



PHOENIX 101

Hanford Advisory Board Meeting

February 13, 2025

Brett Simpson
PNNL PHOENIX Operations Lead



PNNL is operated by Battelle for the U.S. Department of Energy

PNNL-SA-208267





PHOENIX Briefing Agenda



PHOENIX (PNNL-Hanford Online Environmental Information Exchange) allows the public to view Hanford Site soil, groundwater and waste-storage tank information

Introduction to the applications

- Access
- Available information

Brief overview of select application options

- Groundwater and soil-focused applications
- Tank Farms-focused applications



PHOENIX Overview



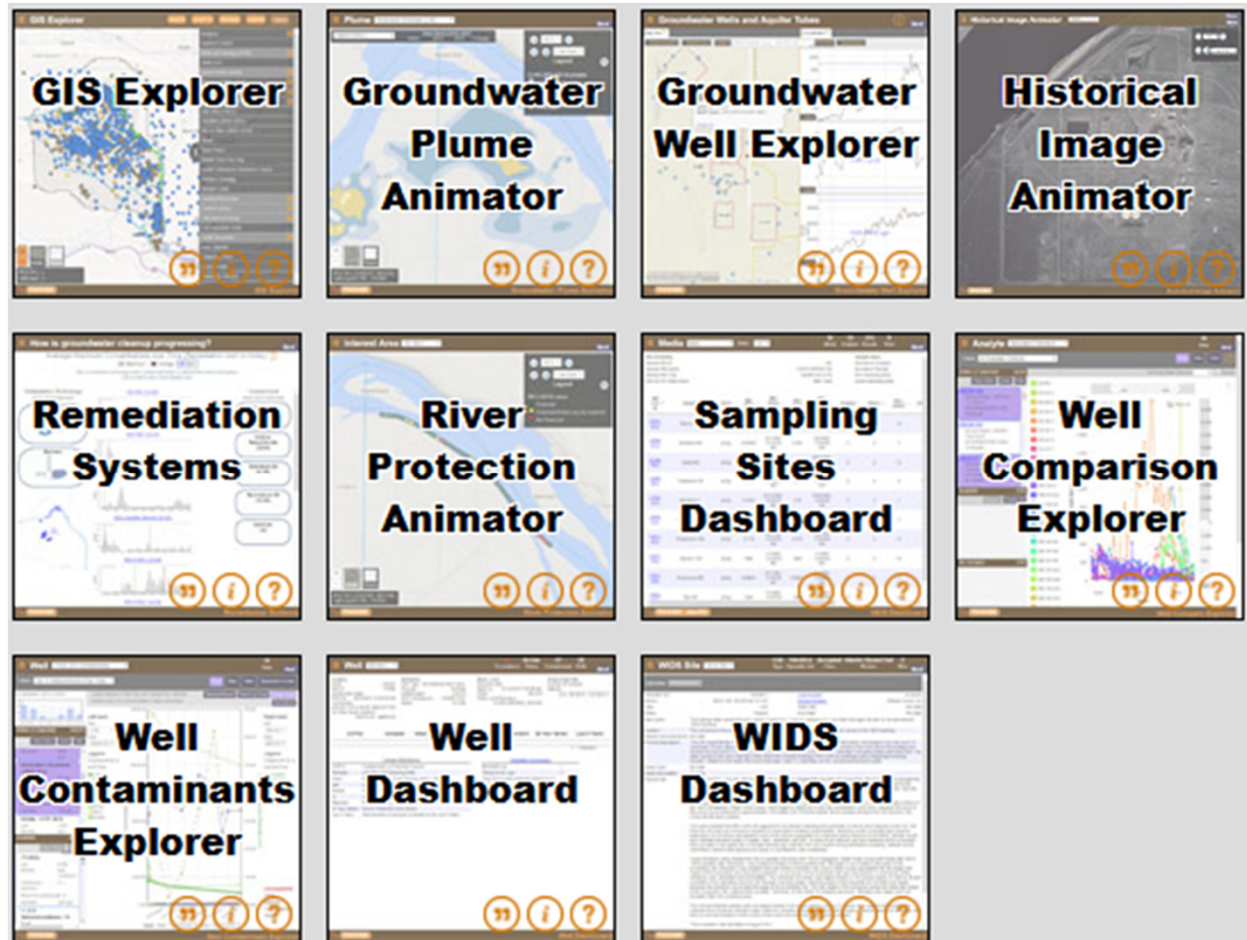
* These were the legacy funding sources. The Hanford Field Office is the current DOE management organization. The names on the website will be updated as part of regular maintenance.

- Allows users to set alerts and download data
- Groundwater and Soil applications allow users to identify and select various locations and sources for groundwater, facilities, waste sites and soil sample data, using a menu or map
- Tank Farm applications provide access to tank temperature, tank waste surface level, surrounding geophysical measurements, and tank inventory data
- Allows for data visualization and analysis
- The Office of River Protection* section applications focus on Hanford tank data
- The Richland Operations Office* section applications focus on groundwater and soil data



PHOENIX Groundwater Apps

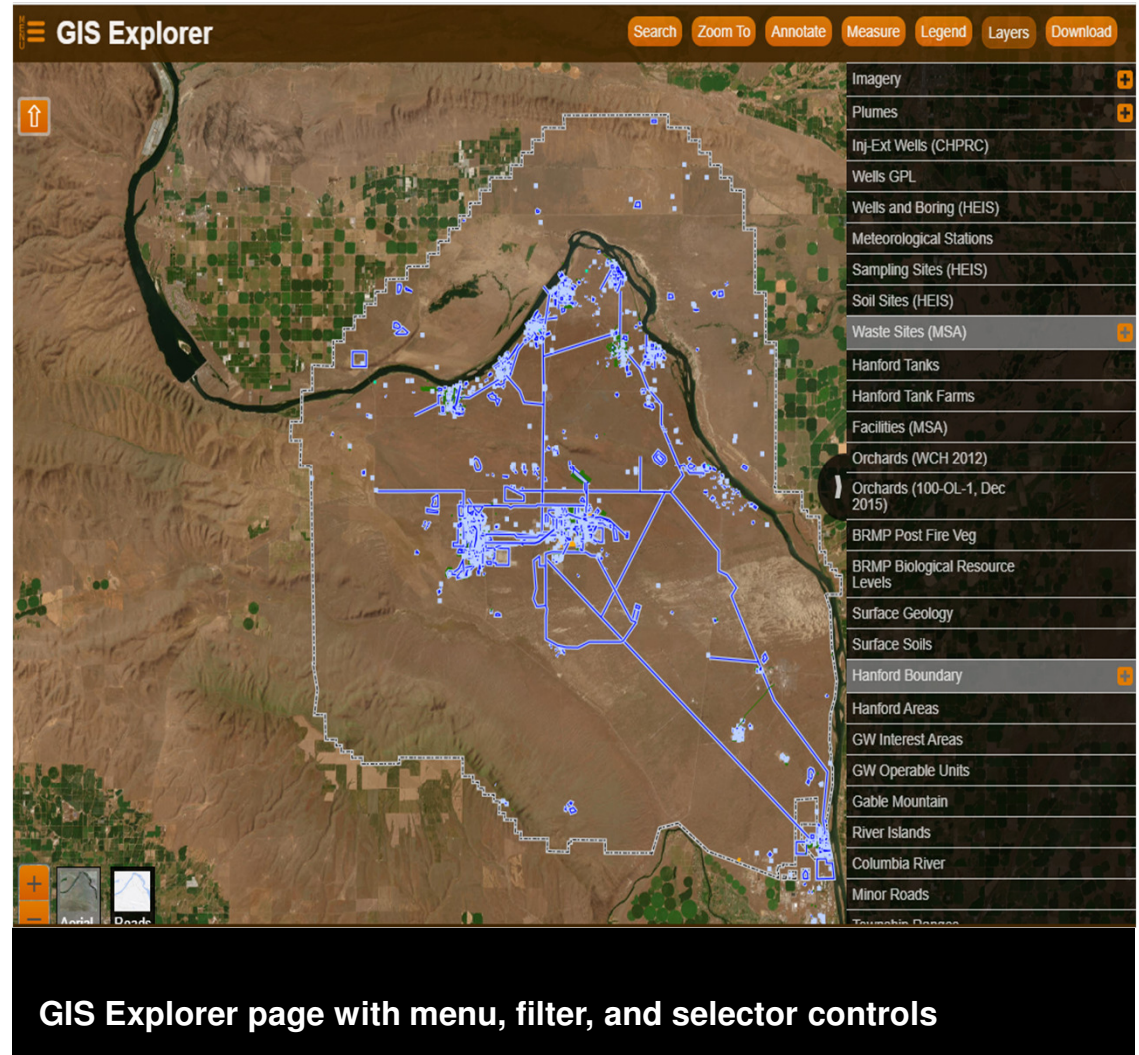
- Geographic Information System (GIS) Explorer is the main application for exploring soil and groundwater data
- Users can also access a variety of environmental monitoring data





GIS Explorer

- Provides easy map-based access to the rich set of Hanford geospatial data and imagery
- Users can zoom to preset features
- A search tool identifies all the features in a user-drawn area on the map
- Users can access details about the map layers

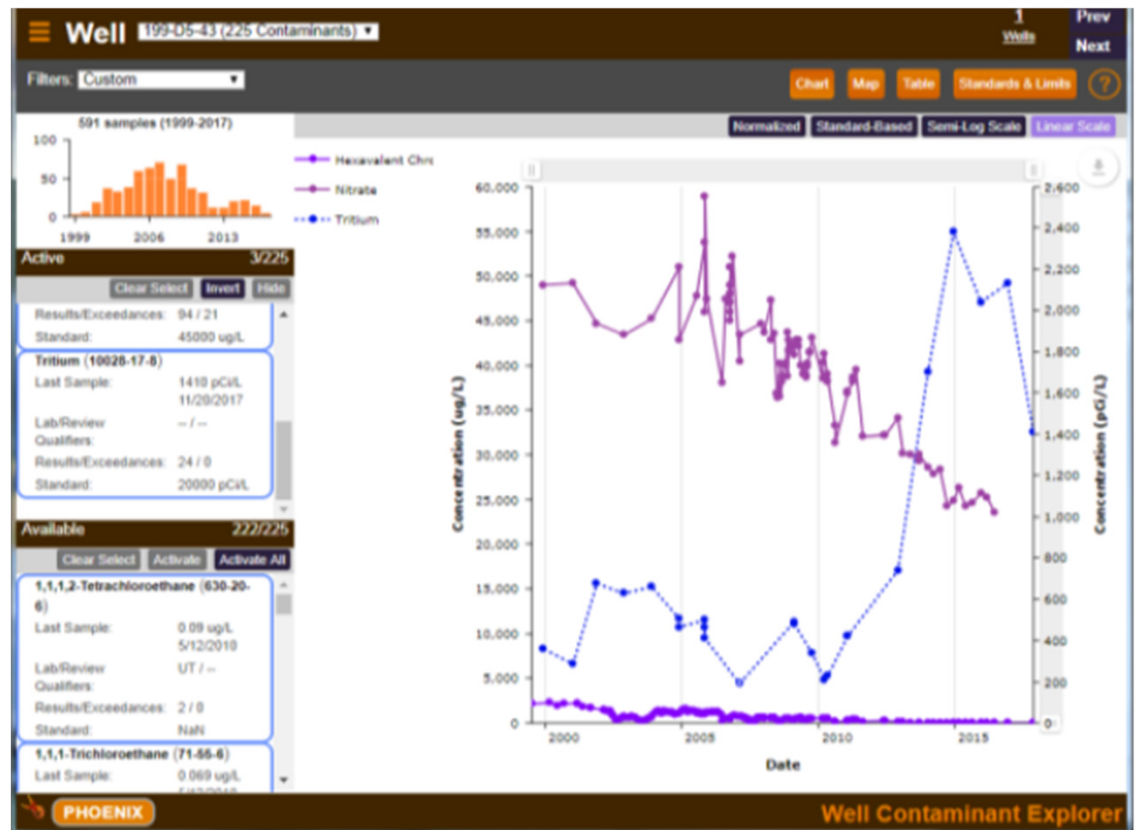


GIS Explorer page with menu, filter, and selector controls



Groundwater Well Explorer

- Provides an intuitive method for obtaining groundwater concentration data, through a map interface
- Users can click wells displayed on a map to see charts of concentrations over time for the most common contaminants of interest
- The application also features a search function, allowing users to find one or more wells based on one or more characters in the name



Groundwater Well Explorer page for a well



Groundwater Plume Animator

- Depicts the extent of groundwater contamination “plumes”
- Allows animation of plume movements through time, and stepping through years for a contaminant

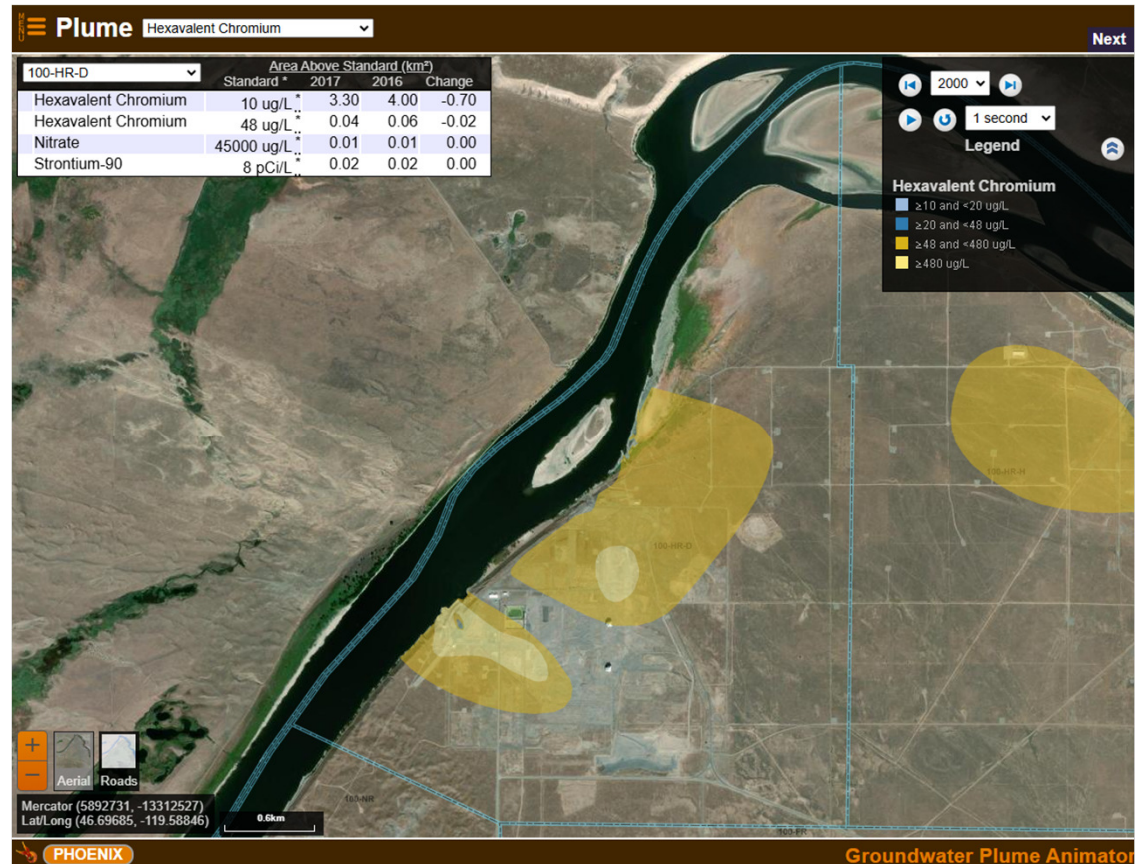


Image of contaminant plume (yellow) near the Columbia River



Sampling Sites Dashboard

- Provides site attributes and site sampling history for a variety of environmental media and contaminants
- Users can “drill down” to more detailed charts and tables to further investigate the site's sampling history

Media Soil
Sites: 100-D-100 -- 215155
660
Soil Sites
Next

Site Attributes		Sample Stats
Sample Site ID:	215155	Number of Analytes:
Sample Site Name:	100-D-100	Number of Results:
Sample Site Type:	SAMPLING SITE	First Sampling Date:
NAD 83 WA State South (meters):	573355, 151365	Latest Sampling Date:
Mercator Coordinates:	5891803.54826342, -13307234.2017995	

Analyte	Units	Min Value	Min Value Date	Max Value	Max Value Date	Suspect	Reject	Non-Detect	Detect	Results	Average	Median	Std. Dev.
Aluminum (7429-90-5)	ug/kg	400000	4/22/2009 9:36:00 AM	600000	4/22/2009 9:21:00 AM				7	7	5157142.8571	5100000	736788.3
Antimony (7440-38-0)	ug/kg	1100	4/21/2009 3:15:00 PM	1100	4/21/2009 3:15:00 PM			6	1	7	1100	1100	
Arsenic (7440-38-2)	ug/L							1		1			
Arsenic (7440-38-2)	ug/kg	1600	4/22/2009 9:36:00 AM	3500	4/21/2009 3:15:00 PM				7	7	2228.5714	2000	657.556
Barium (7440-39-3)	ug/L	380	4/21/2009 3:15:00 PM	380	4/21/2009 3:15:00 PM				1	1	380	380	
Barium (7440-39-3)	ug/kg	55000	4/22/2009 9:36:00 AM	81000	4/22/2009 9:21:00 AM				7	7	67714.2857	66000	9499.37
Beryllium (7440-41-7)	ug/kg	690	4/22/2009 9:02:00 AM	1000	4/22/2009 9:21:00 AM				7	7	851.4286	810	106.211
Boron (7440-42-8)	ug/kg	2500	4/22/2009 10:22:00 AM	2500	4/22/2009 10:22:00 AM			6	1	7	2500	2500	
Bromide (24959-67-9)	ug/kg	1900	4/21/2009 3:15:00 PM	1900	4/21/2009 3:15:00 PM			6	1	7	1900	1900	
Cadmium (7440-43-9)	ug/L							1		1			
Cadmium (7440-43-9)	ug/kg	71	4/21/2009 3:15:00 PM	71	4/21/2009 3:15:00 PM			6	1	7	71	71	
Calcium (7440-70-2)	ug/kg	4700000	4/22/2009 10:02:00 AM	11000000	4/21/2009 3:15:00 PM				7	7	6314285.7143	5700000	2217677.8
Chloride (16887-00-6)	ug/kg	3900	4/22/2009 10:02:00 AM	15000	4/21/2009 3:15:00 PM				7	7	6171.4286	4700	3929.25
Chromium (7440-47-3)	ug/L	5900	4/21/2009 3:15:00 PM	5900	4/21/2009 3:15:00 PM				1	1	5900	5900	
Chromium (7440-47-3)	ug/kg	14000	4/22/2009 9:36:00 AM	15000	4/21/2009 3:15:00 PM				7	7	40714.2857	28000	48736.41
Cobalt (7440-48-4)	ug/kg	7400	4/22/2009 10:22:00 AM	9400	4/22/2009 9:36:00 AM				7	7	8457.1429	8700	830.375
Copper (7440-50-8)	ug/kg	12000	4/22/2009 1:02:00 PM	15000	4/21/2009 3:15:00 PM				7	7	13142.8571	13000	1214.98
Fluoride (16984-48-8)	ug/kg	1000	4/22/2009 9:21:00 AM	3600	4/21/2009 3:15:00 PM				7	7	1642.8571	1100	972.723
Hexavalent Chromium (18540-29-9)	ug/kg	1730	4/22/2009 10:22:00 AM	87000	4/21/2009 3:15:00 PM			1	6	7	19425	3995	33632.46
Iron (7439-89-6)	ug/kg	2000000	4/21/2009 3:15:00 PM	2800000	4/22/2009 9:21:00 AM				7	7	22857142.8571	22000000	2410295.3

Sample dashboard showing soil results

PNNL-SA-208267



PHOENIX Tank Farm Apps

- The Tank Farms Explorer application wraps several tank-focused data sources into a high-level, one-stop shop
- Many of these high-level functions have their own features with more tailored controls
- Several Tank Farms applications provide best-basis inventory (BBI) data, showing the most accurate estimate of the composition and quantity of waste stored in a tank





Tank Farms Dashboard

- Data such as total waste stored, tanks in retrieval and tank leak status for a farm/tank is available
- Selected inventory metrics are available for tanks through drill-down

Tank Farms Dashboard

Provides summary Tank Farm data with drill-down to select tank information



Waste Tank Summary Report

- This is a web rendering of a Waste Tank Summary Report, the official inventory for waste stored in the 200 Area tanks
- The data can be copied to other applications, like Word, Excel and PowerPoint
- Charts and infographics provide quick summaries of select data categories
- Older versions of the report can be viewed

Waste Tank Summary Report

May 2011

“ i ?

This report provides the latest tank volume and integrity data from HNF-EP-0182



Key Takeaways

- PHOENIX integrates geospatial search and query functionality with workflow management capabilities to deliver meaningful and insightful analysis and visualization tools
- Available at <https://phoenix.pnnl.gov>
- Contact Brett.Simpson@pnnl.gov or send a message through the “Comments” link in the menu for questions

A screenshot of a web comment form. The form has a title bar that says "Comment" with a small orange flame icon. Below the title bar are three input fields: "Name:" with "Your Name" inside, "E-mail:" with "Your Email" inside, and "Subject:" with "Subject" inside. Below these is a large text area labeled "Your Comments". At the bottom right of the form are two orange buttons: "Send" and "Clear". The background of the screenshot shows a browser window with the address bar containing "Office of River Protection (DOE-ORP)".