

About PHOENIX

The Department of Energy has partnered with the Pacific Northwest National Laboratory on PHOENIX, a family of spatially enabled web applications providing quick access to decades of valuable scientific data and insight through intuitive query, visualization, and analysis tools.

PNNL-Hanford Online ENvironmental Information eXchange provides a single access point to multiple data sets via standard web browsers. PHOENIX also provides data visualization tools and provides explanations of key data sets to aid understanding. PHOENIX applications are based on the innovative technology applied by the Pacific Northwest National Laboratory (PNNL) to access and visualize other environmental data sets at the Hanford Site.

By integrating previously isolated datasets and developing relevant visualization and analysis tools, PHOENIX applications are enabling DOE to discover new correlations hidden in legacy data, allowing them to more effectively address complex issues at Hanford.

Questions, Comments, Concerns, Feedback?

Contact the PHOENIX team: PHOENIX@pnnl.gov

About Well Contaminants Explorer

The Well Contaminants Explorer is an interactive explorer environment which enables many contaminants from the same well to be visualized at once. It specializes in showing all contaminants (not just Contaminants of Potential Concern [COPCs]) from a single given well. Wells are provided by other PHOENIX applications, or entered in manually through the "Well Select" tool.

The Well Contaminants Explorer provides summary statistics for chosen wells and contaminants, displays the groundwater concentration per contaminant through time in a chart for single wells, and shows all the data in tabular form. A map is provided, allowing users to locate wells in the set.

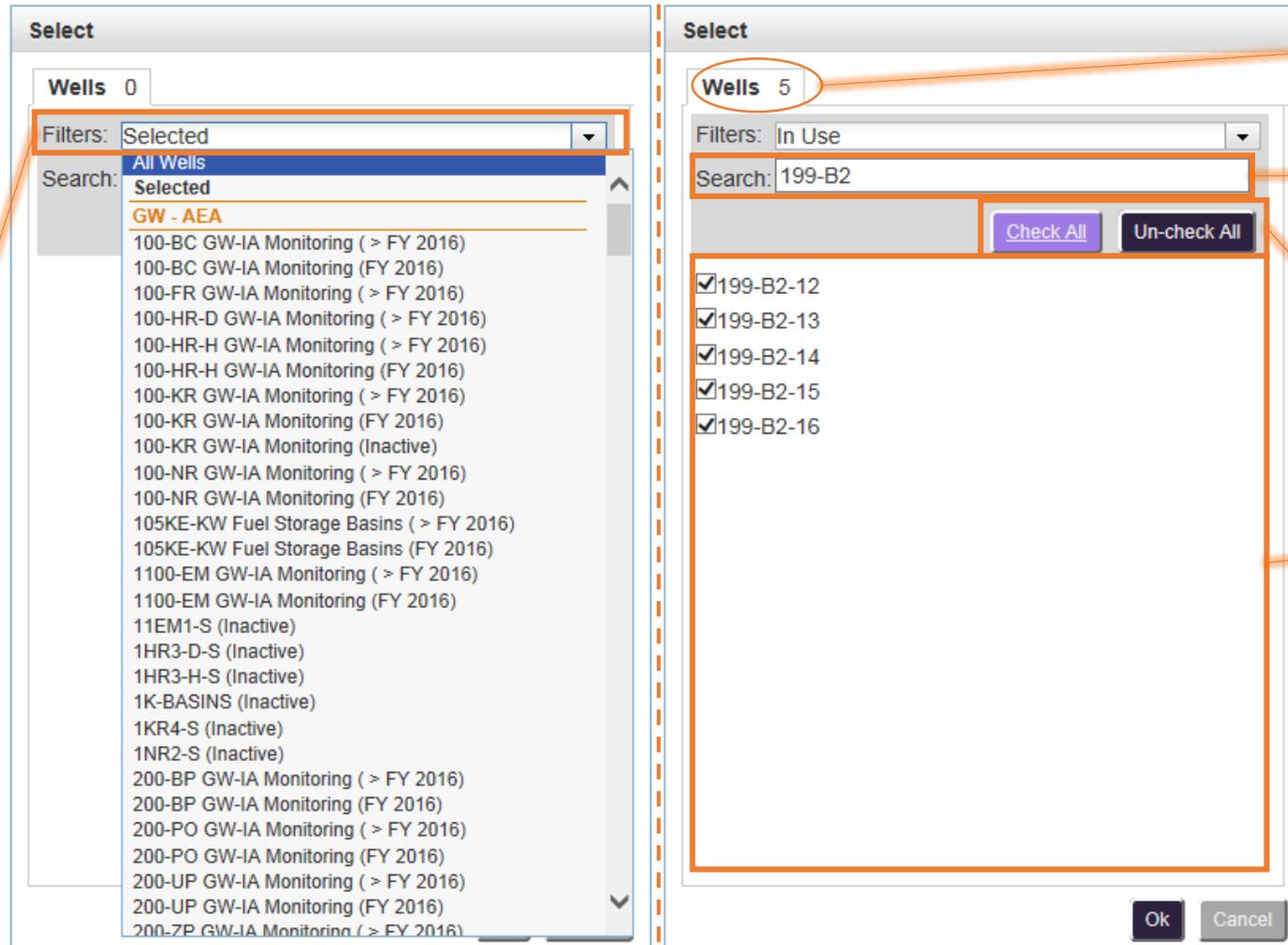
This application shows concentration results for all the contaminants found in the Hanford Environmental Information System (HEIS). A COPC filter shows only those found in the Hanford Annual Groundwater report. To compare groundwater concentrations of COPCs across several wells at once, see the Well Comparison Explorer.

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Well Select Dialog

When navigating from the Gallery, users are prompted to specify wells they would like to analyze using the Well Select dialog. When opening the Well Dashboard from a different application, the user's current well list will be used.

The Filters drop-down will filter the wells by pre-defined lists pulled directly from the Hanford Environmental Information System (HEIS).



The image displays two screenshots of the 'Well Select Dialog' interface. The left screenshot shows the dialog with 'Wells 0' and a list of wells under the 'Selected' filter. The right screenshot shows the dialog with 'Wells 5' and a list of wells under the 'In Use' filter, with search text '199-B2' and 'Check All'/'Un-check All' buttons.

Total number of selected wells.

Users can refine their results by specifying search text.

Click **Check All** to select all of the wells in the results list. Click **Un-check All** to un-select all of the selected wells in the results list.

Well results list. Wells can be selected individually by clicking the checkbox to the left of their name.

Scroll over the bar chart to view sample counts per year for selected well.

Filter all “active” and “available” analytes based on pre-determined filters.

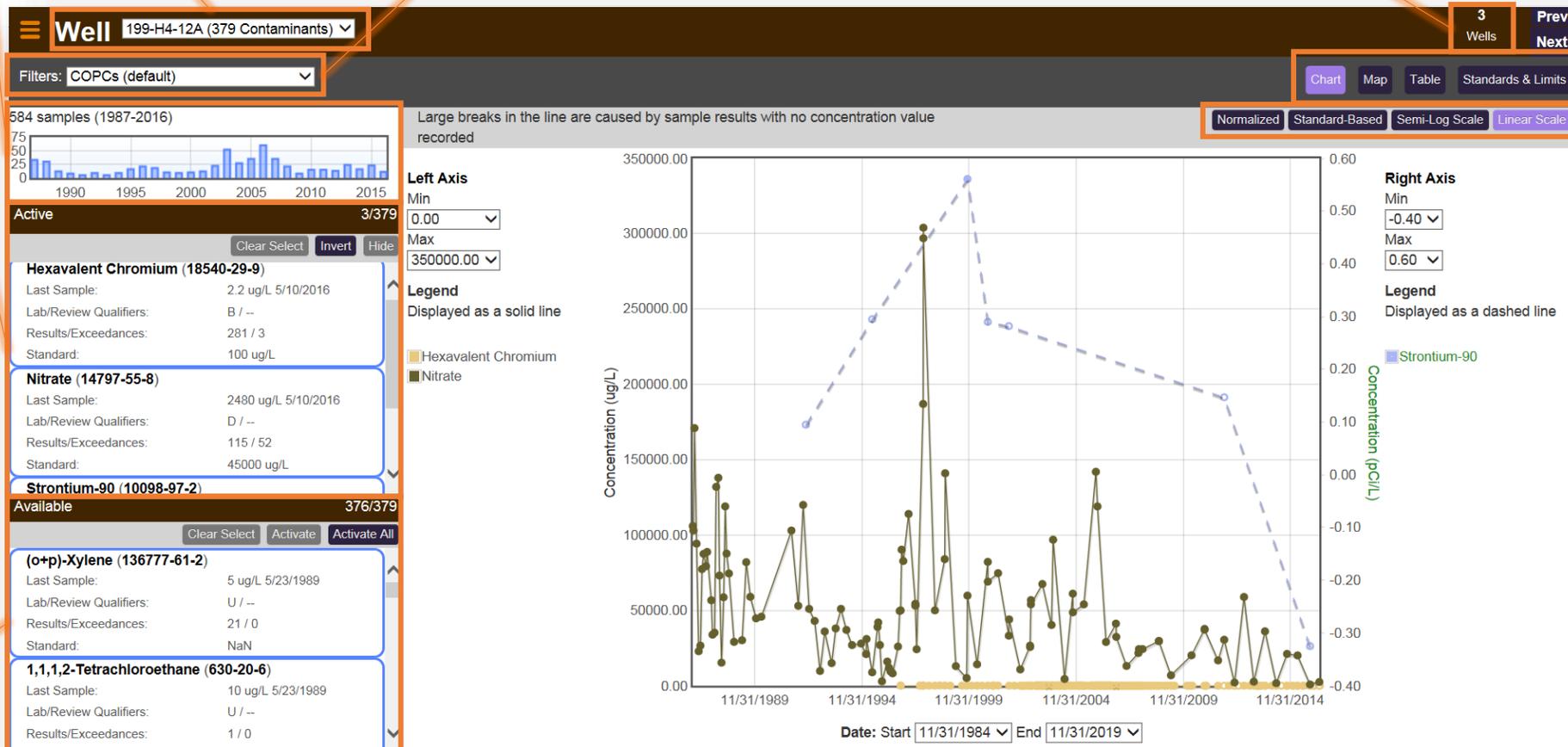
Filter all **Active** and **Available** analytes based on pre-determined filters.

Access the Well Selector dialog to select/un-select wells.

View data in chart form (as shown), interactive map, or table. Also view all relevant groundwater standards and limits.

View top COPCs specified for the well (as per GW OU). These *Active* analytes are plotted on the chart to the right. To remove an analyte from the list and chart, select the analyte and click **Hide**, and the analyte will be added to the *Available* list below.

View all available analytes that have been sampled in the selected well. The analytes can be added to the *Active* panel above by selecting the analyte and clicking **Activate**.

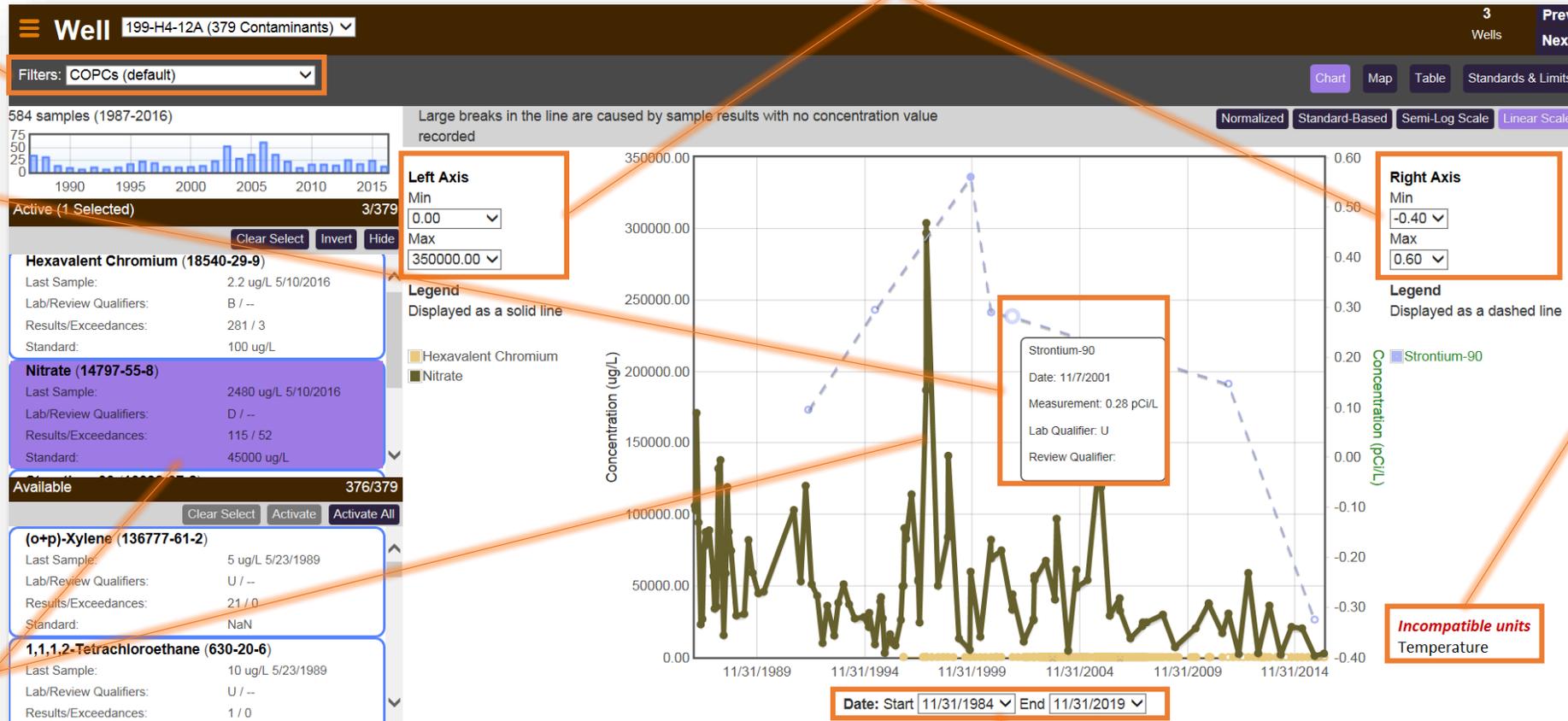


View the chart with a linear scale (as shown), semi-log scale, standards-based scale (all concentration values normalized by the respective groundwater standard), or normalized (all concentration values normalized by the first sampled concentration value).

- COPCs (default)
- Exceeding Standard
- Top 10 Measurements (Past Year)
- Top 10 Measurements (All Time)
- Top 10 Sample Counts (Past Year)
- Top 10 Sample Counts (All Time)

Filters: Custom

Set the chart's y-axes, given the concentrations of the analytes in the legend areas listed below. If an analyte with a different measuring unit is activated, a secondary (right) axis is added to the chart to plot the analyte.



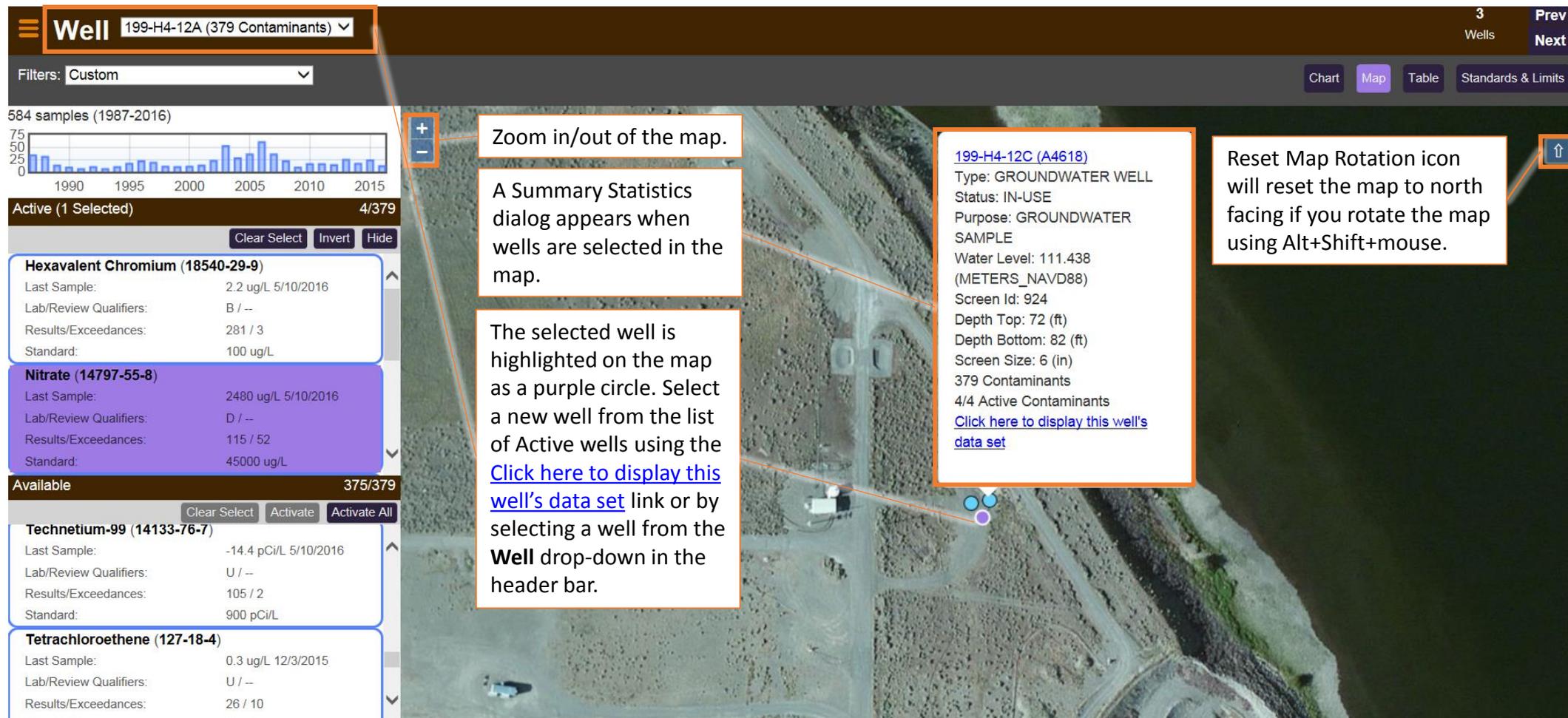
A Summary Statistics dialog appears when sample points are selected in the chart.

Data with a "U" lab-qualifier are shown with a hollow circle, data without a "U" lab-qualifier are shown with a filled circle.

When wells are selected in the Active list or in the chart, the selected well is highlighted in the list and the chart line is bolded.

Analytes listed under **Incompatible units** do not have units that match either the primary (ug/L) or secondary axis (pCi/L). For example, if Temperature were activated from the **Available** list and added to the **Active** list, Temperature would be listed under **Incompatible units**, as Deg C is not compatible with either ug/L or pCi/L.

Set the chart's x-axis date range.



Well 199-H4-12A (379 Contaminants) 3 Wells **Prev** **Next**

Filters: Custom Chart Map Table Standards & Limits

584 samples (1987-2016)

75
50
25
0

1990 1995 2000 2005 2010 2015

Active (1 Selected) 4/379

Clear Select Invert Hide

Hexavalent Chromium (18540-29-9)

Last Sample: 2.2 ug/L 5/10/2016
Lab/Review Qualifiers: B / --
Results/Exceedances: 281 / 3
Standard: 100 ug/L

Nitrate (14797-55-8)

Last Sample: 2480 ug/L 5/10/2016
Lab/Review Qualifiers: D / --
Results/Exceedances: 115 / 52
Standard: 45000 ug/L

Available 375/379

Clear Select Activate Activate All

Technetium-99 (14133-76-7)

Last Sample: -14.4 pCi/L 5/10/2016
Lab/Review Qualifiers: U / --
Results/Exceedances: 105 / 2
Standard: 900 pCi/L

Tetrachloroethene (127-18-4)

Last Sample: 0.3 ug/L 12/3/2015
Lab/Review Qualifiers: U / --
Results/Exceedances: 26 / 10

Zoom in/out of the map.

A Summary Statistics dialog appears when wells are selected in the map.

The selected well is highlighted on the map as a purple circle. Select a new well from the list of Active wells using the [Click here to display this well's data set](#) link or by selecting a well from the **Well** drop-down in the header bar.

199-H4-12C (A4618)

Type: GROUNDWATER WELL
Status: IN-USE
Purpose: GROUNDWATER SAMPLE
Water Level: 111.438 (METERS_NAVD88)
Screen Id: 924
Depth Top: 72 (ft)
Depth Bottom: 82 (ft)
Screen Size: 6 (in)
379 Contaminants
4/4 Active Contaminants
[Click here to display this well's data set](#)

Reset Map Rotation icon will reset the map to north facing if you rotate the map using Alt+Shift+mouse.

Summary table - high level information and statistics for the selected well

Well 199-H4-12C (379 Contaminants) 3 Wells [Prev](#) [Next](#)

Filters: Custom [Chart](#) [Map](#) [Table](#) [Standards & Limits](#)

477 samples (1986-2016) Non-Detect Handling: **Substitute with zero** Table Type: Summary

Contaminant	Last Sampled	Value	Standard	Units	First Sample Date	Average	Maximum	Date of Max	# Results
Hexavalent Chromium	6/27/2016	130.00	100.00	ug/L	10/22/1996	120.27	260.00	10/22/1996	166
Nitrate	5/11/2016	15500.00	45000.00	ug/L	12/31/1986	6226.28	17700.00	11/11/2015	85
Strontium-90	11/11/2015	6.05	8.00	pCi/L	5/29/1992	1.21	6.05	11/11/2015	5

Active (1 Selected) 3/379 Showing 1 to 3 of 3 entries

Hexavalent Chromium (18540-29-9)
 Last Sample: 130 ug/L 6/27/2016
 Lab/Review Qualifiers: -- / --
 Results/Exceedances: 166 / 137
 Standard: 100 ug/L

Non-detect Handling allows the user to choose whether they want to display non-detects as reported, or to fill non-detects with zeros.

Measurements table - all of the sampling data for the selected well

Well 199-H4-12C (379 Contaminants) 3 Wells [Prev](#) [Next](#)

Filters: Custom [Chart](#) [Map](#) [Table](#) [Standards & Limits](#)

477 samples (1986-2016) Non-Detect Handling: Substitute with zero Table Type: Measurements

Contaminant	Last Sampled	Value	Units	Lab Qualifier	Review Qualifier	Filtered Flag	Sample Number
Hexavalent Chromium	5/11/2016	130	ug/L			N	B351R1
Hexavalent Chromium	5/11/2016	130	ug/L			Y	B351R5
Hexavalent Chromium	5/16/2016	135	ug/L			N	B35DT8
Hexavalent Chromium	6/6/2016	131	ug/L			N	B35DV7
Hexavalent Chromium	6/13/2016	128	ug/L			N	B35DX0
Hexavalent Chromium	6/27/2016	130	ug/L			N	B35F12
Nitrate	12/31/1986	5110	ug/L			N	H00076Q2
Nitrate	1/7/1987	5280	ug/L			N	H00076Q3

Active (1 Selected) 3/379

Hexavalent Chromium (18540-29-9)
 Last Sample: 130 ug/L 6/27/2016
 Lab/Review Qualifiers: -- / --
 Results/Exceedances: 166 / 137
 Standard: 100 ug/L

Nitrate (14797-55-8)
 Last Sample: 15500 ug/L 5/11/2016
 Lab/Review Qualifiers: D / --
 Results/Exceedances: 85 / 0
 Standard: 45000 ug/L

Switch the Table Type drop-down from/to Measurements/Summary to change the table view.

When selecting analytes in the **Active** list or table, the table rows are highlighted in purple.

Standards & Limits view shows the detection limits and reference/source for all contaminants found in the selected well.

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