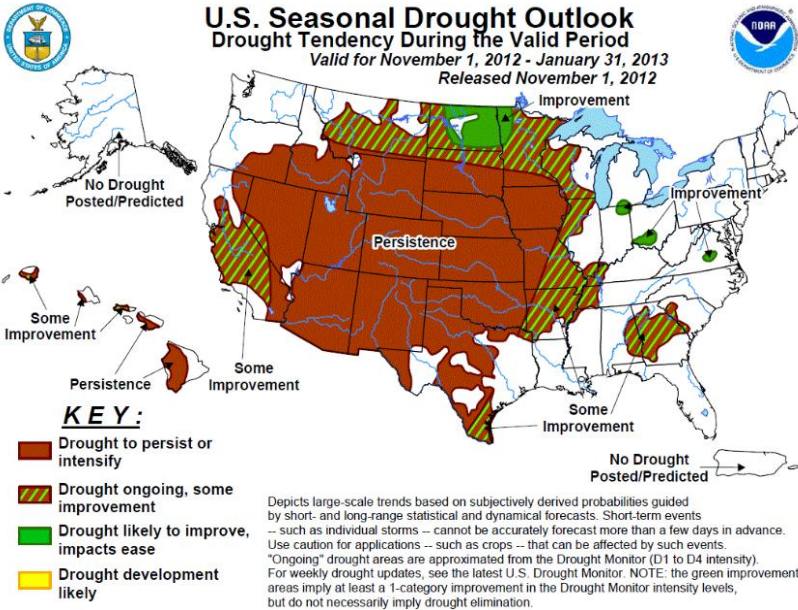
Flood layers encompass information about flood hazards and mitigating flood risks. The flood layers include the best available flood hazard data. See the User Guide in the Resources Tab for more information.

The screenshot shows the interactive map interface of the WV Flood Tool. The map displays a topographic view of a region in West Virginia, with a red line indicating a flood hazard area. The interface includes a search bar at the top with the text "Input your address". Below the search bar are tabs for "Public", "Expert", "Risk MAP", "Flood", "Reference", and "Basemap". The "Flood" tab is currently selected. Two information pop-ups are visible on the map. The first pop-up, titled "Flood Hazard", contains the following text: "Flood Hazard Area: Selected site is WITHIN the FEMA 100-year floodplain", "Additional Hazard Info: Click here", "Elevation: About 597 feet", "Location (long, lat): (-81.570998, 38.316658)", "Location (UTM 17N): (450084, 4241104)", "FEMA Issued Flood Map: 54038C0429E", and "Contacts: Kanawha County". The second pop-up, titled "Selected Site within Floodplain", contains the following text: "Flood Risk Information", "Flood Insurance: Go to [www.floodsmart.gov](\"http://www.floodsmart.gov\") to get an idea of the cost of flood insurance and to find an agent close to you who wants to help you obtain it.", "Surveyed Elevation: A surveyor can provide more exact elevation data and your local Floodplain Manager can review this information with you to help assess your risk of flooding. This elevation data can also be used to rate or re-rate a flood insurance policy and may result in significant cost savings if you do not have a basement.", and "Basement: Click [here](\"#\") to get a better idea of risk consider whether your house is built on a basement, 'slab on grade' (flat on the ground) or elevated on a crawlspace or above an enclosed area (not a basement) that is used for limited storage, parking or access to the upstairs." At the bottom of the map, there is a scale bar showing 5 km and 3 miles, and coordinates: "Scale: 1:72,224" and "x: -81.359511, y: 38.295778".

Supported Browsers: Internet Explorer 7.8.9, Firefox 3+, Chrome, Safari. Please contact info@wv.gov with questions or comments.

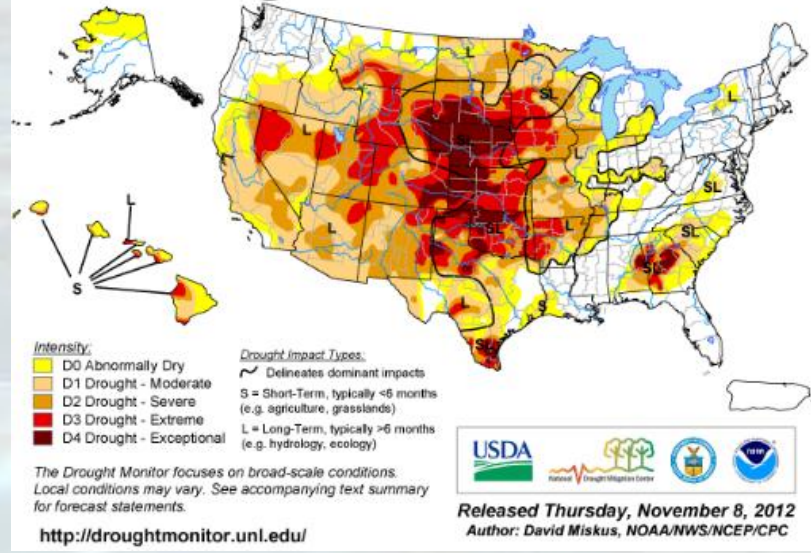
Drought Monitoring Sites

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period Valid for November 1, 2012 - January 31, 2013 Released November 1, 2012

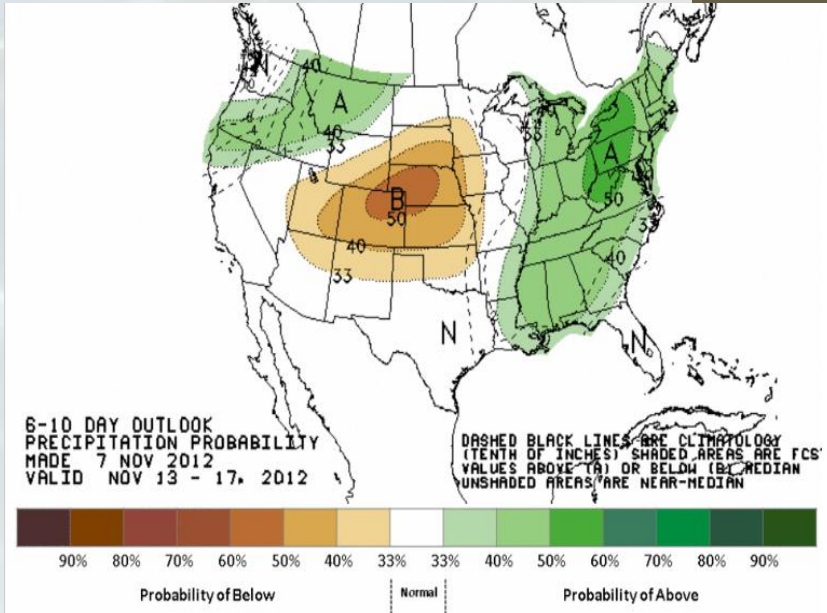
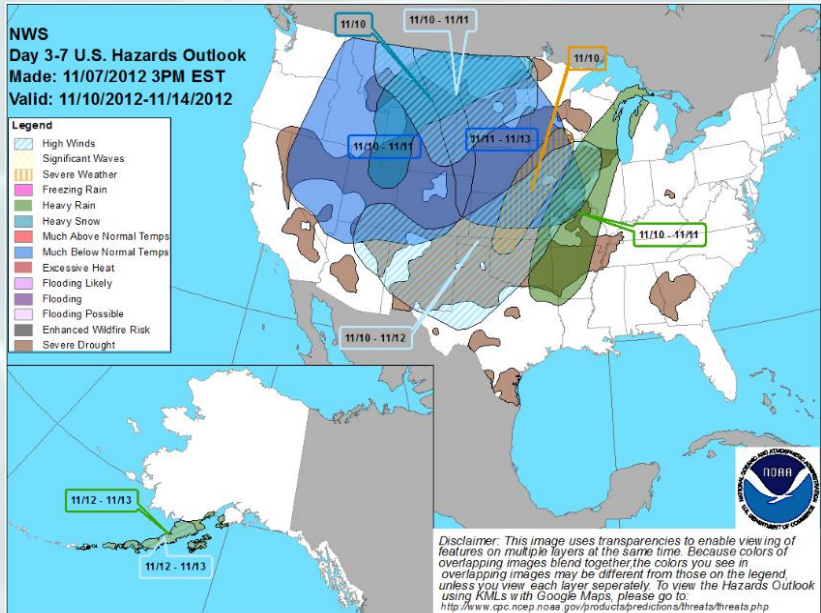


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

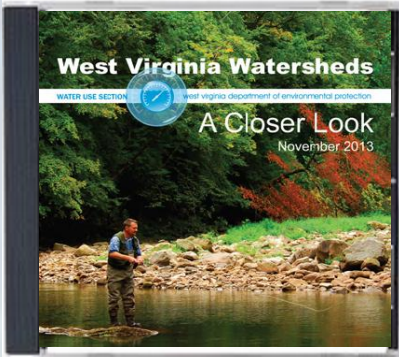
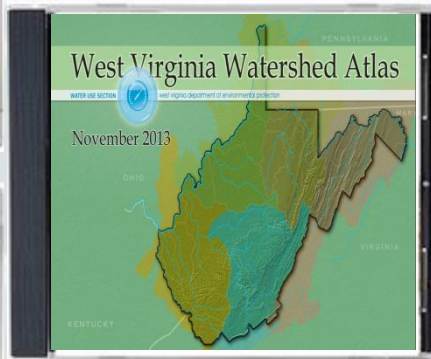
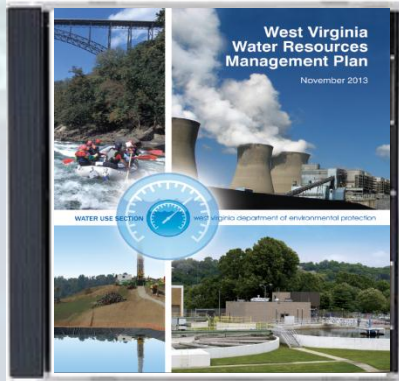
U.S. Drought Monitor November 6, 2012 Valid 7 a.m. EST



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



The WVWRMP and Companion Reports were Submitted November 22, 2013



A set of 3 CD's were hand delivered to the Senate and House Chairs of this Commission

The Plan was posted on the Legislative State Agency Report Submission site.

West Virginia Legislature
1ST SESSION OF THE 81ST LEGISLATURE

Enter Search Terms
Search

Senate House Joint Bill Status WV Code Audits/ Reports Educational Contact

State Agency Report Submission

Reports must be saved as a Portable Document Format (.pdf) file. After submitting the form below, a new file name for the document will be e-mailed to the agency contact. Please copy this new document name and paste it over the old to rename it properly. Please ensure that any "Hide Extension" box is unchecked in your save window so files are not saved with duplicate ".pdf" extensions. After renaming, please reply to the email with the .pdf file attached.

If possible, please send a .pdf copy of your report made from the original document and NOT a scanned version of the report. Scanned .pdf files are much larger and are not searchable. Almost all word processing and layout programs can "Save As" or "Export" as a .pdf file.

If you have any questions or your agency's name does not appear in the menu below, contact our [Website Administrators](#).

Agency:

What section of WV Code requires this report?

Title of the report

What type of report is this?

Select Year Type

The year the report covers
If more than one year, enter last year report covers

Agency contact for report information

Email address for agency contact
Must be a valid e-mail address

Who produced this report, if not produced by your agency?

Enter the text of the image below:



WVWRMP Mapping Tool

Google search: wvwaterplan and click the Blue Button

The screenshot shows the West Virginia Department of Environmental Protection (WVDEP) website. At the top, there is a navigation bar with the WVDEP logo and the text "west virginia State Agency Directory | Online Services". A search bar on the right contains the text "Search WV DEP". Below the navigation bar, the main header features the WVDEP logo and the text "west virginia department of environmental protection - Promoting a Healthy Environment". A secondary navigation bar includes links for "DEP Offices | Agency History | News | Outlook Web Access | Text size A A A".

The main content area is titled "Home > Water and Waste Management > Water Use Section > WV Water Resources Management Plan". Below this, the heading "West Virginia Water Resources Management Plan" is displayed. A welcome message follows, stating: "Welcome to the WVDEP Water Use Section Public Information Portal. This website was developed in cooperation with the Center of Environmental, Geotechnical, and Applied Sciences (CEGAS) at Marshall University. It serves as a public information portal for data related to water use in West Virginia. The Water Use Section of the WV DEP was developed as a result of the Water Resources Protection and Management Act of 2008. On this site, you have access to reports from the Large Quantity User and Marcellus Shale Frac Water databases. Additionally, there are many other related datasets displayed for the West Virginia Water Plan Mapping Tool."

A blue button labeled "WV Water Resources Management Plan Mapping Tool" is prominently displayed. Below it, a text block reads: "To view the 'West Virginia Water Resources Management Plan', the 'West Virginia Watershed Atlas', or the 'West Virginia Watersheds: A Closer Look' documents please click on the corresponding image below. *Please note that the files are quite large and may take several minutes to load into your browser."

Three document thumbnails are shown at the bottom:

- West Virginia Water Resources Management Plan**: A collage of images including a bridge, a power plant, and a water treatment facility. Below the thumbnail is the text "Filetype: PDF (45 MB)".
- West Virginia Watershed Atlas**: A map of West Virginia with various watershed boundaries highlighted in green and yellow. Below the thumbnail is the text "Link to Watershed Maps".
- West Virginia Watersheds: A Closer Look**: A photograph of a person standing in a stream next to a rocky bank. Below the thumbnail is the text "Filetype: PDF (30 MB)".

On the left side of the page, there is a vertical menu with the following items: "Water Withdrawal Guidance Tool", "WV Water Resources Management Plan", "Progress Reports - Water Resources Protection & Management Act", "State Rules and other related documents", "Frac Water Reporting Form", "Annual Certification-Large Quantity Users", "Mine Pool Atlas", "WV Water Laws, Regulations, and Rights", and "Helpful Links".

Example Future Pursuits

- Develop a guidance document describing the appropriate procedures for protection against spread of invasive species and other best management practices relative to water withdrawals.
- Gather water quality data for mine pool waters in order to improve the Mine Pool Atlas and better identify the resource's potential for use by new and existing industry.
- Better identify the state's groundwater by improved data collection methods, ongoing USGS studies, and computer modeling.
- Identify regional water resource issues based on the five defined water regions of the state.

Example Future Pursuits

- Host an Annual Statewide Water Resources Conference in different locations across the state. The principal objectives of the conference will be:
- Publish online reports in order to update data contained within the Plan.
- Continue to enhance the water withdrawal tool by incorporating the results of scientific studies and continuing stream flow data collection at partial record stations.

Recommendations

- **The Commission should consider amending the statutory definition of “large quantity user” at W. Va. Code § 22-26-2(i).**
- **The Commission should consider amending the statutory survey and registration requirements of the Act to eliminate variances.**
- **The Commission should consider assisting in efforts to continue funding stream gages and amending the Act to require notification if a funding partner becomes unable to contribute.**
- **The Commission should consider whether the state should acquire Light Detection and Ranging (LIDAR) coverage for the 70% of the state that has not yet been so mapped.**
- **The Commission should encourage continued collaboration among all affected agencies to improve data collection regarding the state’s water resources.**

Thank You



WV department of environmental protection
-Promoting a healthy environment

QUESTIONS ?



WV department of environmental protection
-Promoting a healthy environment