

A wide-angle photograph of the Philadelphia skyline, featuring several prominent skyscrapers like the Comcast Center and the Liberty City Center. The foreground shows a river (the Schuylkill River) with a bridge, and lush green trees on the left bank. The sky is blue with scattered white clouds.

DELAWARE VALLEY EARLY WARNING SYSTEM

*RRT III Meeting
May 7, 2019*

**PHILADELPHIA
WATER**
EST. 1801

Presentation Overview

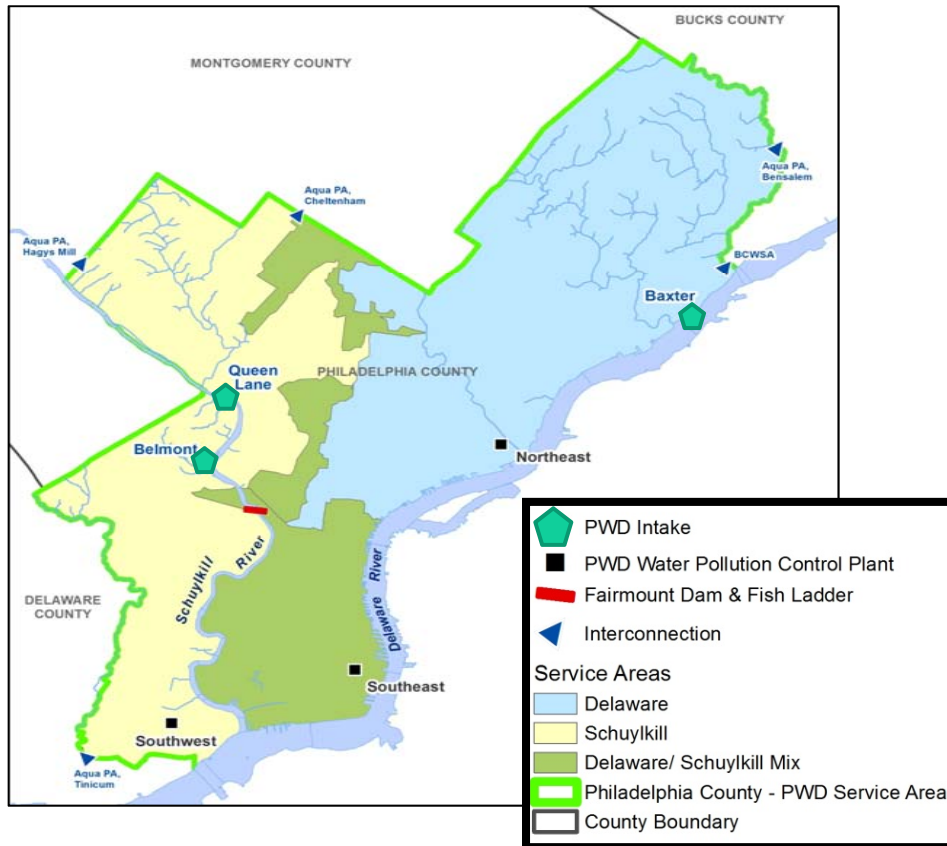


- PWD's Source Water Protection Program
- Overview of Delaware Valley Early Warning System (EWS)

Alex Ridyard

PWD Water System

Serving 1.6 million People



Water Treatment

3 Treatment Plants ~250 MGD

- 2 on the Schuylkill River (~40%)
- 1 on the Delaware River (~60)

Distribution System

- 3,145 miles of water mains
- 483,000 residential connections
- 12,900 commercial connections
- 25,355 fire hydrants and residential fire suppression systems

Pumping and Storage

- 3 raw water pumping stations
- 12 finished water pumping stations
- 12 finished water storage facilities
- Servicing 13 pressure districts

*U.S. Census Bureau, 2010 Census

PWD Source Watersheds



Schuylkill Watershed

- 1,911 sq. miles
- 1.36 million people*



Delaware Watershed

- 8,108 sq. miles
- 2.72 million people*



**U.S. Census Bureau, 2010 Census*

PWD drinking water intakes are located at the bottom of two major watersheds and Philadelphia's jurisdictional area covers less than 1% of the area influencing its water supply

Why is PWD Leading Development of Delaware Valley EWS?

- Operate the 3 most downstream WTPs in the Basin
- Provide drinking water to 1.6 million residents
- Experienced “close calls” (Athos I oil spill, industrial fires, transportation accidents, other spills and accidents)
- Recognize the benefit of better information about upstream water quality and events
- Understand need for a partnership approach

Delaware Valley Early Warning System

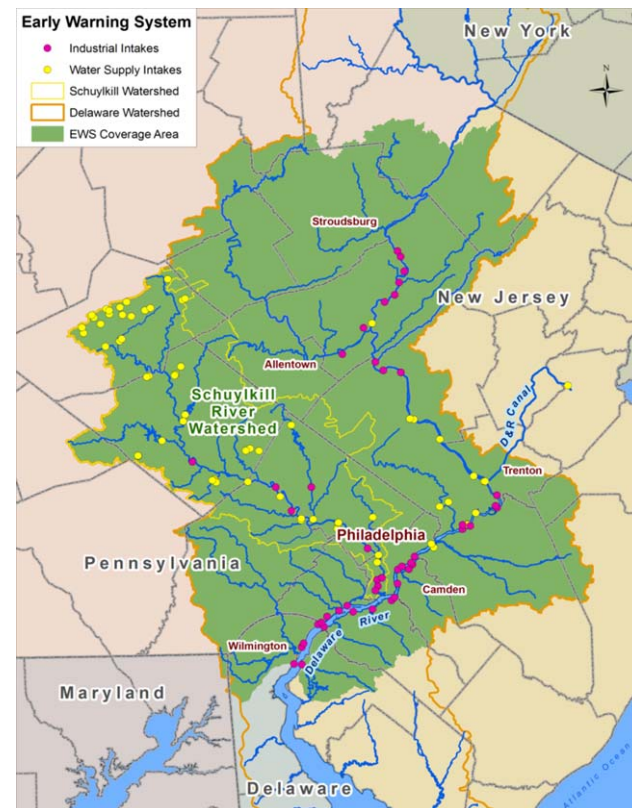
- An integrated monitoring, notification, and communication system designed to provide advance warning of surface water contamination events in the Schuylkill and lower Delaware River watersheds

History of the Delaware Valley EWS

2002	• Source Water Assessments complete – EWS funding available
2002-04	• PWD Development and optimization of EWS
2005	• Deployment of new EWS website
2008	• Integration of CodeRED mass notification telephony system
2009	• Added Industrial users
2014	• Tidal spill model
2017	• User interface expansion started (smart phone, tablet, etc)
2019	• Roll out of EWS Redesign (Fall 2019)

EWS Coverage Area

- Schuylkill River Watershed
- Delaware River Watershed with exception of:
 - ▣ NYC water supply
 - ▣ Tributaries downstream of Philadelphia
- 124 intakes are mapped in EWS
- Over 7,400 stream miles in EWS coverage area



Building Blocks of the EWS

Partnership

- ▣ Includes representatives from public and private drinking water supply and treatment facilities, wastewater treatment facilities, industries, and government agencies

Detection/Notification System

- ▣ Includes automated telephone and web-based notification capabilities

Monitoring Network

- ▣ Consists of online WQ and flow monitoring stations located at USGS sites and water treatment plant intakes

Website and Database Portal

- ▣ Secure communications and information sharing
- ▣ Both systems fully integrated with notification system and monitoring network

EWS Partnership

- 421 users in 53 organizations*
- Water Suppliers
 - ▣ PA Water Suppliers - 14 utilities, 24 Drinking Water Intakes
 - ▣ NJ Water Suppliers - 4 utilities, 4 Drinking Water Intakes
- Industry
 - ▣ 13 Companies, 19 Intakes (PA, NJ and DE)
- PADEP / NJDEP
- Delaware River Basin Commission
- USEPA
- USGS
- US Coast Guard
- County Offices of Emergency Management and Health Departments

* EWS Users as of 3/29/19

MAJOR EWS EVENTS

11/26/2004

Athos I Oil Spill

- 275,000 gallons of crude oil
- Delaware at Paulsboro NJ



DAVID SWANSON/PHILADELPHIA INQUIRER

8/23/2005

Fly Ash Spill

- 100 million gallons
- Delaware from PP&L lagoon



DEMETRA STAMUS/ALLENTOWN MORNING CALL

6/14/2006

Cyanide Discharge

- Through WWTP
- 1000+ fish killed



PHILADELPHIA WATER DEPARTMENT

11/30/2012

Vinyl Chloride

- 4 rail car derailment
- ~25,000 gallons into Mantua Creek



RAE LYN STEVENSON/SOUTH JERSEY TIMES

2/7/2019

Diesel Spill

- Tanker truck fire
- 3,000 gallons
- Delaware River at I-95 and Woodhaven Rd

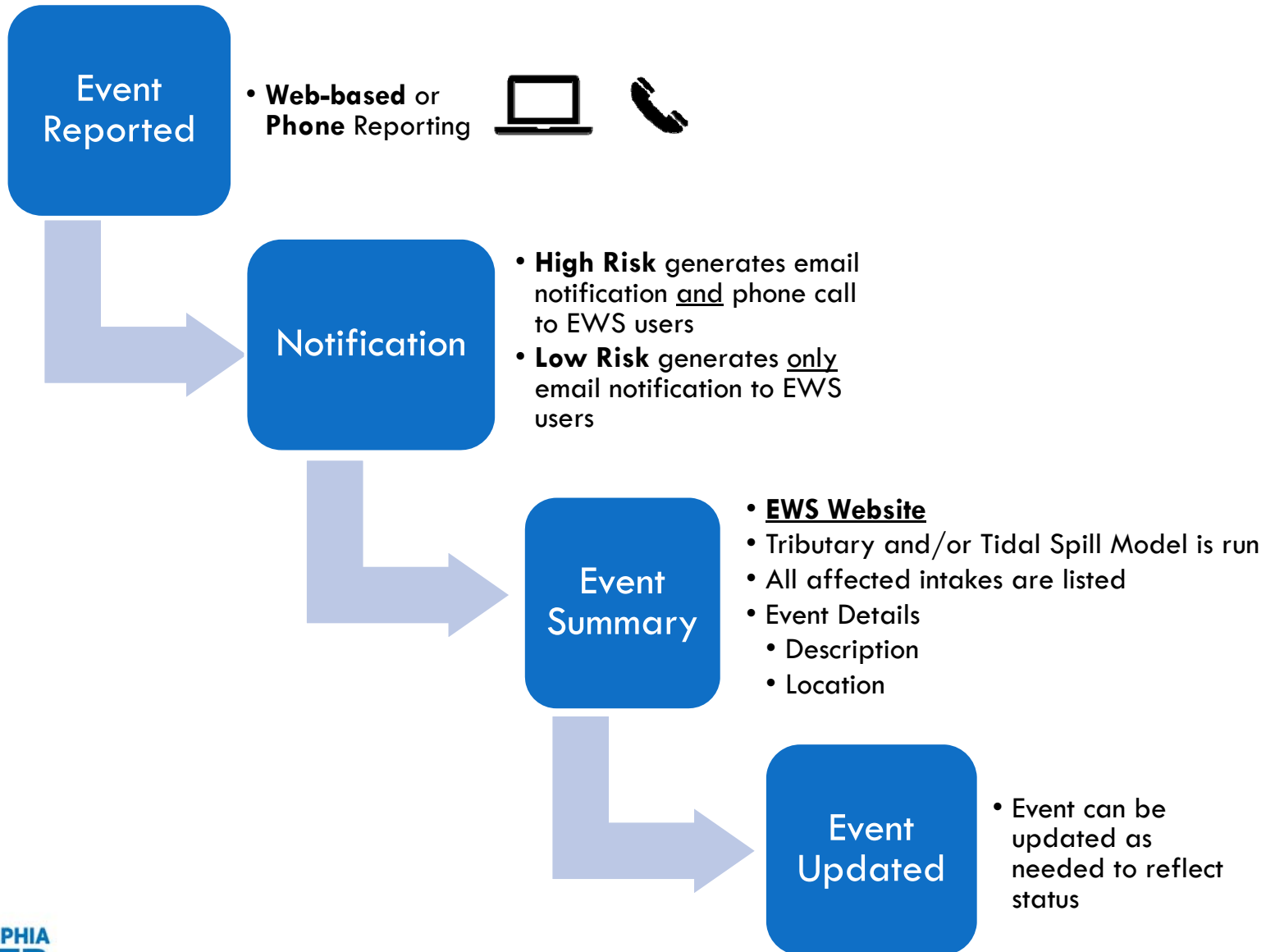


NBC PHILADELPHIA

EWS Functionality

- Event Reporting
- Notification System
- Spill Modeling
- Event Summary

EWS Event Reporting



EWS Tributary Spill Model

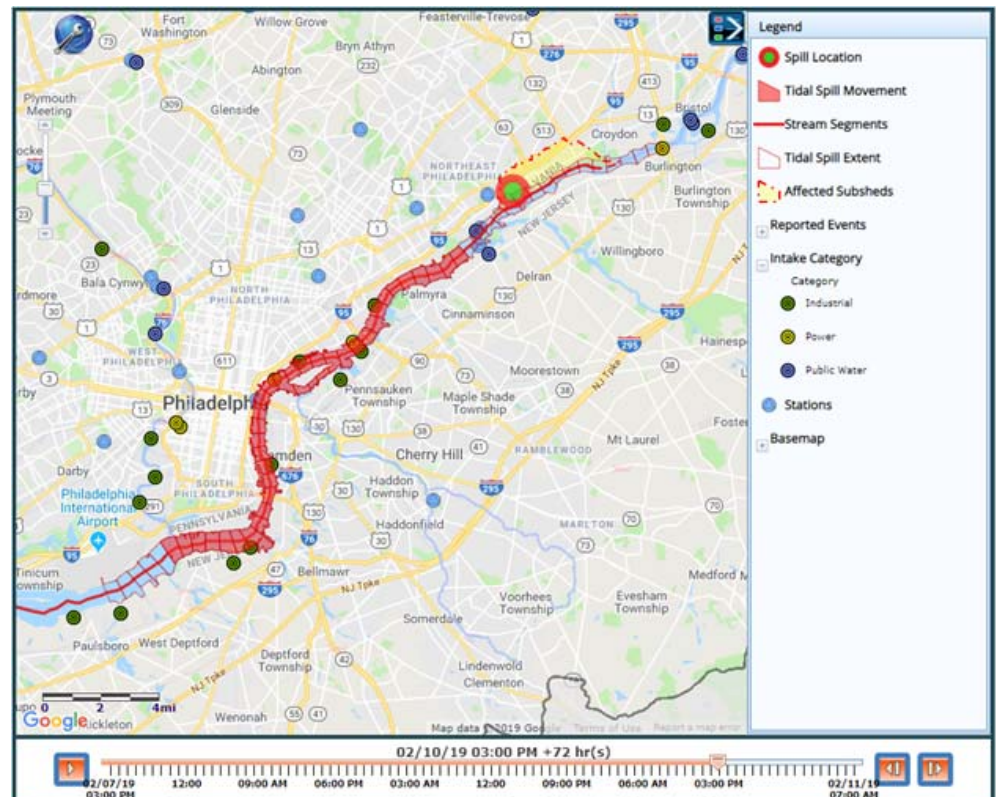
Model Applies to Tributaries of the Delaware River (EWS Coverage Area)

- User inputs spill location (by telephone or EWS web map)
- USGS's National Hydrography Dataset (NHD) is used to assign the spill location (subwatershed) to the nearest stream to route the spill
- Uses USGS stream gage data to determine downstream flow & velocity, to estimate spill travel time

EWS Tidal Spill Model

Model Applies to the Tidal Delaware River from Wilmington, DE to Trenton, NJ

- User inputs spill location
- Uses the National Oceanic and Atmospheric Administration's (NOAA) Delaware Bay Operational Forecast System (DBOFS) model to create a real-time hydrodynamic forecast of water and spill movement in the tidal Delaware River and Bay.




Spill Model Analysis Tool

EWS Spill Analysis Tool Applies to Both Non-tidal and Tidal Waters (EWS Coverage Area)


- The Spill Analysis Tool will **NOT** trigger an EWS event, and is provided for analytical and planning purposes
- Allows user to evaluate the route of a contaminant introduced to a waterway
- User inputs spill location
 - ▣ Generates a list of affected intakes and travel times to each intake *using current flow and historical max flow*

EWS Homepage



**Delaware Valley
Early Warning System**

You may also report a water quality event by calling the **EWS Hotline at 1-866-844-0850**



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Events ▾
Intakes/Stations ▾
WQ & Flow Data ▾
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Contact Info
My Profile
Spill Model Tool
Links
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**Report a New
Water Quality
Event**

Last 5 Events

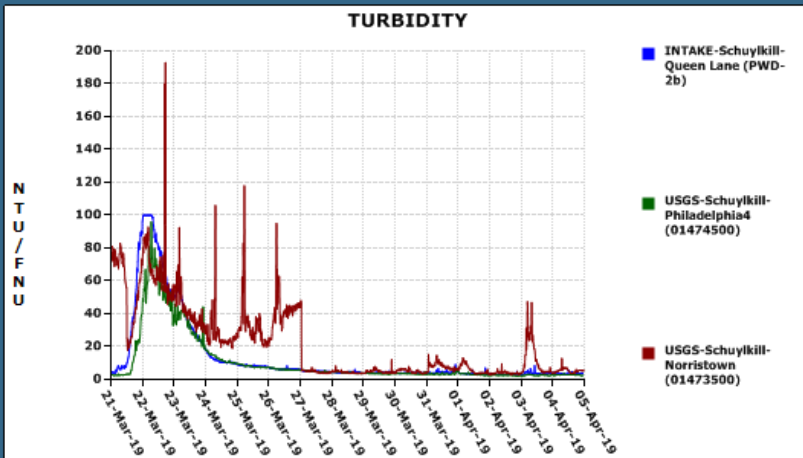
[View Recent Events](#)

Id	Action	Risk Level	Description	Date Occurred	Last Updated
488	View Details	Low	At approximately 12:39 pm, Philadelphia Water Department Waterways Restoration Team called to report an unknown green liquid coming from an Outfall located on Walton's Run at Comly and Academy. Fish and Game Commission and PADEP are onsite and repor... more	4/1/2019 12:39 PM	4/1/2019 7:30 PM
487	View Details	Low	At approximately 09:00, a truck accident on I-76 at Montgomery Drive in Phila caused 12,000 to 14,000 of fuel oil to spill. Unknown at this time what volume of fuel oil has reached the Schuylkill River near the Belmont section of Philadelphia. PA DE... more	3/29/2019 9:00 AM	3/29/2019 10:50 AM
	View		The Hamburg Borough WWTP is discharging	3/22/2019	3/22/2019

Real-Time Flow and Turbidity Charts for the last 15 days

Schuylkill Flow
Schuylkill Turbidity
Delaware Flow
Delaware Turbidity

TURBIDITY




From: March 21, 2019 To April 05, 2019

EWS Happenings

EWS User Guide


The User Guide is available [here](#). Updated January 2014

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Web-based Event Reporting

* Fill in required fields



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New Event

Test event:

Event Date:* **Risk:***

Time:* : **Status:***

Description:*
2000 characters left

Location:* [Hide Tools To Change Location](#)

Zoom to the general event location using a method below:

Search for municipality:

[Show Advanced Search](#)

And then click on the 'Select location on map' button and click on map.

Latitude: _____ **Municipality:** _____ **State:** _____
Longitude: _____ **County:** _____ **Watershed:** _____

Receiving Waterway: _____

Hazard:

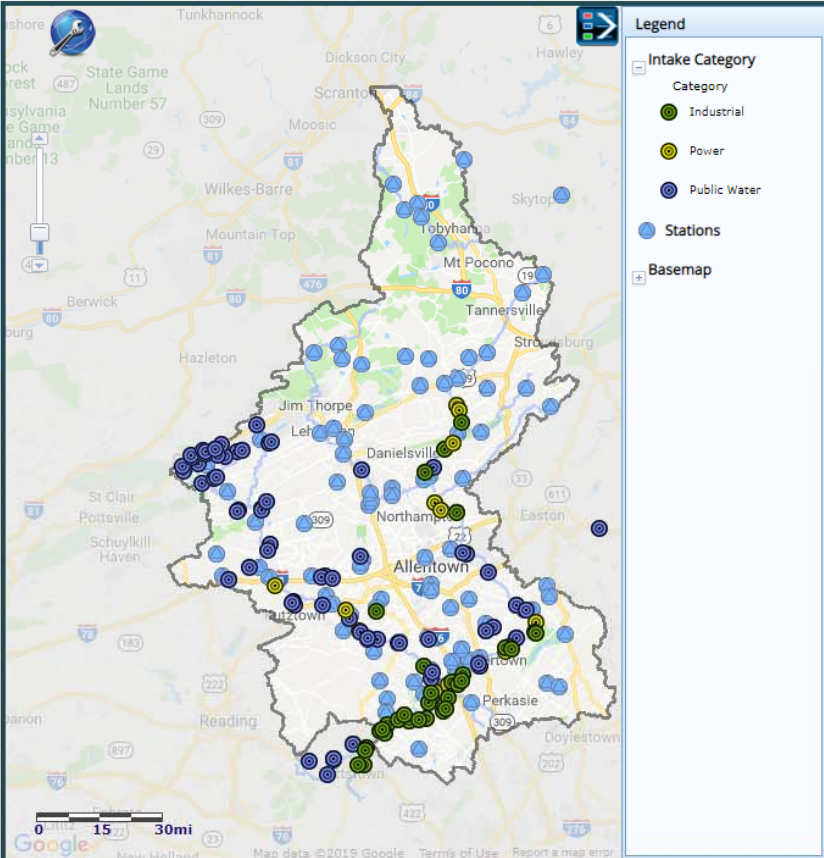
Source:

Contaminant Category:

Name:

Amount:

* Required Field



Legend

Intake Category

- Industrial
- Power
- Public Water

Stations

- Stations

Basemap

Event Summary

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Delaware Valley
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- Home
- Events
- Intakes/Stations
- WQ & Flow Data
- Administration
- Contact Info
- My Profile
- Spill Model Tool
- Links
- Logout



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Event Summary [Recent Events](#)

Update

Tidal Model

The results of the final tidal model are available

Tidal Spill Model

No future updates scheduled

General Information

Event ID: 489
Entered: 4/26/2019 2:53 PM
By: [Kelly Anderson](#)
Event Date: 4/26/2019
Time: 1:45 PM
Risk: Low
Status: Confirmed Report
Description: At 1255hrs Philadelphia Fire Department responded to a spill response / vehicle accident involving a delivery truck, with its left side saddle tank punctured. The truck is storing approximately 100 gallons of fuel, and it is leaking into the surround... [more](#)

Location

Latitude: 40.08408600 **Municipality:** Philadelphia City **State:** PA
Longitude: -74.99004270 **County:** Philadelphia County **Watershed:** Delaware
Receiving Waterway: n/a

Hazard

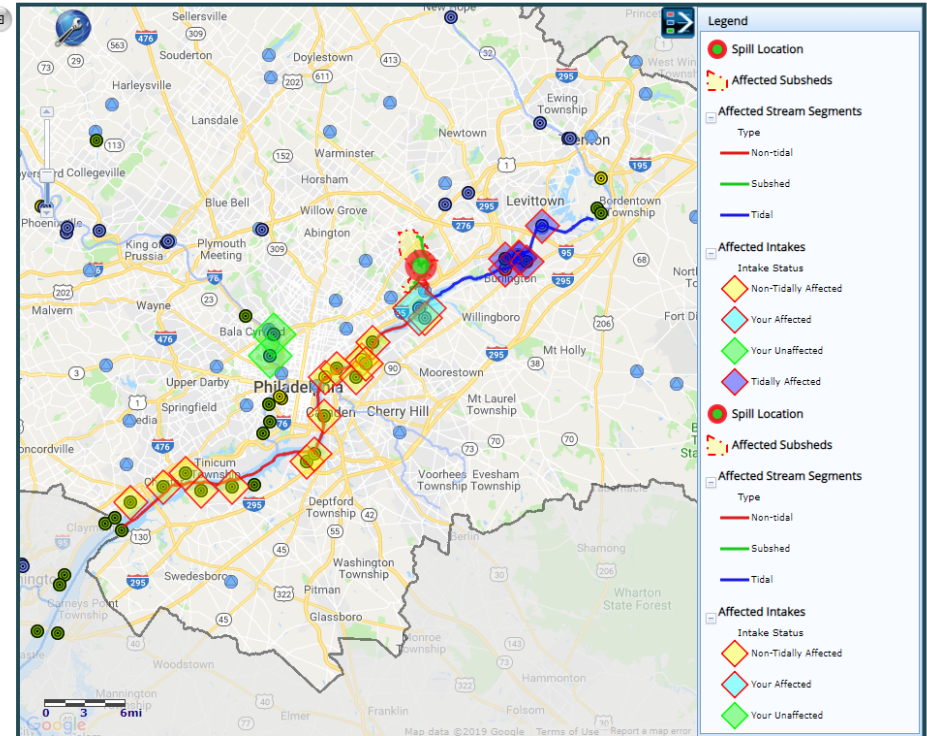
No information available

Affected Intakes for your Organization


Name	Arrival Time with current flow	Arrival Time with historic max flow
PWD-Baxter1	04/26/2019 15:40	04/26/2019 16:28

All Affected Intakes

Name	Arrival Time with current flow	Arrival Time with historic max flow
US Pipe	Delaware - Tidally Affected	Delaware - Tidally Affected
AQUA-Bristol	Delaware - Tidally Affected	Delaware - Tidally Affected
Burlington	Delaware - Tidally Affected	Delaware - Tidally Affected
Rohm&Haas-1	Delaware - Tidally Affected	Delaware - Tidally Affected
PSEG-1	Delaware - Tidally Affected	Delaware - Tidally Affected
Lower Bucks JMA	Delaware - Tidally Affected	Delaware - Tidally Affected
PWD-Baxter1	04/26/2019 15:40	04/26/2019 16:28
NJAW-Deliran	04/26/2019 16:08	04/26/2019 16:55




Spill Model Analysis Tool



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Spill Model Analysis Tool

[Reset Spill Model Tool Page](#)

The results of the spill model will appear shortly. They consist of the following:

- The affected sections of the river will be highlighted on the map showing the exact route of the spill.
- A list of **affected** intakes and travel times to each intake with current flow and historical max flow.

You can run another spill model simply by clicking the location of the spill origin on the map.

Spill Model Results

Spill Model Start Time: 4/5/2019 10:13 AM

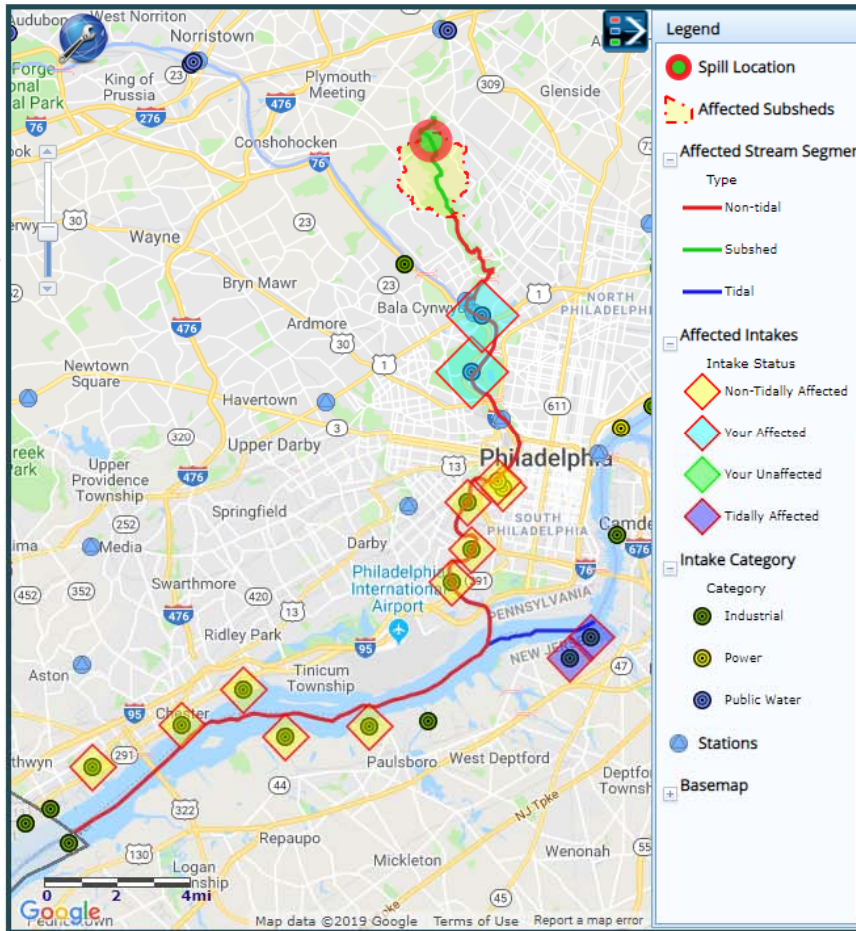
Affected Rivers and Streams: (please note that some unnamed streams/creeks will not appear on this list)
Wissahickon Creek, Schuylkill River, Delaware River

Affected Intakes for your Organization:

Name	Arrival Time with current flow	Arrival Time with historic median flow	Arrival Time with historic max flow
PWD-Queen Lane	04/05/2019 15:12	04/05/2019 16:16	04/05/2019 14:10
PWD-Belmont	04/05/2019 16:26	04/05/2019 17:50	04/05/2019 15:09


All Affected Intakes:

Name	Arrival Time with current flow	Arrival Time with historic median flow	Arrival Time with historic max flow
PWD-Queen Lane	04/05/2019 15:12	04/05/2019 16:16	04/05/2019 14:10
PWD-Belmont	04/05/2019 16:26	04/05/2019 17:50	04/05/2019 15:09
Exelon-Schuylkill	04/05/2019 19:14	04/05/2019 21:24	04/05/2019 17:21
PGW-Passyunk	04/05/2019 19:14	04/05/2019 21:24	04/05/2019 17:21
Veolia Energy	04/05/2019 19:14	04/05/2019 21:24	04/05/2019 17:21




Legend

- Spill Location
- Affected Subsheds
- Affected Stream Segment**
 - Type
 - Non-tidal
 - Subshed
 - Tidal
- Affected Intakes**
 - Intake Status
 - Non-Tidally Affected
 - Your Affected
 - Your Unaffected
 - Tidally Affected
- Intake Category**
 - Category
 - Industrial
 - Power
 - Public Water
- Stations
- Basemap




Intake List



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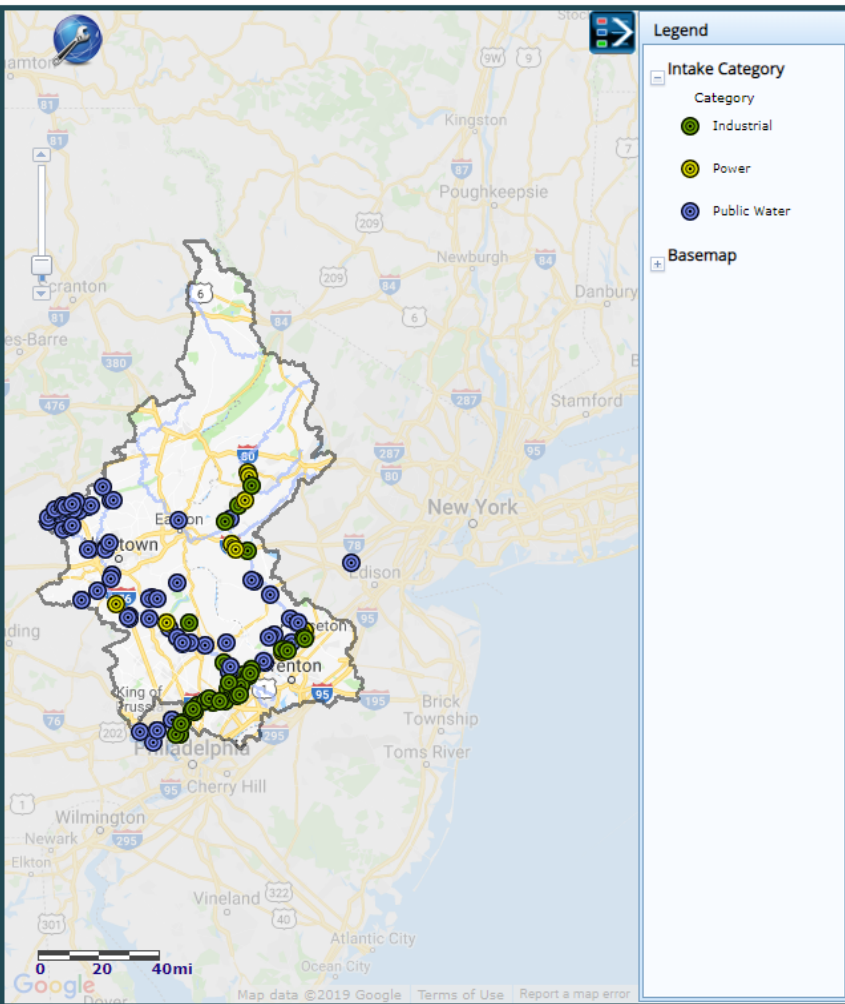
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Home
Events
Intakes/Stations
WQ & Flow Data
Administration
Contact Info
My Profile
Spill Model Tool
Links
Logout

List of All Intakes

Id	Action	Name	Owner	Watershed	River	County	State
1	Map Zoom View Details	ABMA-1	Auburn Borough Municipal Auth	Schuylkill	Bear Creek Res.	Schuylkill	PA
2	Map Zoom View Details	ABMA-2	Auburn Borough Municipal Auth	Schuylkill	Stony Creek Res	Schuylkill	PA
3	Map Zoom View Details	AMB	Ambler Boro Water Dept	Schuylkill	Whitemarsh Spring	Montgomery	PA
4	Map Zoom View Details	BCWS-1	Bucks Co Water&Sewer Auth-Ww	Delaware	Delaware River	Bucks	PA
5	Map Zoom View Details	BLTM-1	Blythe Twp Municipal Authority	Schuylkill	Crystal	Schuylkill	PA
6	Map Zoom View Details	BLTM-3	Blythe Twp Municipal Authority	Schuylkill	Glen Dower	Schuylkill	PA
7	Map Zoom View Details	BLTM-4	Blythe Twp Municipal Authority	Schuylkill	Moss Glen	Schuylkill	PA
8	Map Zoom View Details	BLTM-5	Blythe Twp Municipal Authority	Schuylkill	Silver Creek	Schuylkill	PA
9	Map Zoom View Details	BMA-1	Boyertown Muni Auth	Schuylkill	Popodickon Reservoir	Berks	PA
10	Map Zoom View Details	BMA-2	Boyertown Muni Auth	Schuylkill	Trout Run Reservoir	Berks	PA
11	Map Zoom View Details	BMA-3	Boyertown Muni Auth	Schuylkill	Ironstone Creek	Berks	PA
12	Map Zoom View Details	BMWA-1	Birdsboro Muni Water Auth	Schuylkill	Dyer/Trap Rock Quarry	Berks	PA
13	Map Zoom View Details	BMWA-2	Birdsboro Muni Water Auth	Schuylkill	Hay Creek	Berks	PA
14	Map Zoom View Details	BMWA-3	Birdsboro Muni Water Auth	Schuylkill	Indian Run Reservoir	Berks	PA
15	Map Zoom View Details	BMWA-4	Birdsboro Muni Water Auth	Schuylkill	Stinson Run Reservoir	Berks	PA
16	Map Zoom View Details	BURL-1	Burlington City	Delaware	Delaware River	Burlington	NJ
17	Map Zoom View Details	CCAM-1	Container Corp Of America	Schuylkill	Schuylkill River	Philadelphia	PA
18	Map Zoom View Details	CRVT-1	Crown Vantage	Delaware	Delaware River	Hunterdon	NJ
19	Map Zoom View Details	PAWC-4	Pa American Water Company	Schuylkill	Schuylkill River	Montgomery	PA
20	Map Zoom View Details	EGBW	East Greenville Boro Water Dep	Schuylkill	Perkiomen Creek	Montgomery	PA

1 2 3 4 5 6 7




Legend

Intake Category

- Industrial
- Power
- Public Water


Basemap

Member Directory



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Home
Events
Intakes/Stations
WQ & Flow Data
Administration
Contact Info
My Profile
Spill Model Tool
Links
Logout

Member Directory

Online Users: 2

Last name starts with: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) [\[ALL\]](#)

Action	Name	Organization	Full Title of Organization	Email	Contact Phone Number	Notification Phone Number
View Details	911 Supervisors 24/7,	MontCo Public Safety	Montgomery County Department of Public Safety	911supervisor@montcopa.org		
View Details	Abbott, Ryan	Philadelphia OEM	City of Philadelphia Office of Emergency Management	ryan.abbott@phila.gov		(267) 250-4656 -- Cell
View Details	Abdelrahmen, Aly	MWC	Middlesex Water Company	aabdelrahmen@middlesexwater.com		
View Details	Ackerman, Rich	PHWD	Phoenixville Water Department	richack@comcast.net		
View Details	Adams, Bryan	NJAWC	New Jersey American Water Company	Bryan.Adams@amwater.com		
View Details	Agustini, Dino	PADEP	Pennsylvania Department of Environmental Protection	daugustini@state.pa.us		
View Details	Ahearn, Joseph	Mafco	Mafco Worldwide Corporation	jahearn@mafcolicorice.com		
View Details	Alshouli, Michele	PWD	Philadelphia Water Department	michele.alshouli@phila.gov		
View Details	Amin, Hiral	PWD	Philadelphia Water Department	hiral.amin@phila.gov	(215) 760-6565 -- Cell	(215) 760-6565 -- Cell
View Details	Aminto, Alison	PWD	Philadelphia Water Department	alison.aminto@phila.gov	(215) 685-6254 -- Office	(267) 563-1354 -- Cell
View Details	Ammon, Erick	PADEP	Pennsylvania Department of Environmental Protection	eammon@pa.gov	(717) 705-4775 -- Office	(717) 705-4775 -- Office
View Details	Anderson, Chris	PWD	Philadelphia Water Department	christopher.anderson@phila.gov	(215) 683-3238 -- Office	(215) 240-0243 -- Cell
View Details	Anderson, Kelly	PWD	Philadelphia Water Department	Kelly.Anderson@phila.gov	(215) 906-8577	(609) 760-8868 -- Cell
View Details	Anspach, David	RWWTP	Reading Wastewater Treatment Plant	David.Anspace@readingppa.gov	(610) 655-6502 -- Office	(484) 955-2592 -- Cell
View Details	Aqua PA, Dispatch	Aqua PA	Aqua Pennsylvania			(610) 645-1034
View Details	Aquatic Biology Laboratory, PWD	PWD	Philadelphia Water Department	Ivanna.Szpilczak@phila.gov	(215) 685-1428 -- Office	
View Details	Arbaugh, Shawn	PADEP	Pennsylvania Department of Environmental Protection	sarbaugh@state.pa.us		
View Details	Augustine, Kevin	PADEP	Pennsylvania Department of Environmental Protection	kaugustine@state.pa.us		
View Details	Baetzel, Edward	PAWC	Pennsylvania American Water Company	edward.baetzel@amwater.com		(484) 955-0384
View Details	Bair, Walt	PADEP	Pennsylvania Department of Environmental Protection	wbair@state.pa.us	(717) 571-9837 -- Cell	(717) 571-9837 -- Cell
View Details	Balakas, Ronald	NJAWC	New Jersey American Water Company	rbalakas@njawater.com		
View Details	Bauer, Bob	PADEP	Pennsylvania Department of Environmental Protection	rbauer@state.pa.us		(484) 250-5132
View Details	Baxter-Green, Scott	NJAWC	New Jersey American Water Company	Scott.Baxter-Green@amwater.com	(732) 302-3182 -- Office	(908) 334-0010 -- Cell
View Details	Bickel, Jeffery	Aqua PA	Aqua Pennsylvania	JWBickel@aquaaamerica.com		

Upcoming EWS Redesign User Interface Improvements

- Add full mobile device (smartphone) functionality for EWS web site
- Improved user experience
- Map improvements
- Improved Notifications
- Organization-centric approach shows affected intake information for member's organization, based on login information

Questions?

Contact Information

ALEX RIDYARD

EWS LEAD, SAGE SERVICES LLC

PHONE: 267.602.3402

alex.ridyard@sageservicesh2o.com

KELLY ANDERSON

SOURCE WATER PROTECTION PROGRAM MANAGER

PHONE: 215.685.6245

MOBILE: 215.906.8577

kelly.anderson@phila.gov