

Groundwater Assessment Data Viewer

User Guide



Application Overview

This Web application was prepared by Texas Commission on Environmental Quality (TCEQ) under US EPA grant partnership, Section 305(b) reporting requirement of the Clean Water Act. In general, 305(b) reports describe the quality of surface waters and groundwater and existing programs to protect water quality. Section 305(b) of the Clean Water Act requires a biennial reporting of activities conducted for the program, including groundwater monitoring to protect sources of drinking water.

You may use this Experience Viewer to do the following:

- Search the location to find water wells monitoring and sampling taken for certain chemical constituents.
- Search to find information about the chemical of concerns in the aquifer regions.
- Print a custom map that shows groundwater monitoring in the local area.

For the 2022 report, TCEQ evaluated ambient groundwater data for Fiscal Year (FY) 2012 through FY2021 (September 1, 2011, through August 31, 2021) from the TWDB groundwater database. The Chemicals of Concern constituents were chosen from all the analyses conducted because they are listed in state rules related to drinking water standards: arsenic, barium, cadmium, chromium, copper, gloss alpha; iron, manganese, mercury, selenium, sulfate, chloride, nitrate-nitrogen, total dissolved solids and zinc.

In evaluating these constituents of interest, staff sorted the data and filtered the results to eliminate duplicate samples for any given well, giving a “snapshot” of the highest concentration value for each well that is available. The purpose for choosing the highest concentration at each sampled well during the ten-year period was to be conservative in estimating concentrations of constituents in each aquifer. Concentrations illustrated in previous reports may have changed at specific sampling sites since each report looks at the most recent ten-year period. For each constituent, results were evaluated to determine how many wells in each sampled aquifer were above an accepted regulatory value, typically the maximum contaminant level (MCL) for drinking water established by US EPA.

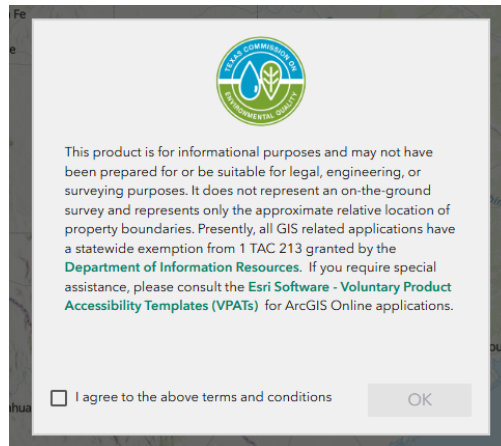
Contents

Groundwater Assessment Data Viewer.....	1
Application Overview.....	1
Navigating Around the Map.....	3
Splash Screen Pop Up:.....	3
Viewer Header:.....	3
Widget Controller:.....	4
About Groundwater Assessment Data Viewer.....	4
Layers.....	5
Legend.....	6
Add Data.....	7
Draw.....	8
Measurement.....	9
Bookmarks.....	10
Basemap Gallery.....	11
Print.....	12
Search Bar:.....	13
Attribute Table:.....	13
Map Tools:.....	14
Contact Us.....	16

Navigating Around the Map

Splash Screen Pop Up:

When first accessing the Viewer, you will see a pop-up that includes disclaimer information on the intended use of the application. Users must select the checkbox next to “I agree to the above terms and conditions” and then the “OK” button will be selectable. Click the OK button to exit the window and continue to view the application.



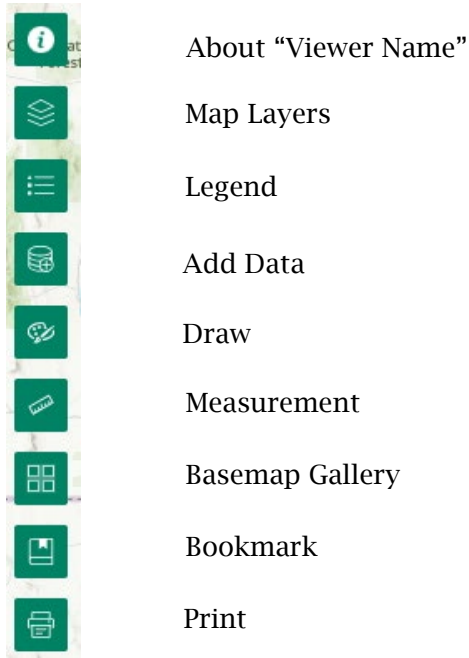
Viewer Header:

The header section of the Viewer includes the Viewer’s title and essential information about the Viewer. It provides links to the TCEQ Homepage, the viewer’s landing page under the TCEQ Geographic Web Apps page, the Viewer’s User Guide, and the Texas Integrated Report. A version number may also be displayed to assist version control for developers.




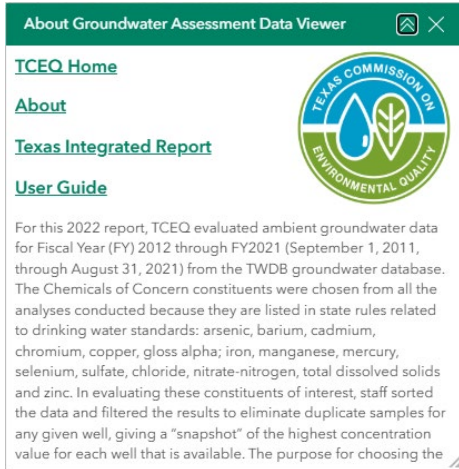
Widget Controller:

The widget controller is located on the left-hand side of the Viewer. It hosts individual widgets to conduct varying actions such as measuring or changing the basemap being displayed.




About Groundwater Assessment Data Viewer

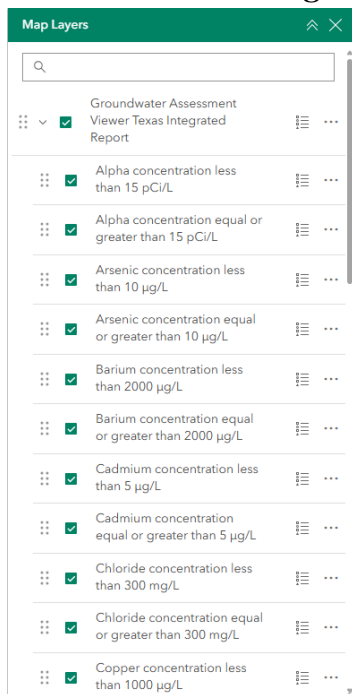
- The **About** widget provides users with essential information regarding the application, including its purpose, user guide, data sources, and any credits or acknowledgements related to the content.
- To use the **About** widget, click on the **About Groundwater Assessment Data Viewer**  icon in the widget controller
- This opens a brief description of the application and the links



- To close the window, click **Close**  in the upper right-hand corner.
- To collapse the window, click **Collapse**  just to the left of the close button.

Layers

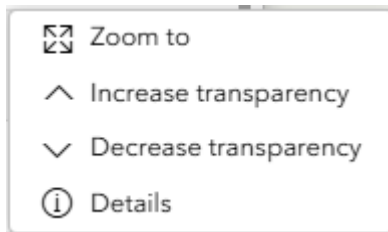
- The **Layers** widget can be used to turn on and off data layers such as the Surface Water Intake and the current query results.
- To **view** the layers, simply click the **Layers** button  in the widget controller.
- Then browse through the available layers.




- To **Toggle the layer visibility**, locate the layer in the list and click on the checkbox next to the layer name. This toggles the visibility on and off the map.
- **Expand** the layer by clicking the small arrow to the left of the check box. Here you can see the layer symbology.

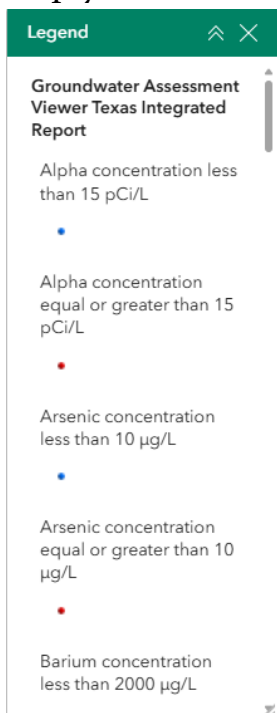


- To **Zoom, increase/decrease transparency, and get details** of the layers, click on the **options** button  and select the desired option.




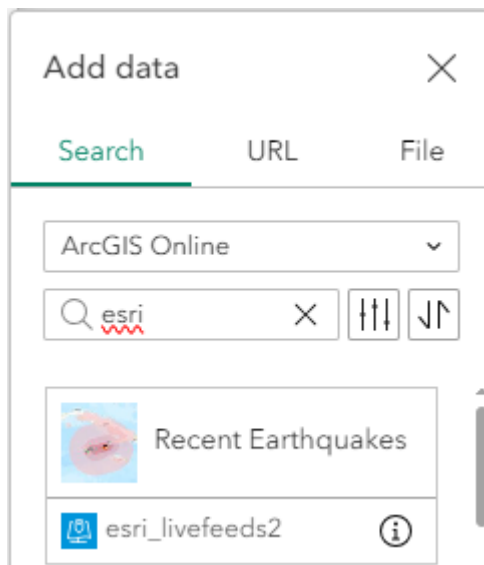
Legend




- The **Legend** widget shows the symbols for the various layers on the map.
- Simply click the **Legend** button  in the widget controller




Add Data

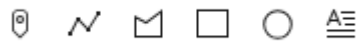
- Click to add publicly available layers from ArcGIS Online or external websites, or user-owned GIS layers. Layers added to the viewer using the **Add Data**  widget will be removed when the viewer is closed and will not appear when the viewer is opened again.
- To search publicly available layers on ArcGIS Online, select “Click to add data”, then select “ArcGIS Online” from the drop-down menu under the search tab. In the search bar, enter the name of the layer you are searching for (e.g., “forest”) or layer author (e.g., ESRI). Select the data you would like to add and click “Done”. To add a layer from your computer, select the “File” tab.



- From the **Add Data** widget window, click on the **Actions** icon  to add the data to your map.
- To move the layer under the project points, click on **Layers**  in the widget controller, hold the **Reposition: “layer name”** icon  to the left of the added layer, and drag the layer to its desired position.

Draw




- Use the **Draw** widget to draw simple graphic and text on the map.
- Click on the **Draw** widget  icon in the widget controller. Click on the various symbols to draw a **point, polyline, polygon, rectangle, circle, or text**.




- For points, polylines, polygons, and shapes drawn, you can change the symbol type and fill/outline color as well as show the location, length, and area/perimeter measurements. You can change the color, font, and text size for added text.
- To select graphics drawn using the widget, **select feature, by rectangle or by lasso** under “Select draw mode”. You can then **delete** or **duplicate** the selected features.

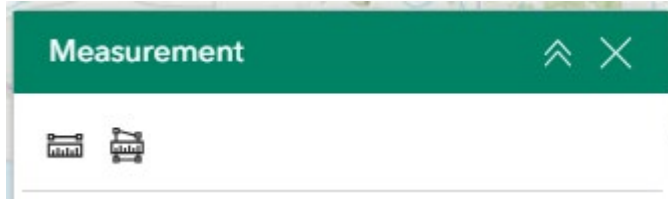
Select draw mode




- Use the **arrows**   to **undo** and **redo** draw actions.
- To **clear all**, select the **eraser** icon  .


Measurement

- The Measurement widget enables user to calculate the area, and distance directly on the map.
- To measure a feature, click on the **Measurement**  widget in the widget controller.
- The Measurement window will appear as shown below.





- There are two different ways to measure features on the map:

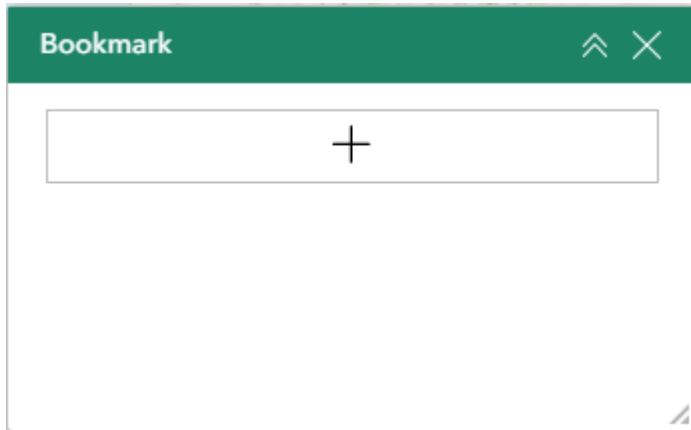
 **Distance** - Click the button with a line (first from the left), choose a unit of measurement from the drop- down list, then single-click the first point of your line on the map. Continue to single-click until you have finished measuring your linear feature. Double-click to end. Results will appear in the Measurement window.


 **Area** - Click the button with a polygon (second from the left), choose a unit of measurement from the drop- down list, then single-click the first point of your polygon on the map. Continue to single-click until you have finished measuring your area feature. Double-click to end. Results will appear in the Measurement window.

- To clear the measurement, click the **Trash** icon  or **New Measurement** .

Bookmarks


- The **Bookmark** widget enables users to navigate to predefined map locations.
- To Create a bookmark, navigate to the desired map extent and click on the **Bookmark** widget  in the widget controller.
- Click on the **Add Bookmark**  icon in the window.

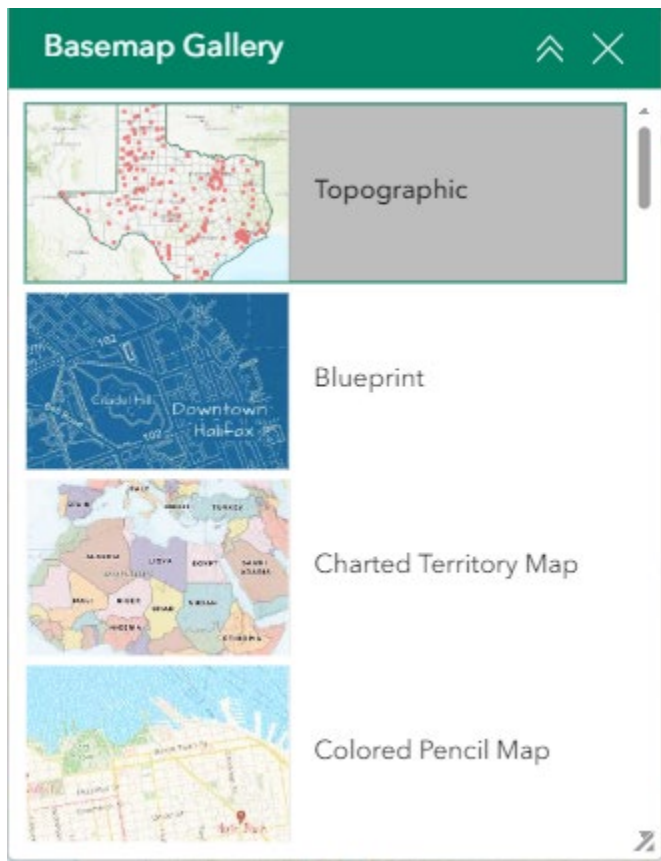


- Click on the name of the bookmark to rename it. Click on the **Delete**  icon on the right to remove the bookmark.




Basemap Gallery

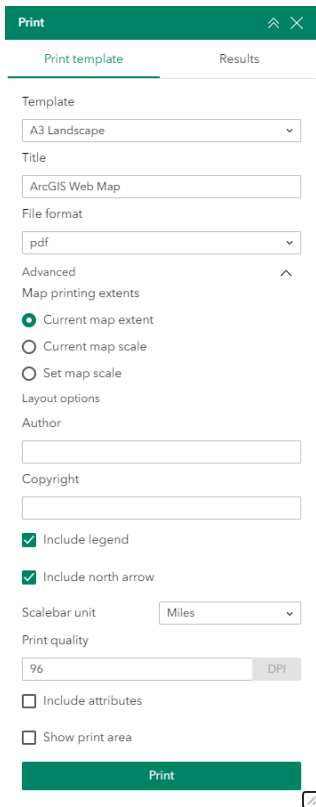
- The **Basemap Gallery** widget can be used to change the background in the map viewer. The topographic basemap is the default basemap.
- To change the basemap, click on the **Basemap Gallery** widget  on the widget controller, then select the basemap you wish to use.



- You may choose from thirty-four different basemaps.

Print

- Use the **Print** widget  to save the current map as a pdf file. You may give it a customized title, choose the format, and select a layout and size. Advanced features include ability to add map scale, author, copyright, north arrow, and legend. You may also set the map extent and printing quality.

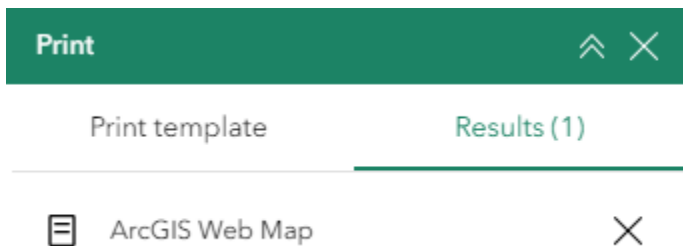


The screenshot shows the 'Print' widget configuration panel. It has a title bar with 'Print' and window controls. Below the title bar are two tabs: 'Print template' (selected) and 'Results'. The 'Print template' tab contains the following settings:

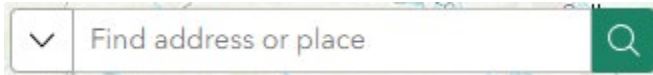
- Template: A3 Landscape
- Title: ArcGIS Web Map
- File format: pdf
- Advanced: Map printing extents
 - Current map extent
 - Current map scale
 - Set map scale
- Layout options: Author, Copyright
- Include legend
- Include north arrow
- Scalebar unit: Miles
- Print quality: 96 DPI
- Include attributes
- Show print area


At the bottom of the panel is a green 'Print' button and a small square icon.

- After clicking print, the results will show in the results panel of the Print window.



Search Bar:





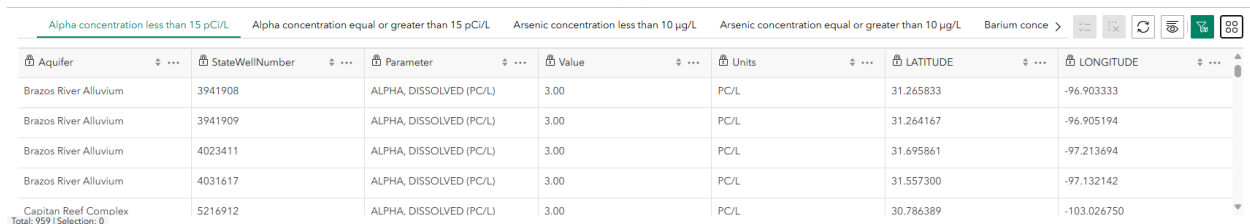
- Type in an address or place into the bar to search for a location. As you type, you will be presented with similar matches. If you see your desired location appear, simply click on it and the map will zoom to that location. Or you can complete typing in the location and then press Enter on the keyboard or click the magnifying glass. You can click the **Clear** icon  on the bar to clear out the search bar.

The following are examples of the types of searches you can perform.


- Addresses: 17041 El Camino Real, Houston, TX, 77058
- Names of places or projects: Houston Zoo, Cedar Bayou, Trash Bash

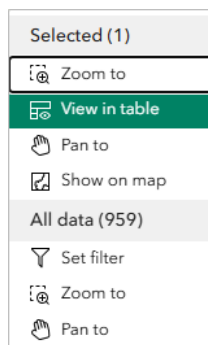
Attribute Table:

To view the attribute table, click on the green **Expand** arrow  at the bottom of the viewer. The attribute table will expand. To collapse the attribute table, click on the green **Collapse** arrow  at the top of the table.



Aquifer	StateWellNumber	Parameter	Value	Units	LATITUDE	LONGITUDE
Brazos River Alluvium	3941908	ALPHA, DISSOLVED (PC/L)	3.00	PC/L	31.265833	-96.903333
Brazos River Alluvium	3941909	ALPHA, DISSOLVED (PC/L)	3.00	PC/L	31.264167	-96.905194
Brazos River Alluvium	4023411	ALPHA, DISSOLVED (PC/L)	3.00	PC/L	31.695861	-97.213694
Brazos River Alluvium	4031617	ALPHA, DISSOLVED (PC/L)	3.00	PC/L	31.557300	-97.132142
Capitan Reef Complex	5216912	ALPHA, DISSOLVED (PC/L)	3.00	PC/L	30.786389	-103.026750


- Select points in the table by clicking on the row. Click the **Actions** icon  to **zoom to**, **pan to**, or **show on map**. You can also set a filter for all the data in the **Actions** menu.




Map Tools:

The zoom tools are located on the bottom right hand side of the map application.

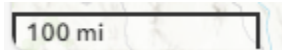


 **Zoom In** – Click the **zoom in** button once or multiple times to **zoom in** at fixed increments

 **Zoom Out** – Click the **zoom out** button once or multiple times to **zoom out** at fixed increments

 **Default Map View** – Click the **default map view** button once to return to the default extent



 **Find My Location** – Click the **find my location** button to take you to your current location.

 **Scale Bar** – shows the scale of the map at your current extent, located in the bottom left corner of the viewer window.


Coordinates

- The **Coordinates** widget is found on the bottom left corner of the viewer window, above the scale bar. The coordinates automatically update to the location of the cursor in the viewer window.




- To get the coordinates of a particular location on the map, click on the **Enable clicking the map to get the coordinates**  icon.
- Click on the map to create a **marker** . The coordinates widget will update with the coordinates of the marker.




- You can copy the coordinates of the marker by clicking the **Copy**  icon.

Overview Map

- The **Overview Map** tool provides users with a smaller navigational map that offers an overview of the entire map or application. It helps users quickly locate their position within the larger map and navigate more efficiently.
- To use the **Overview Map** tool, click on the **Overview** arrow  located in the upper-right corner of the map, directly below the **header bar**.

- A small map  will appear, displaying your current view within a larger extent.

- To pan, click and drag the dark grey rectangle  within the overview map to adjust your location.

- To collapse the small map, click on the **Overview Map** arrow  again.

Contact Us

TCEQ Water Availability Division, Groundwater Planning and Assessment Team.
If you have questions regarding this Web App, please email us
gpat@tceq.texas.gov or contact via phone (512) 239-4600.

<https://www.tceq.texas.gov/waterquality/assessment>

<https://www.tceq.texas.gov/> help search keyword: “ 305(b) Groundwater”