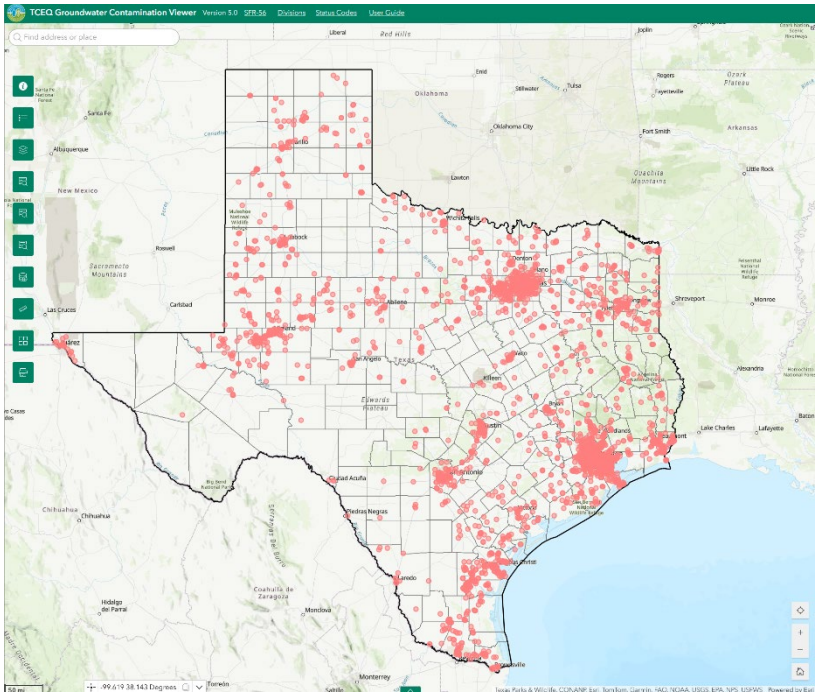
Texas Commission on Environmental Quality (TCEQ) Groundwater Contamination Viewer

User Guide



Application Overview

Introduction

Created by the Texas Legislature in 1989, the Texas Groundwater Protection Committee[i] (TGPC) strives to improve coordination between state and federal agencies involved in groundwater-related activities. A major responsibility of the TGPC is the publication of an annual *Joint Groundwater Monitoring and Contamination Report*[ii] ("*Joint Report*"). For an audience of health and elected officials, Groundwater Conservation Districts (GCDs), and citizens in the state, the *Joint Report* describes the current status of groundwater monitoring activities conducted or required by each member of the TGPC, the groundwater protection programs of each TGPC member, and the enforcement status of each active and inactive groundwater contamination case in the state.

Groundwater is defined by the TGPC as water existing below the land surface in a zone of saturation – that is, the water which completely fills the interconnected pore spaces of the rock or sediment. Groundwater contamination is defined by the TGPC as any detrimental alteration of the naturally-occurring quality of groundwater; it is limited, however, to contamination suspected of being associated with activities under the jurisdiction of the contributing agencies and affecting usable quality groundwater. Groundwater monitoring is conducted by members of the TGPC in order to assure regulatory compliance with groundwater protection, assess ambient groundwater quality, and conduct research activities.

This interactive, online map ("Viewer") of the active and inactive groundwater contamination cases in Texas that are documented in the current issue (and some previous issues) of the *Joint Report* has been developed in order to provide users with the ability to query the database and obtain spatial relationship information about the cases. Over a dozen natural and administrative boundaries have also been provided in the Viewer for reference.

This map was generated by the Water Availability Division of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property

boundaries. For more information concerning this map, contact the Water Availability Division at gpat@tceq.texas.gov or (512) 239-4600.

Software requirements

For the best performance with this Viewer and its tools, please use the latest version of one of the browsers listed below:

- Edge;
- Firefox;
- Chrome;
- Safari;
- iOS Safari; or,
- Chrome for Android.

Author

The TCEQ Groundwater Planning and Assessment Team (GPAT) in the Water Availability Division (Office of Water) developed and maintains this application. Please contact us at gpat@tceq.texas.gov or (512) 239-4600 if you have any questions or find errors in the Viewer.

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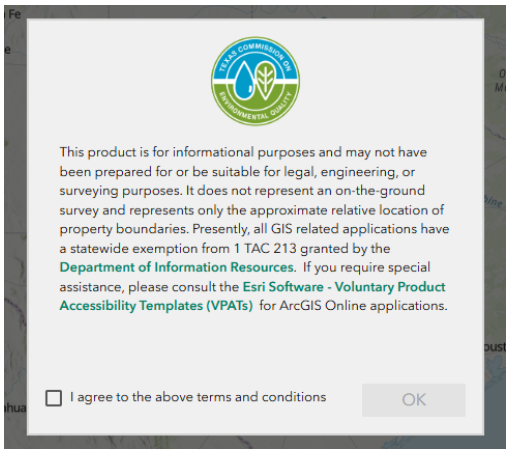
Navigating Around the Map

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, and the Viewer's User Guide. A version number may also be displayed to assist version control for developers.

The following links can be found in the center of the Viewer's top green banner:

- SFR-56 – the webpage for the current version of the *Joint Report*;
- Divisions[iii] – a PDF file that lists the Division acronyms for the groundwater contamination cases;
- Status Codes[iv] – a PDF file that lists the Enforcement Status, Activity Status, and Data Quality codes for the groundwater contamination cases; and,
- User Guide[v] – this PDF file.

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.

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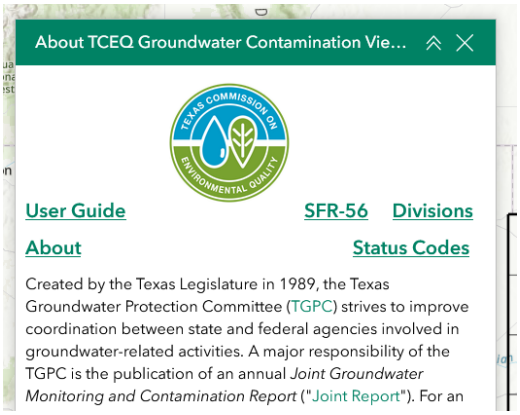
About TCEQ Groundwater Contamination Viewer

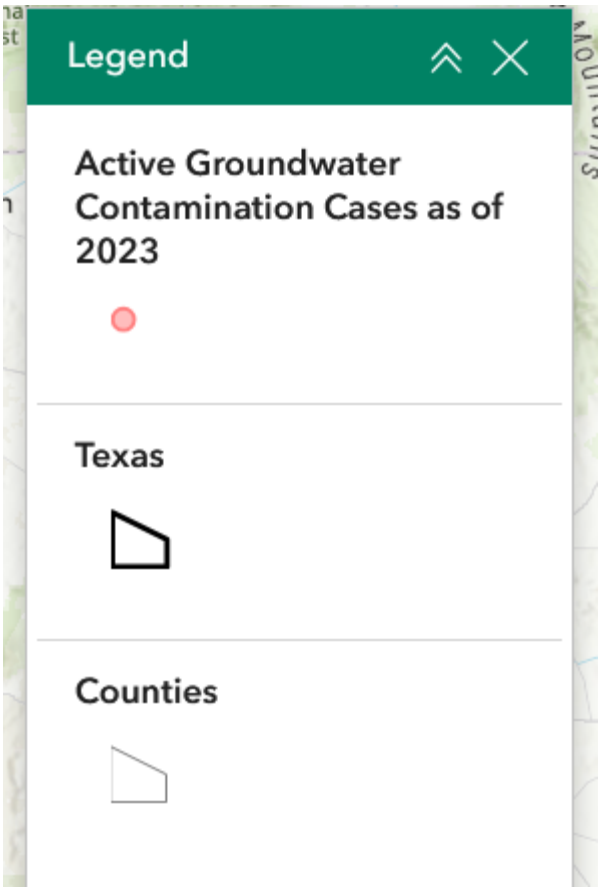
- The **About** widget provides users with essential information regarding the application, including its purpose, user guide, data sources, and any credits or acknowledgements related to the content.
- To use the **About** widget, click on the **About TCEQ Groundwater Contamination Viewer** icon in 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.

Legend

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



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.

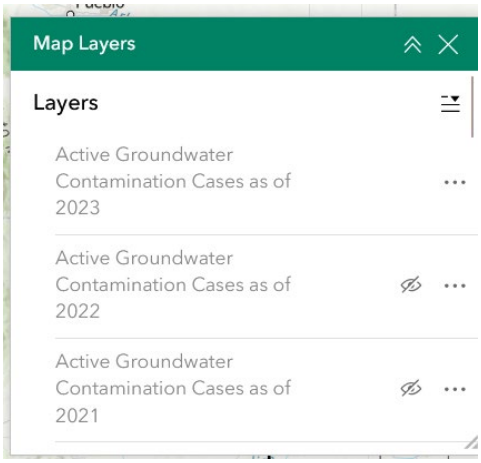
The Viewer should open with the active groundwater contamination cases as per the current Joint Report symbolized as colored points on the map; if your device has a small display, zoom in until you see the points. The points from each issue of the Joint Report are symbolized differently. If you click on one of these points, or anywhere inside Texas, the selected feature(s) will be highlighted and you will get a pop-up with information about the operational layers that are checked on at that location. Depending on the size of your device:

- Click on the white arrow on the right side or top right portion of the pop-up to scroll forward and backward through the layer information; and,

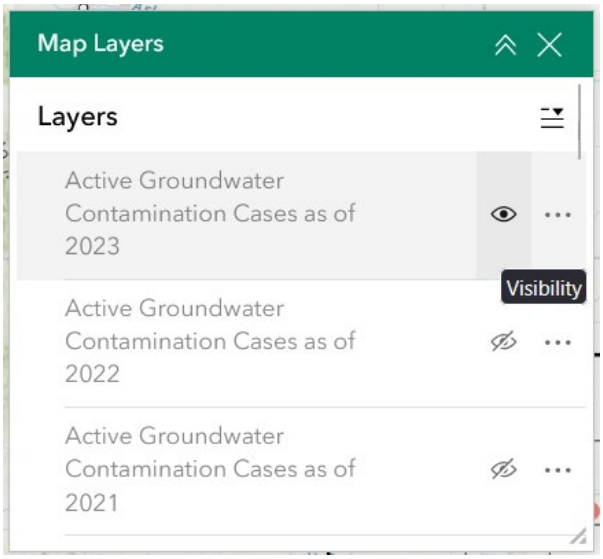
- Click on the ellipsis in the bottom left or bottom right portion of the pop-up to Pan to, Add a marker, and View in Attribute Table.

On devices with large displays, click on the “Zoom to” link in the bottom left portion of the pop-up to zoom to the layer feature.
Note that:

- Although the Texas layer is turned on, its default pop-up information has been disabled; and,
- If you click too close to multiple features in a layer (e.g., close to a county border), the pop-up will include the information for all of those features; zoom in on the map to refine the results.

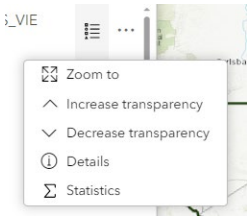


- To **Toggle the layer visibility**, locate the layer in the list and click on the eye next to the layer name. This toggles the visibility on and off the map.



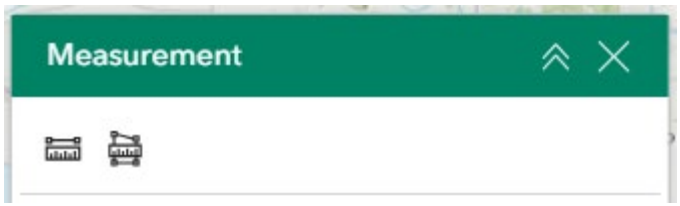
- **Expand** the layer by clicking the small arrow to the left of the check box. Here you can see the layer symbology.

- To **Zoom, order, get details and statistics** of the layers, click on the **options** button ••• and select the desired option.



Measurement

- The Measurement widget enables user to calculate the area, and distance directly on the map.
- This Viewer uses the Web Mercator projection which distorts area and distance as scale decreases (i.e., as you zoom out), and therefore the Measurement tool may not provide data suitable for legal, engineering, or surveying purposes.
- 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:

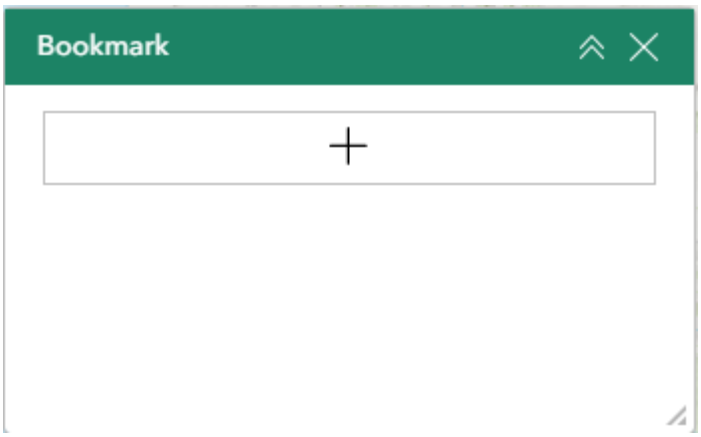
  Distance - Click the button with a line (first from the left), choose a unit of measurement from the drop- down list, then single-click the first point of your line on the map. Continue to single-click until you have finished measuring your linear feature. Double-click to end. Results will appear in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

  Area - Click the button with a polygon (second from the left), choose a unit of measure 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** New measurement.

Bookmarks

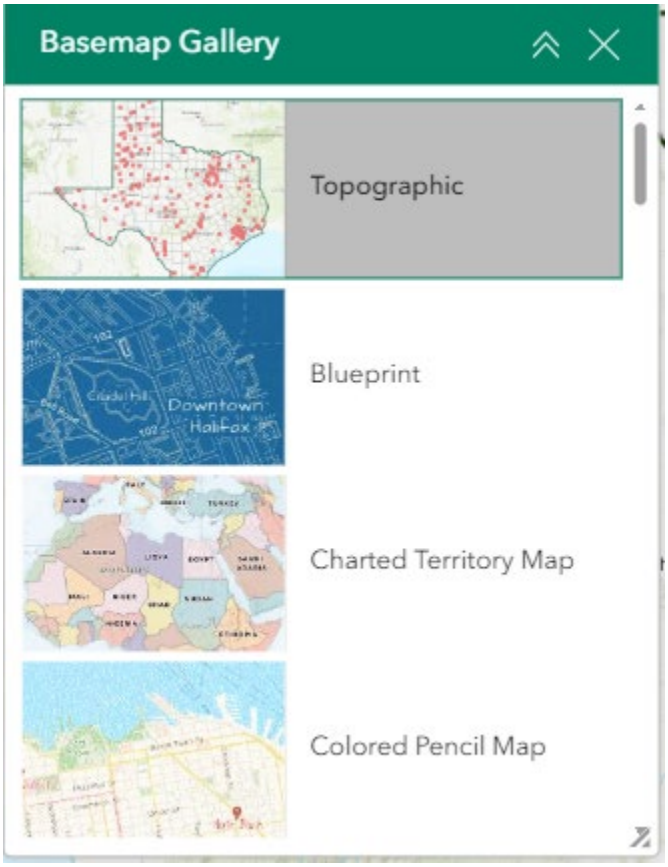
- The **Bookmark** widget enables users to navigate to predefined map locations.
- To Create a bookmark, navigate to the desired map extent and click on the **Bookmark** widget in the widget controller.
- Click on the **Add Bookmark** + icon in the window.



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

Basemap Gallery

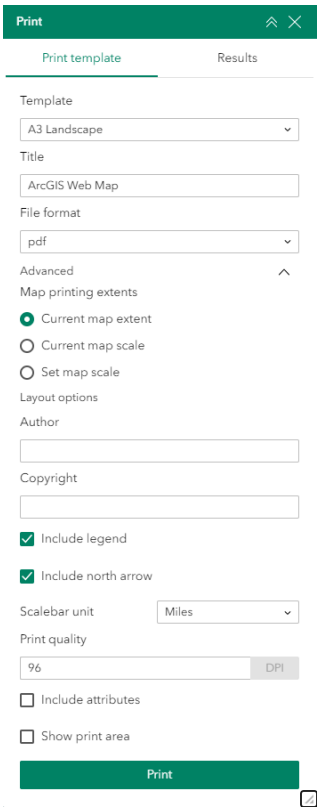
- The **Basemap Gallery** widget can be used to change the background in the map viewer. The topographic basemap is the default basemap.
- To change the basemap, click on the **Basemap Gallery** widget on the widget controller, then select the basemap you wish to use.



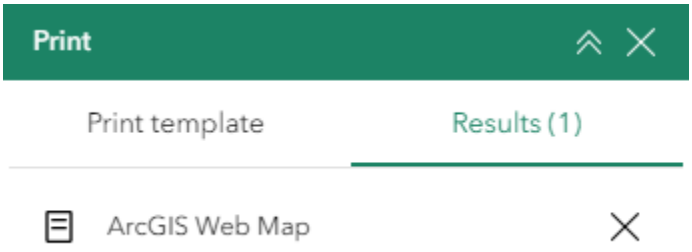
- You may choose from thirty-four different basemaps.

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.



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



Analysis Widgets:

- **Query** – Click to enter and execute predefined queries

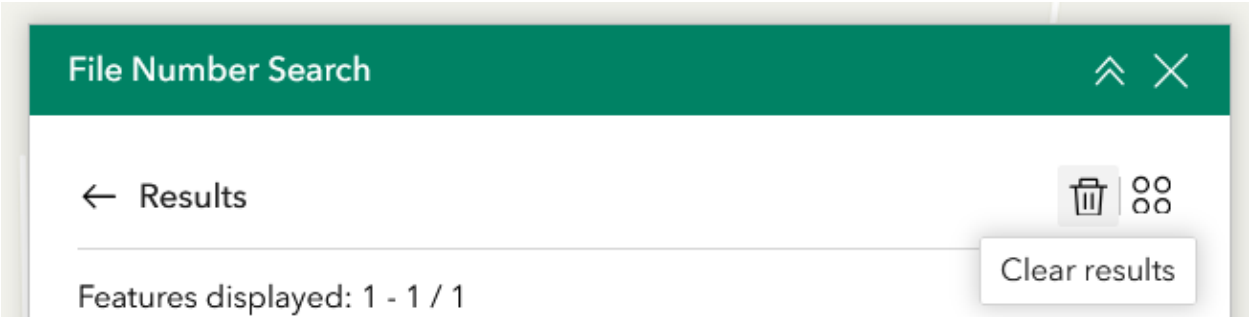
File Number Search, File Name Search, and Contamination Description Search

The File Number Search, File Name Search, and Contamination Description Search buttons  enable queries of the groundwater contamination cases databases. They differ only in their search criteria. In addition, you have the option to also include a County when performing a query. The File Number Search button will be explained here as the example, and the features of the other two queries are the same.

In the Tasks tab, click on the operational layer that you want to query; on the next Tasks panel, you can select a different operational layer by clicking on the left arrow at the top of the panel. Default text (not case sensitive) is displayed in the Query criteria text box. Click the green Apply button at the bottom of the Tasks tab and the default query results will be highlighted on the map and listed in the Results tab. Note that the query results include all of the records that contain the text that was entered (i.e., not just an exact match).

Click on the ellipsis in the top right portion of the Results tab for additional functionality (e.g., View in Attribute Table). Click on the arrow on the right side of each record to expand or collapse the details for that record; clicking on each record will highlight its point on the map and give you a pop-up with the same details for that record. If the pop-up is not visible (or not completely visible), zoom out one level to see the full pop-up associated with that point.

When conducting multiple queries the results will remain circled in red on the map until the clear results option is selected in the query results.



In the Results tab, note that the last field in each record is GEOLOCATION ACCURACY CONFIDENCE LEVEL; its values are either HIGH, MEDIUM, or LOW, as explained below:

Superfund Site records should have confirmed latitude and longitude coordinate values and were initially assigned a GEOLOCATION ACCURACY CONFIDENCE LEVEL of HIGH;

All other records that were submitted with latitude and longitude coordinate values were assigned a GEOLOCATION ACCURACY CONFIDENCE LEVEL of MEDIUM; and,

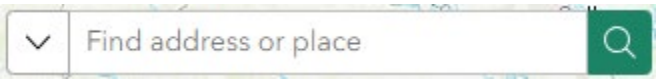
Records without latitude and longitude coordinate values had to be researched or geocoded and were therefore assigned a GEOLOCATION ACCURACY CONFIDENCE LEVEL of LOW. In addition, any records whose submitted latitude or longitude coordinate values had to be adjusted in any way (e.g., the longitude was missing the "-" sign) were also assigned a GEOLOCATION ACCURACY CONFIDENCE LEVEL of LOW.

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.

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.

The Attribute Table button in the bottom center of the Viewer's map displays a tabular view of the attributes for the current active groundwater contamination cases and any other operational layers that were added using any of the three Search tools, the Layer List tool, or a point's pop-up. Click on the button to open and close the Attribute Table; click and drag the gray horizontal line under the arrow on the button to resize the Attribute Table.

Clicking on a row in the left most column of the Attribute Table selects a record in the table and highlights the corresponding feature in the map. Use the Shift or Ctrl keys to select and deselect multiple records. Double-clicking any field in the selected record(s) will zoom to the feature(s) on the map and open its pop-up. The total number of features, and the number of selected features, are shown in the lower left portion of the Attribute Table.

Tools available in the upper left portion of the Attribute Table include Options, Filter by Map Extent, Zoom to, Clear Selection, and Refresh. Note that the Filter by Map Extent tool is turned off by default; clicking on this tool will turn it on

and populate the Attribute Table with only those records for that operational layer that can currently be seen on the map. Clicking the Home button also resets the Attribute Table. The Options tool allows you to Show Selected Records, Show Related Records, Filter, Show/Hide Columns, and Export to CSV. When exporting to CSV there will be a X and Y fields generated automatically and these can be disregarded. Any subsequent spatial analysis from an exported CSV should only use the LATTITUDE and LONGITUDE fields. You can also show or hide columns by clicking the + icon in the top right portion of the Attribute Table.

Note that an Excel file with all of the current Joint Report's case data is available on its webpage.

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

Please contact us at gpat@tceq.texas.gov or (512) 239-4600 if you have any questions or find errors in the Viewer.

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[i] Texas Groundwater Protection Committee, https://tgpc.texas.gov
[ii] *Joint Groundwater Monitoring and Contamination Report*, TCEQ publication SFR-56, https://www.tceq.texas.gov/groundwater/groundwater-planning-assessment/sfr-056-joint-groundwater-monitoring-contamination-report
[iii] Divisions, https://www.tceq.texas.gov/downloads/groundwater/joint-report/divisions.pdf
[iv] Status Codes, https://www.tceq.texas.gov/downloads/groundwater/joint-report/status-codes.pdf
[v] *User Guide*, https://www.tceq.texas.gov/downloads/groundwater/joint-report/user-guide-exb.pdf