2018

XPLORER USER GUIDE

V.3.0

SUPPORT@ERISINFO.COM

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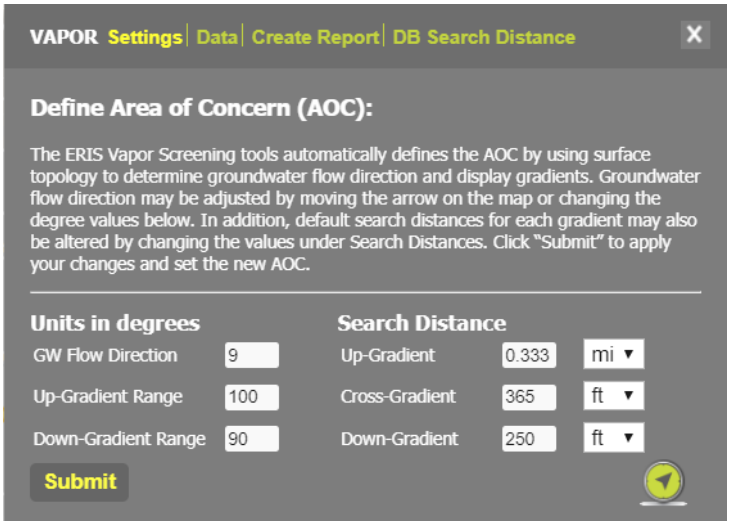
Vapor Encroachment Overview

Vapor migration and encroachment into structures on a property can potentially create significant liability and have a material impact on property value. As such, it is a growing concern for property owners, prospective purchasers of property and environmental professionals conducting due diligence. The first check in the 2 tier screening process is a search distance test to identify if there are any known or suspected contaminated sites with volatile or semi-volatile hazardous chemicals of concern (COC) in the area of concern (AOC). If there are none, no further action is required. If there is suspected contamination, Tier 2 screening should be undertaken which focuses on characteristics of the contaminated plume. Tier 2 screening is outside the scope of the tool.

The ERIS Vapor Screening Tool is a powerful tool to help those conducting a Vapor Encroachment Screening on Property Involved in Real Estate Transactions under the ASTM Standard Designation E2600 – 15. The tool searches data sources around the property and identifies any hits in the default Area of Concern (AOC). The tool assists in identifying potential Chemical of Concern (COCs) and Petroleum Hydrocarbon COCs in the AOC and provides an intuitive checklist to help determine whether or not a Vapor Encroachment Condition (VEC) exists on the target property (TP). The tool produces a report with all the checklist comments.

Settings

The Settings tab allows the user to refine the AOC by changing groundwater flow direction, adjusting the gradient ranges as well as modifying the search distances for the gradient areas.



Define Area of Concern (AOC):

When the ERIS Vapor Screening Tool is initially opened, the default AOC is determined and the four gradients are displayed. The potential sites of concern in the AOC are highlighted in RED for review and you may immediately begin your VEC assessment and completion of the Vapor Checklist for each site.

If there are no sites in the AOC, you may create / print the report and no further action is required.

The AOC may be refined based on expertise and knowledge of the site by adjusting the three parameters below:

1. Groundwater flow direction
   - Initial default direction is based on surface topography

   The GW flow direction may be changed by:
   - Dragging the arrow on the map to the preferred direction. The AOC is automatically re-calculated, OR
   - Adjust the GW flow direction numbers under 'Settings' and click on 'Submit'

2. Up-gradient / Down-gradient Range
   - Use this parameter to expand or reduce the AOC from your target property
   - The default value is 90 degrees and the minimum value is 5 degrees

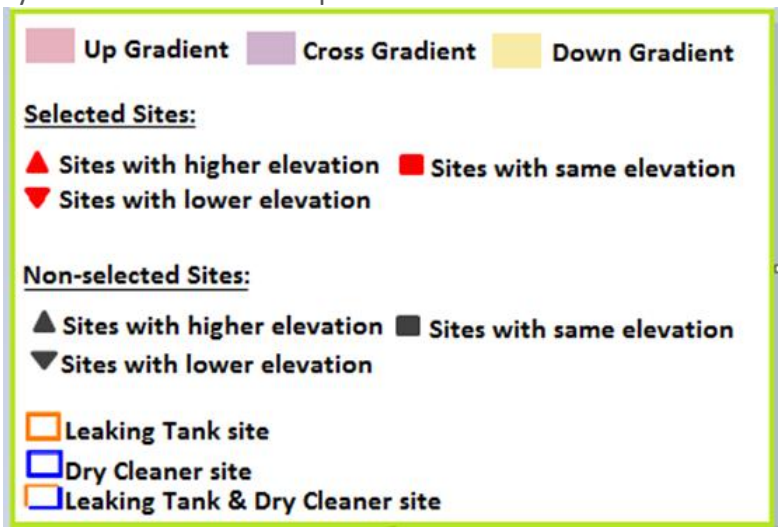
3. Up-gradient, cross-gradient and down-gradient Search Distances
    - The initial, default direction is based on guidelines set out in E2600-15 or from papers as referenced in this document
    - The maximum search distance for the screening tool is 1 mile.
    - Units are in miles (mi) and feet (ft)
    - Adjust any search distances required and click on 'Submit'

** For more information on default AOC settings refer to "Additional Reference Information on Gradient Search Distance"

Analysis of Sites within the AOC

Once your AOC has been set – you are now ready to evaluate sites for a vapor encroachment condition. Sites within the AOC are highlighted in red and by default, these are selected to be included in the report output. Any records that fall outside of the area of concern are grey.

Click the 'Legend' button at the bottom of the right hand corner to display more information on symbols used on the map.



In addition, for easier identification of potential concerning sites –sites that contain a leaking tank, dry cleaner or both have been symbolized on the map

Orange

- Leaking Tank site

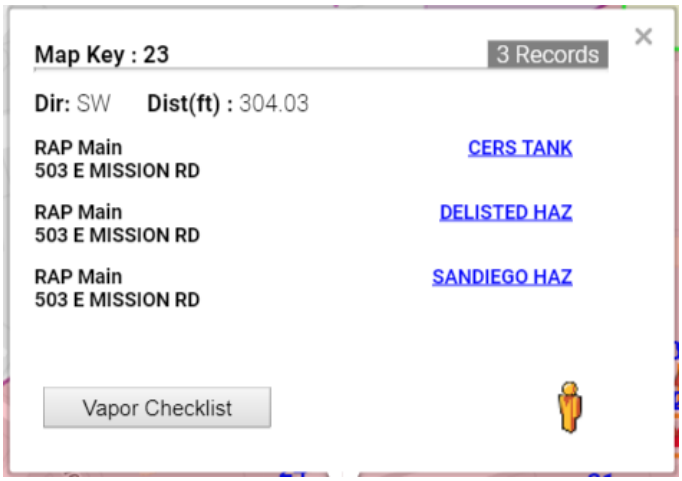
Blue

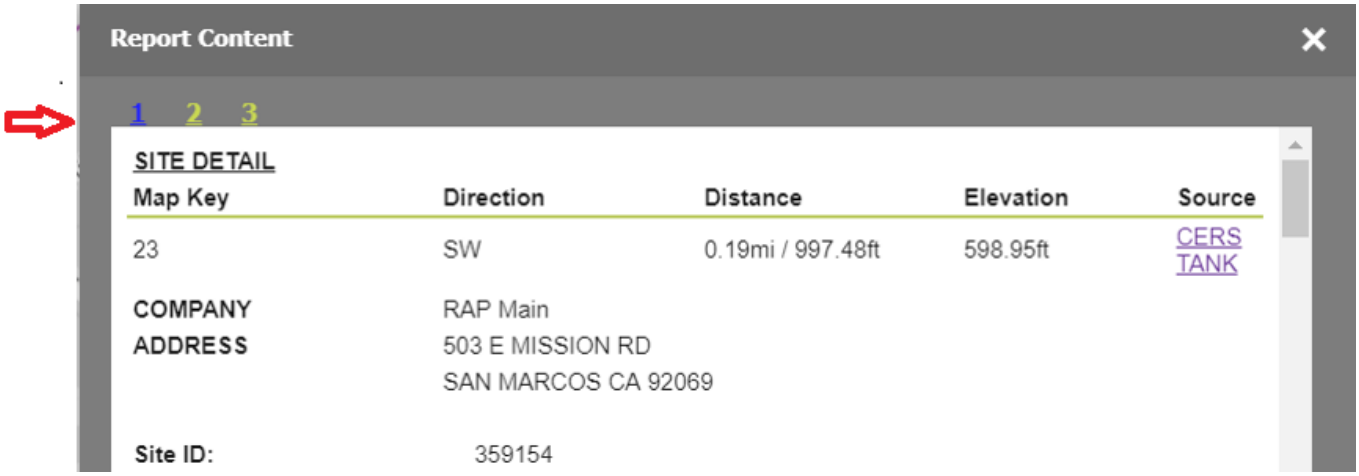
- Dry Cleaner site

Orange/Blue

- Leaking Tank & Dry Cleaner site

- Click the map key on the map to open a pop-up window to display all database records
- Click the individual database to view more details in another window
    - Click the number near the top of the page to view the next database record





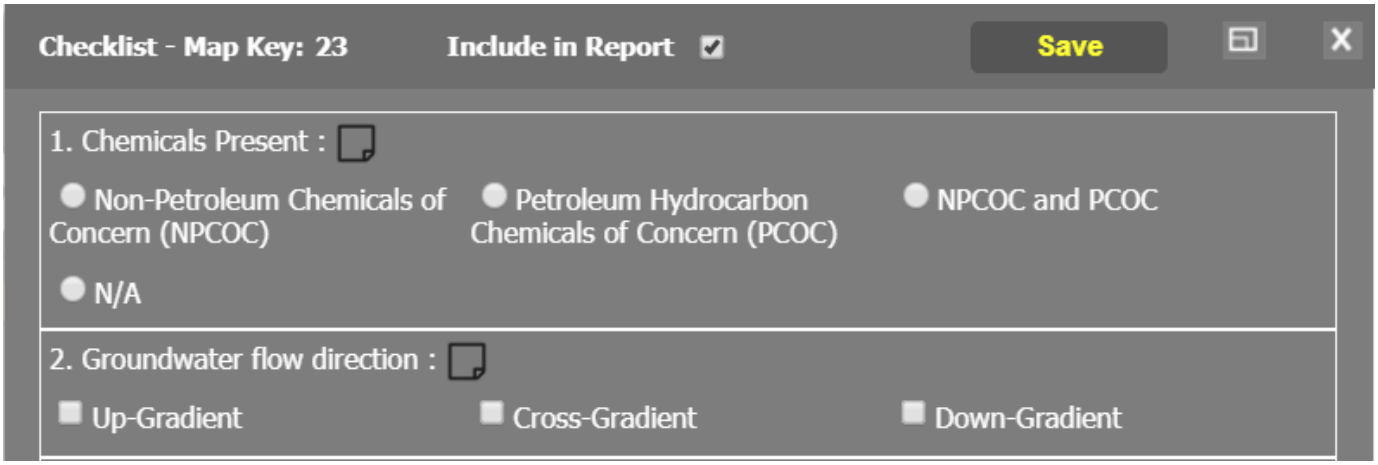
Vapor Checklist

The vapor checklist is a pre-populated checklist of questions that may be filled out for each site to help determine if a Vapor Encroachment Condition exists.

The Vapor Checklist opens automatically when you click on a site on the map and may be expanded or minimized at any time.

The site you are currently editing is indicated in the header of the checklist and is also indicated by the icon blinking on the map.

- "Include in Report"
  - This will allow you to include or exclude the site from the outputted report
- Additional comments/details may be added to each question by clicking the comments icon at the end of each question. Click it again to close it
- Click "Save" to save all details to be included in the report



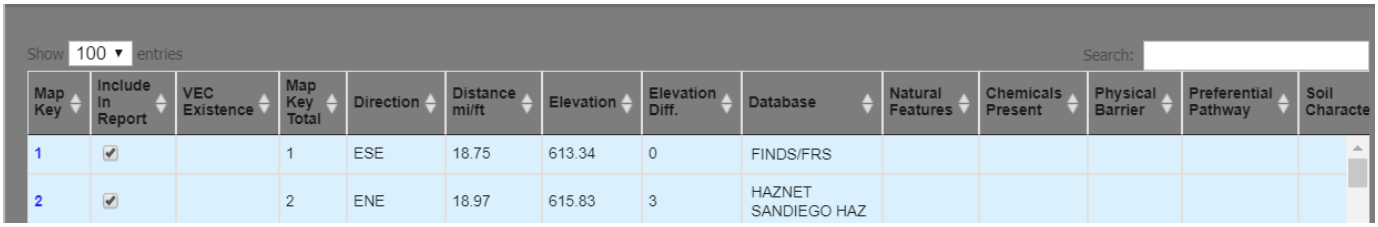
Data

Under the 'Data' tab, sites and vapor checklist details are displayed in an easy-to-read table format. Here all sites within the AOC and non-AOC area are included. Sites within the AOC are checked to be included in the report by default

In this table view, all of the columns are sortable and a search function will help to narrow down the entries in the table.

Hovering over the database names under a site will indicate the source category (e.g for LUST - State and tribal leaking storage tank lists will be displayed).

You may make any modification here or click the map key to go to the Vapor Checklist. You may decide to include or exclude the record in the Vapor Report by checking on/off the "Include in Report" column.



Show 100 entries Search:

Map Key	Include In Report	VEC Existence	Map Key Total	Direction	Distance mi/ft	Elevation	Elevation Diff.	Database	Natural Features	Chemicals Present	Physical Barrier	Preferential Pathway	Soil Characte
1	☑		1	ESE	18.75	613.34	0	FINDS/FRS					
2	☑		2	ENE	18.97	615.83	3	HAZNET SANDIEGO HAZ					

Create Report

A Vapor Screening Report can be generated at any time

- 2 types of reports can be generated: Vapor Report or Vapor Report with Database Details
- The report will include all records that are marked as "Include in Report"
- The report will also include any comments or selections made in the Vapor Checklist
- When the report is ready, it will be saved and downloaded in the this tab or under the Report section of the tool bar
- The report can be run multiple times but only the latest copy will be saved
- The report will be available for download for up to 60 days

DB Search Distance

- The chart displays the Default Approximate Minimum Search Distances for different database sources together with the standard category name
- The search function will narrow down the results to the data sources searched

Additional Reference Information on Gradient Search Distance

The following are some guidelines to consider when setting the search distances for the gradients. Adjustments may be applied based on your knowledge and experience about the areas including the subsurface geology, soil characteristics and man-made or natural preferential vapor pathways.

Up-gradient:

The default approximate minimum search distance surrounding the target property for COC is mostly 1/3 mi (1760 ft) and 1/10 mi (528 ft) for Petroleum Hydrocarbon COC. Please refer to ASTM E2600 for the detail list.

Down-gradient:

According to E2600 guide, the default approximate minimum search distance is equal to 100 ft (30.5 mi) for COC or 30 ft (9 mi) for dissolved petroleum hydrocarbon COC. The critical distance for petroleum hydrocarbon COC as LNAPL is the same as for non-petroleum hydrocarbon COC (that is, 100 ft (30.5 mi)).

Cross-gradient:

For a contaminated property identified in Tier 1 located cross-gradient from the TP, the AOC will be the area within the critical distance plus 1/2 of a reasonable estimation of the contaminated plume width that might be associated with the nearby known or suspected COC-contaminated property.

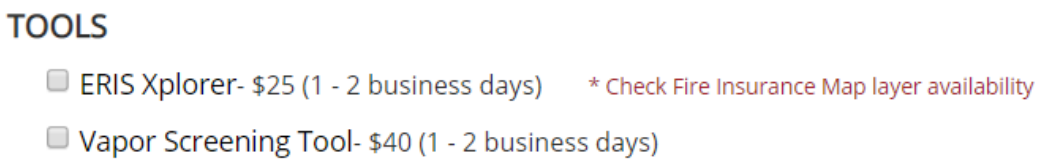
Please refer to these papers[1234] for estimation of the plume length. Please refer to these papers[567] for the default maximum plume width is equal to 1/3 of the plume length. Below are suggested values based on the formula.

- 365 ft for sites contaminated with non-petroleum hydrocarbon COC
- 165 ft for sites contaminated with petroleum hydrocarbon where LNAPL exists
- 95 ft for sites with only dissolved petroleum hydrocarbon contamination

Ordering ERIS Vapor Screening Tool

The Vapor Screening Tool is available as a package with a database report or as an add-on product to any E1 to E6 package.

** Please speak to your Regional Account Manager for details.



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Xplorer Key Features

ERIS Vapor Screening Tool is built on top of ERIS Xplorer which is a powerful, interactive tool that allows the user to layer data and historical images. Xplorer is an innovative way to visualize and analyze your data.

Features of ERIS Xplorer:

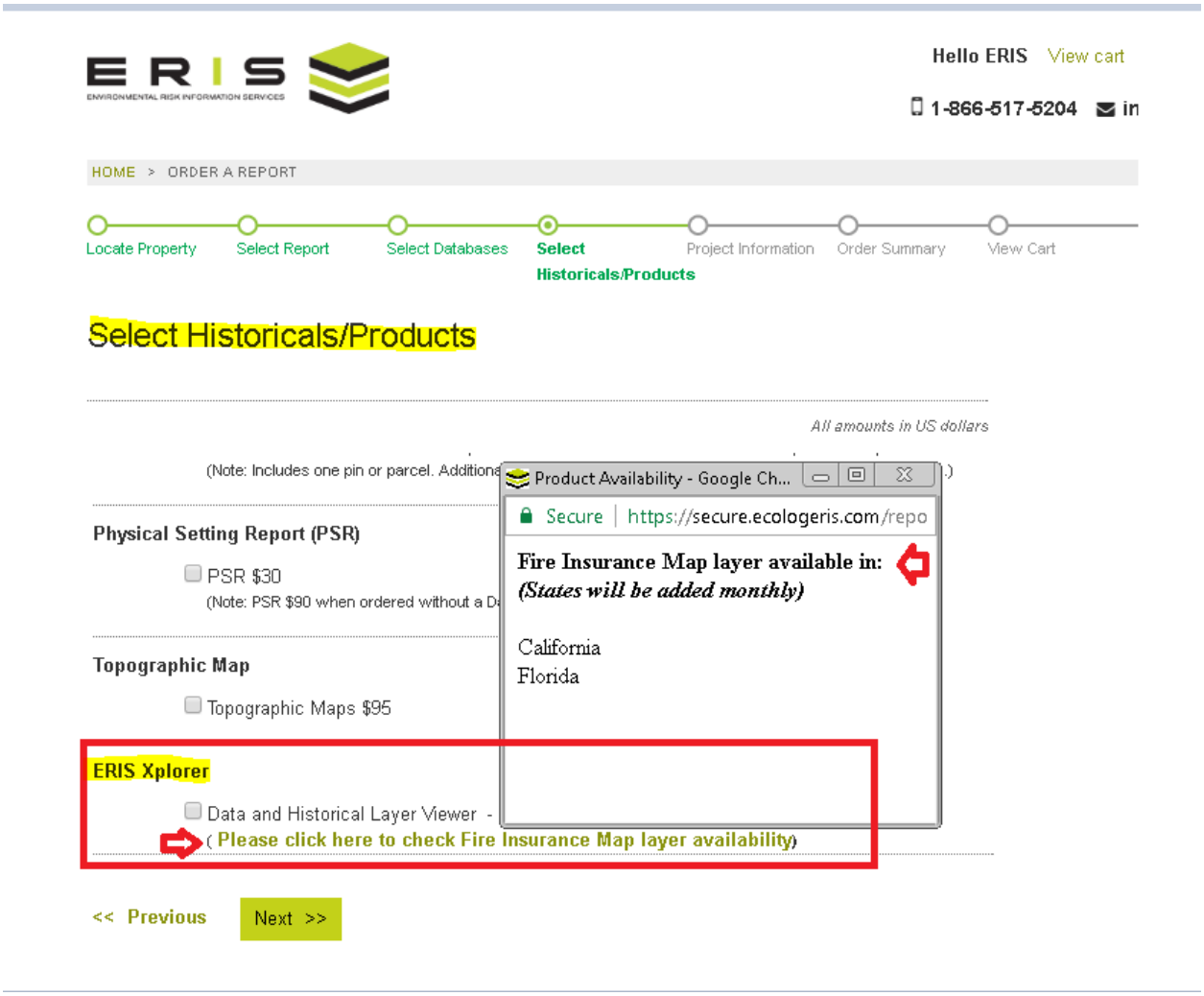
- Overlay data and multiple images over current street layers and compare changes over time.
- Filter data sources and view only the desired data sources on the map.
- Switch between 'street view', 'satellite', or 'terrain' base layers to more effectively analyze the project property and related data.
- Calculate the distance between 2 points or within a polygon area using the 'Measure Tool'.
- Draw and/or add comments directly to any layer, then print to PDF, for easy sharing between colleagues and clients.
- Look up specific address or key words using the 'Search' functionality.
- Reports and historical products ordered will be delivered and housed within the application – eliminating the need to leave the application to download reports
- Database Report sections (Report Summary and Excel Add-On reports) are always included with Xplorer; download the report from the 'Reports' tab.
- User-friendly interface with functionalities such as key word searches, filtering by source, transition and easy workflows

▲

Ordering ERIS Xplorer

ERIS Xplorer is available as an add-on feature to any US Database Report, Physical Setting Report or historical product including Aerials, Topo Maps, and Fire Insurance Maps. If not part of a package, Xplorer can be added to any order by selecting the option on the *'**Select Historicals/Products**' page* of the Online Order Form.

Note: Initially, FIM image availability within Xplorer will be limited to specific States. A list of States available appears under the ERIS Xplorer option.



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ERIS Xplorer may be added to any one of the following products or combination of products.

- Database Reports
- Physical Setting Report
- Aerial Photographs
- Fire Insurance Maps
- Topographic Maps

The Xplorer option will not be available if the order is placed **only** with City Directories or Chain of Title and Lien Search products.

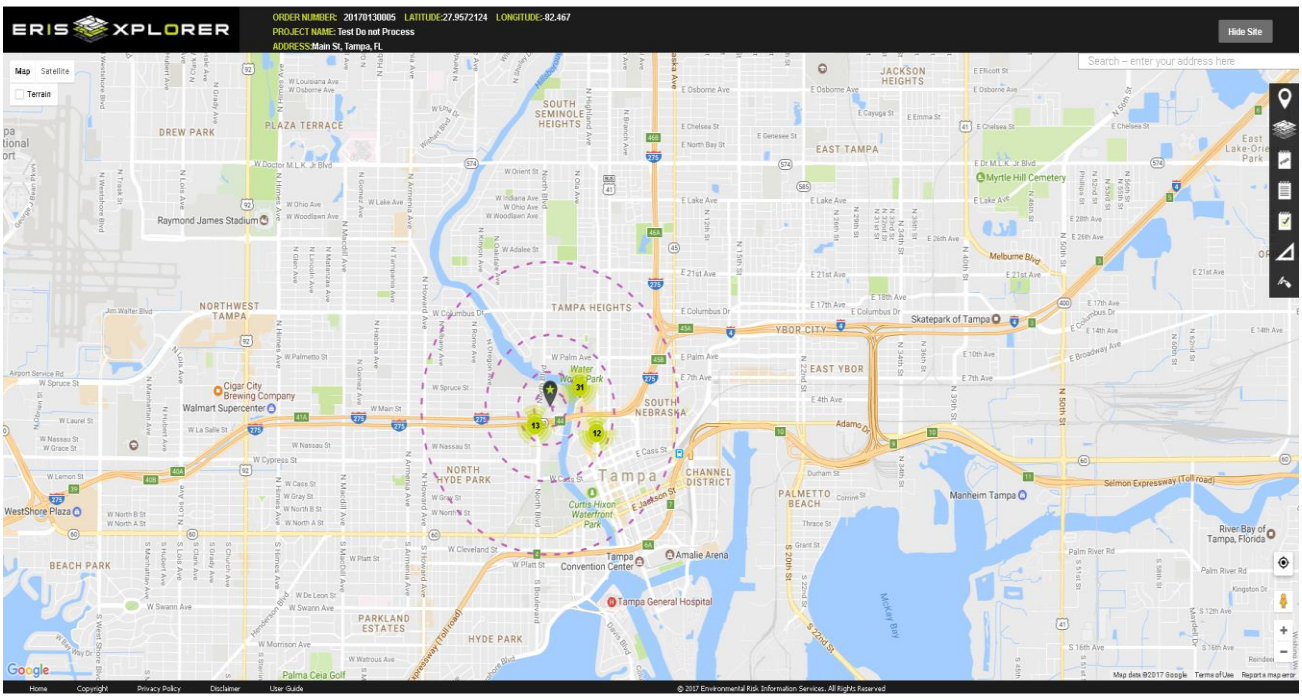
Access to Xplorer

Each order placed with Xplorer will have a unique URL. This URL can be accessed by clicking on the 'ERIS Xplorer' link under 'My Orders => Download Reports'. Clicking on the link opens ERIS Xplorer for that particular order in a separate browser window. As each product is fulfilled, they will be added as a layer in Xplorer.

2017/01/30	20170130005	Test Do not Process Main St Tampa, FL P.O.No.:	New	2017/02/01	View Summary	Eris Xplorer	Loucks James

ERIS orders will be processed as per the report type and product chosen by clients.

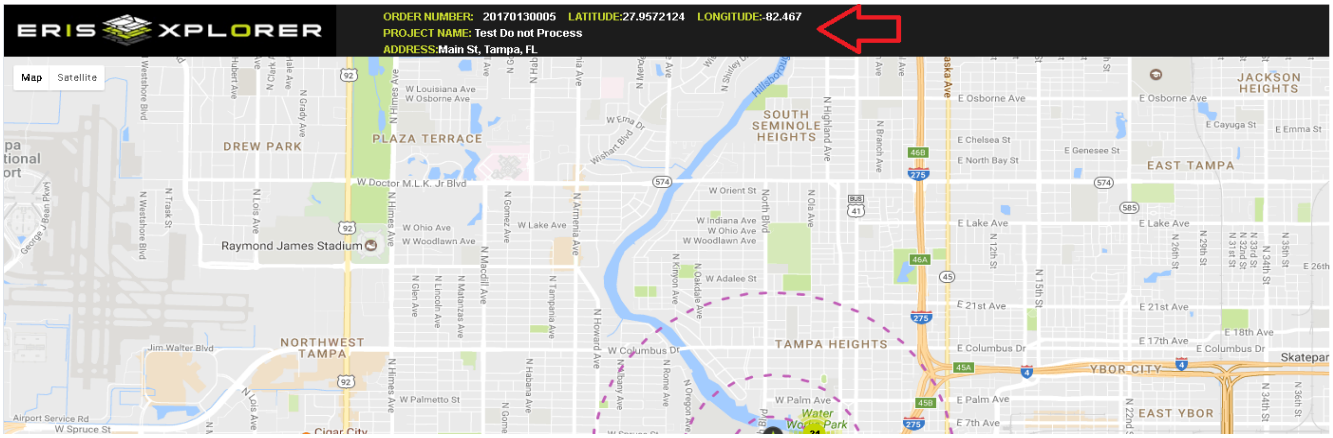
As soon as one of the product(s) or report is fulfilled, clients will be notified by an email.



Overview of ERIS Xplorer

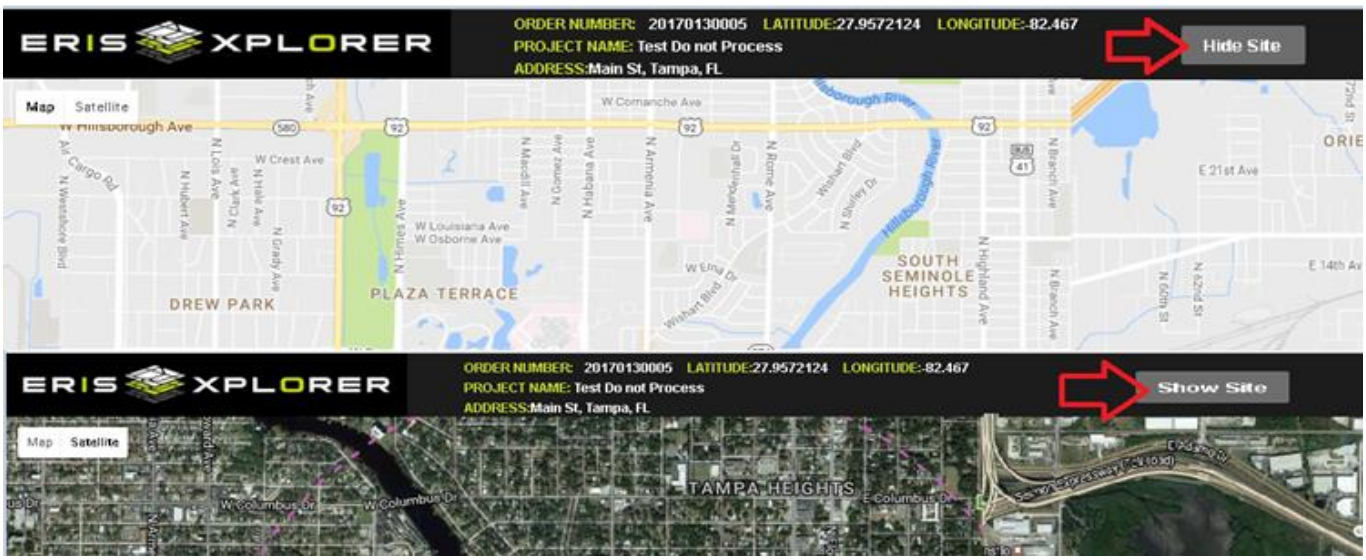
Order Details

Within the application, the order details including Order Number, Project Name, Address and Coordinate details are displayed at the top of the page.



Hide Site/Show Site

Users will be able to hide the project property marker by clicking on the 'Hide Site' function, located at the right corner of the header. To show the marker again, simply click on 'Show Site'.



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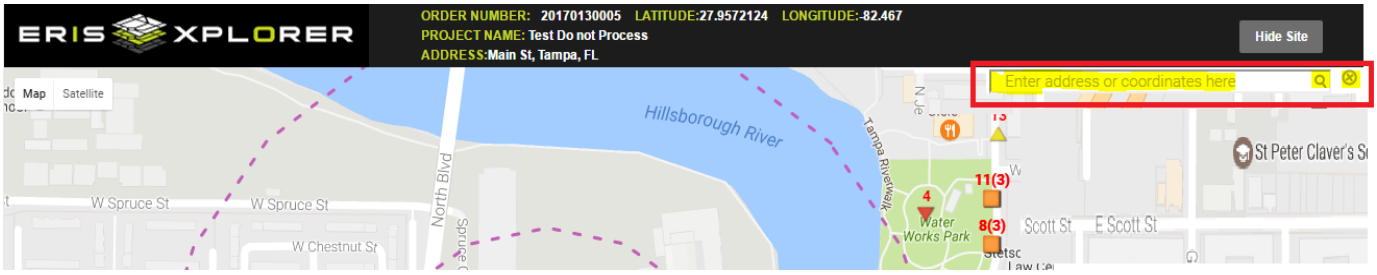
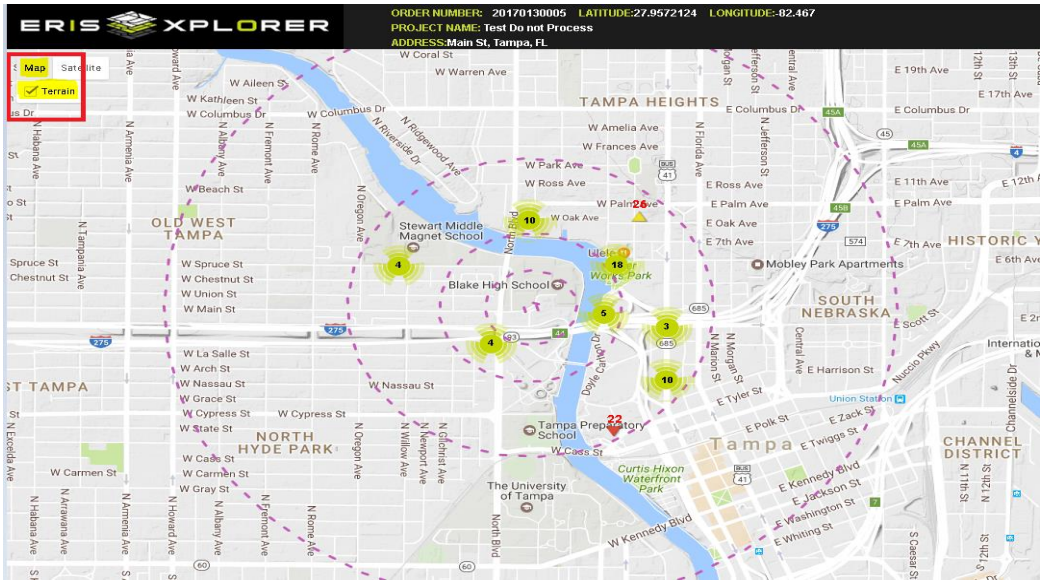
Address/Coordinates Search

Address or Coordinates can be entered in the search box in the top left corner of the map window. This feature will help the user in locating a specific address surrounding the project property. Enter the address or coordinates and press 'enter' - the results will be shown on the map with a push pin . To clear the text in the search box, click on the clear button.

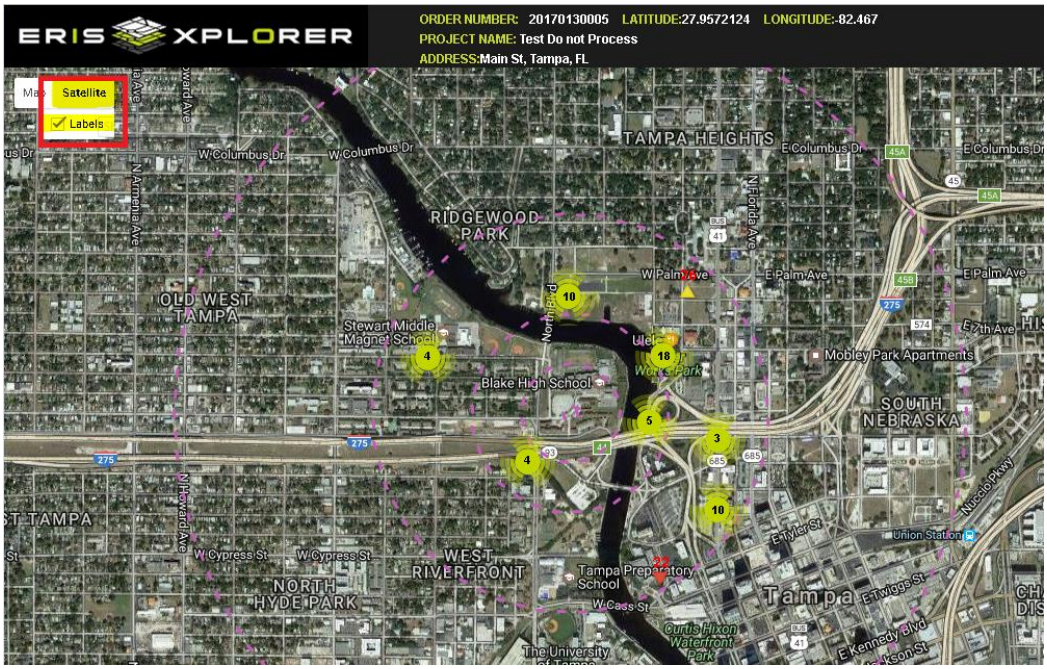


Map/Satellite Views

Different layers and views can be turned on and off within Xplorer. When the application first opens, the view is defaulted to a simple Map with streets and points of interest. Within the Map view, the Terrain layer can be turned on by clicking 'Map' on the left corner and selecting the 'Terrain' option.



Satellite imagery may be viewed by clicking on the 'Satellite' option. Street labels can also be turned on and off.



Recenter Map

Click on the 'Recenter' button to center the screen to the project property.

User Guide

The User Guide is available at the bottom right corner of browser.

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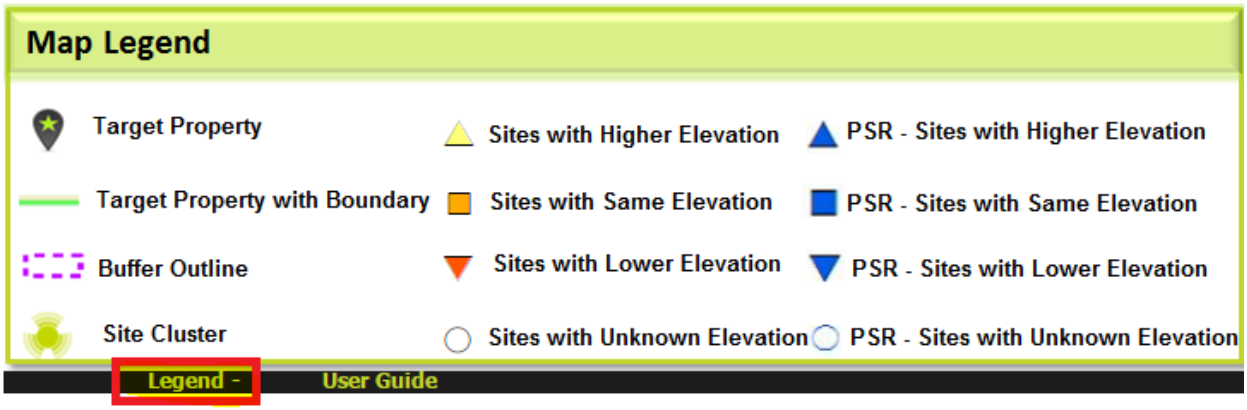
Map Legend

The Map Legend can be viewed by clicking on the text 'Legend', clicking on it again will minimize it.

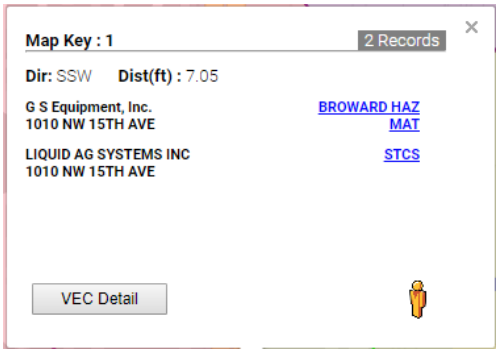


Clustered Sites

When the map is zoomed out, sites will be clustered and shown with the above cluster icon. The number in the middle of the icon represents the number of records at that location. When zooming in closer, records are displayed with different icons according to the elevation and each site will be labelled with a Map Key.

Note: Please refer to the Map Legend section for more information on icons.

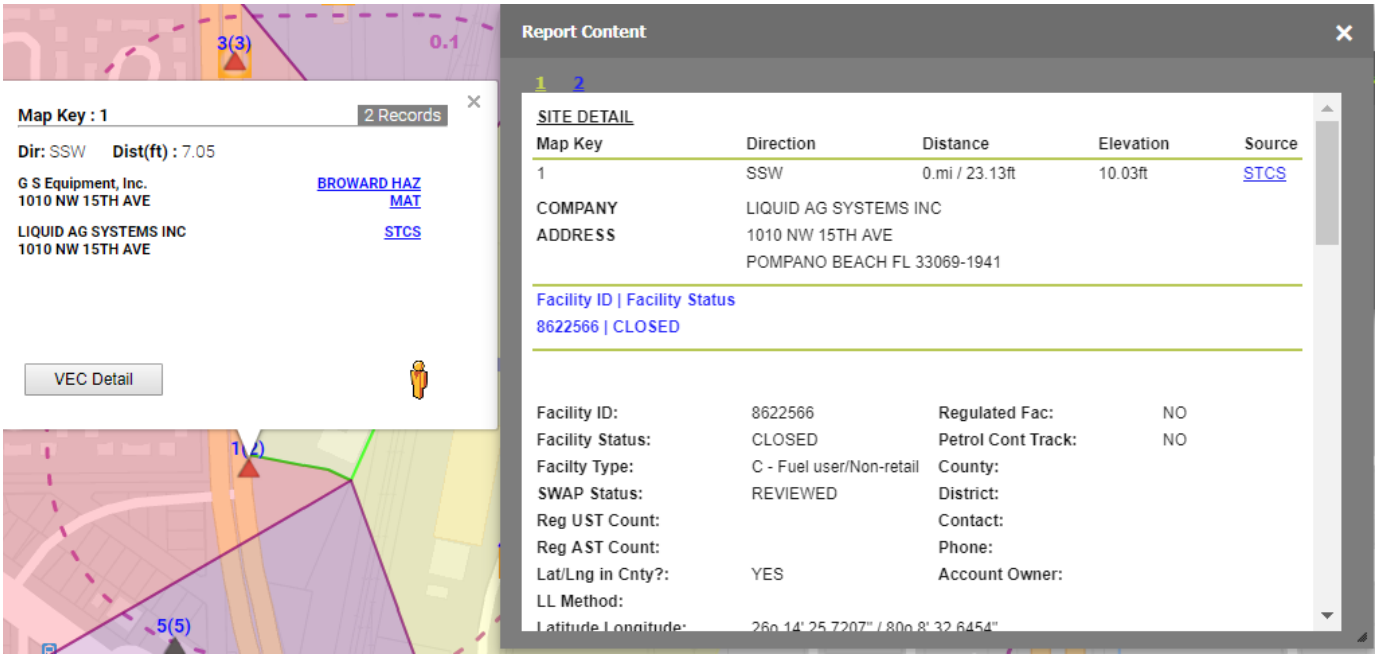
Record Review



- Clicking on any record on the map will display a pop-up window with the associated map key, direction, distance from the subject property, site address and source name.
- The pop-up window also provides map key and number of database records at the top right
- To view complete details for the record, click on individual **database** in blue (e.g STCS) and a separate window will open.

▲

- If more than one site is plotted at the same point, all the individual records (1 2) are displayed at the top for your clicking
- A 'street view' option is also available on the pop up window
- All symbols on the map and legend correspond to those in the pdf Database Report

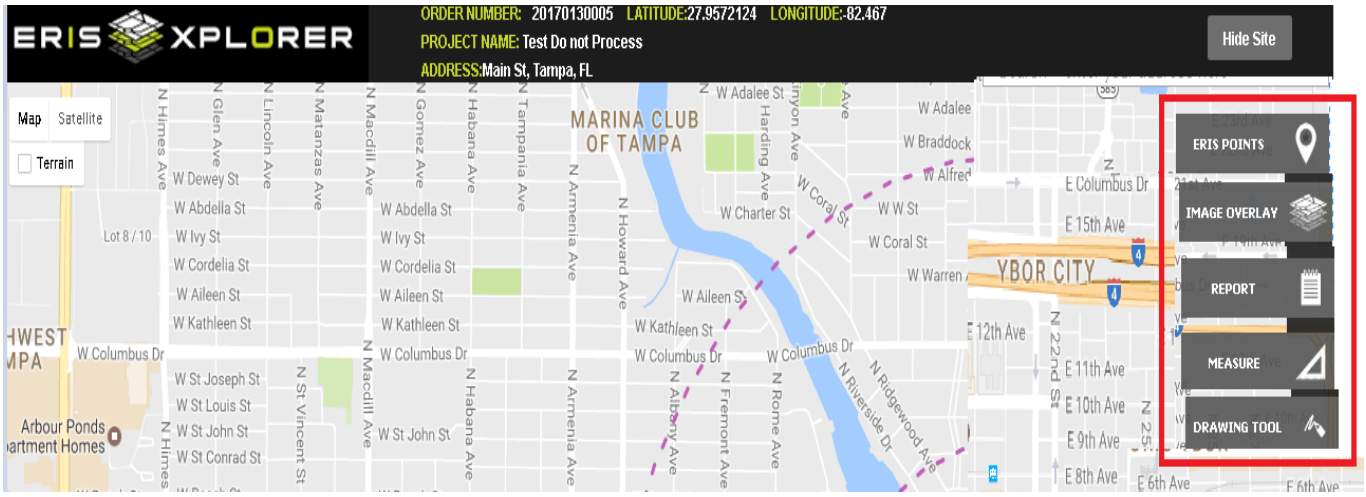


Xplorer Navigation Bar

The Xplorer navigation bar is located on the far right side of the screen. The bar contains the following tools:

- ERIS Points
- Image Overlay
- Reports
- Measure
- Drawing Tool

Once the user clicks on the desired tool, it will open the sub-menu if applicable. The widgets can be closed by clicking on the 'X'.



ERIS Points

When ERIS Points is clicked, it will open with different options to view the environmental data on the Xplorer platform. When the user clicks on any of the available options, the window will open up with related functionalities.

Options under ERIS Points:

- Filter by Source
- All Data
- Unplottables
- Report Summary

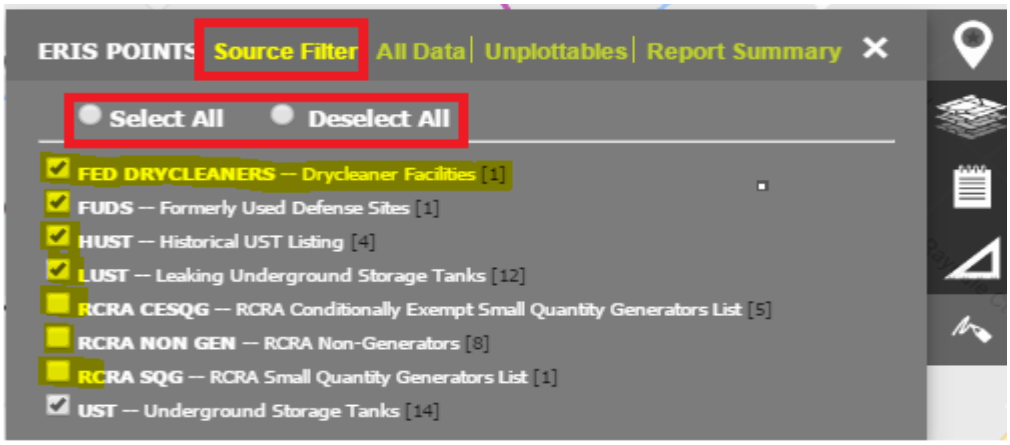
Source Filter

With the Filter by Source function, users will be able to filter on specific types of risk records. Only filtered sources will be displayed on the map.

Source acronyms and names will be displayed along with total number of hits.

'Select All' and 'Deselect All' options are available to select or deselect sources with one click.

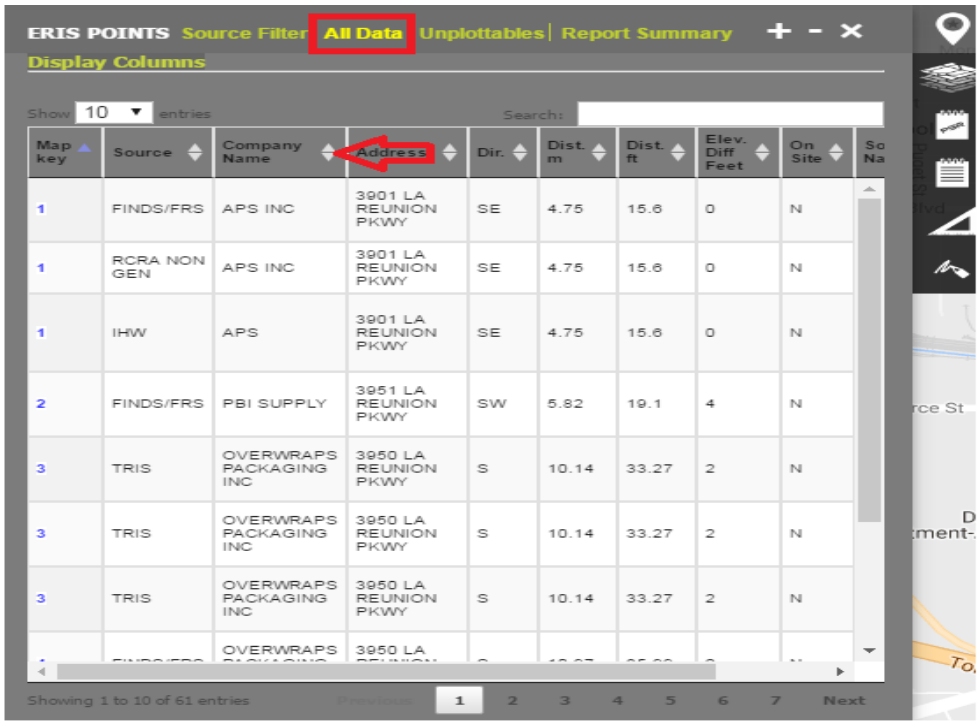
▲



All Data

Under the '*All Data*' tab, all the environmental risk records are displayed in an easy-to-read table format along with the following information - Map Key, On Site, Source, Source Name, Company Name, Address, Latitude, Longitude, Direction, Dist (M), Distance (ft) and Elev Diff (ft).

In this table view, all of the columns are sortable and the search function will help to narrow down the entries in the table.



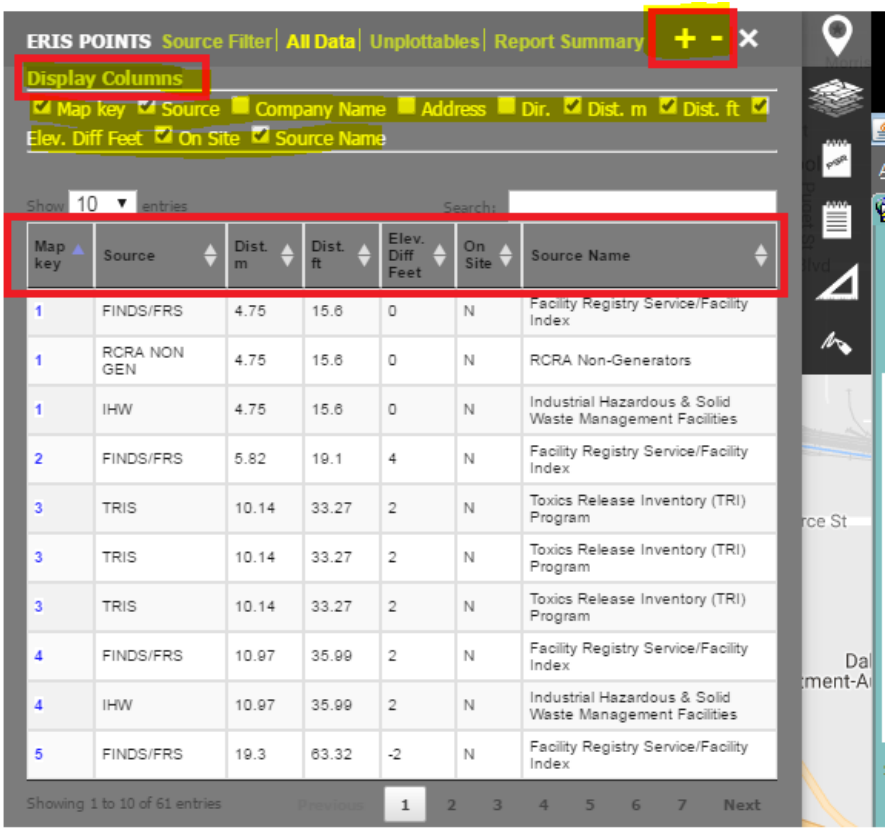
The user will also be able control how many records are to be displayed by using the 'Show' drop down function.▲

Map keys in the *All Data* table are interactive; clicking on the *'map key'* will display the record on the map by opening the window with summary details.

Map key	On Site	Source	Source Name	Company Name	Address	Latitu
1	N	LUST	Leaking Underground Fuel Tank Reports	SUPREME ROOFING CO., INC.		101 N,H
2	N	HHSS	Historical Hazardous Substance Storage Information Database	SUPREME ROOFING CO INC		101 ANC

Customize 'All Data' View

"Display columns" will allow the user to pick and choose the columns / data to be displayed. "+" and "-"at the top right of the tool window will help to expand or contract the size of the current window.



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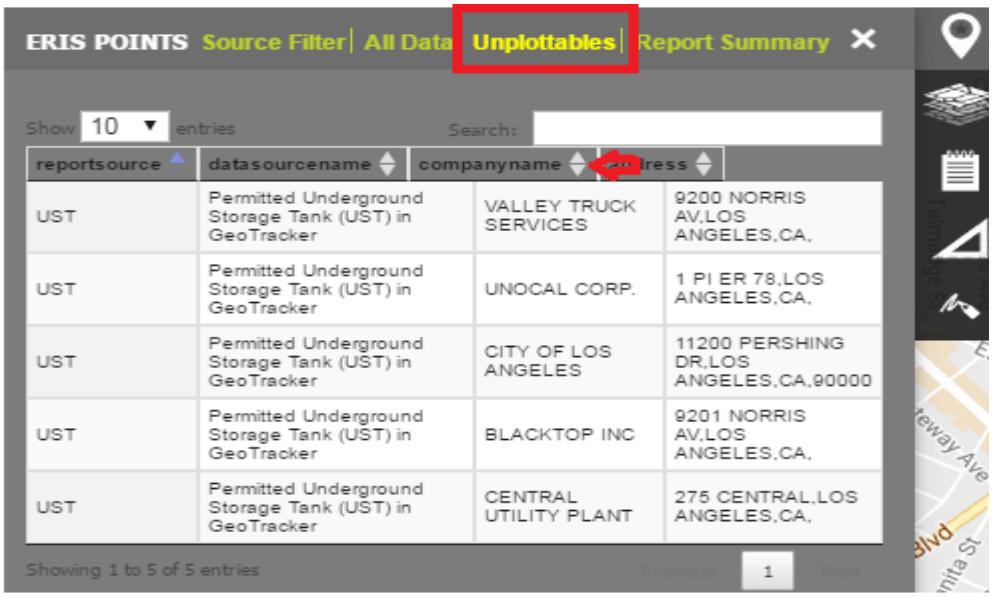
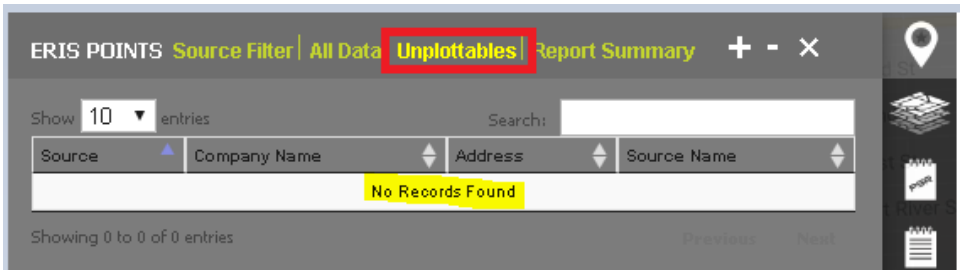
Unplottables

This section will display all the Unplottable records related to the order. These records could not be plotted due to limited information but could still be of concern. The columns are sortable and the search functionality is available.



If no unplottables found, a message will be displayed as 'No Records Found'



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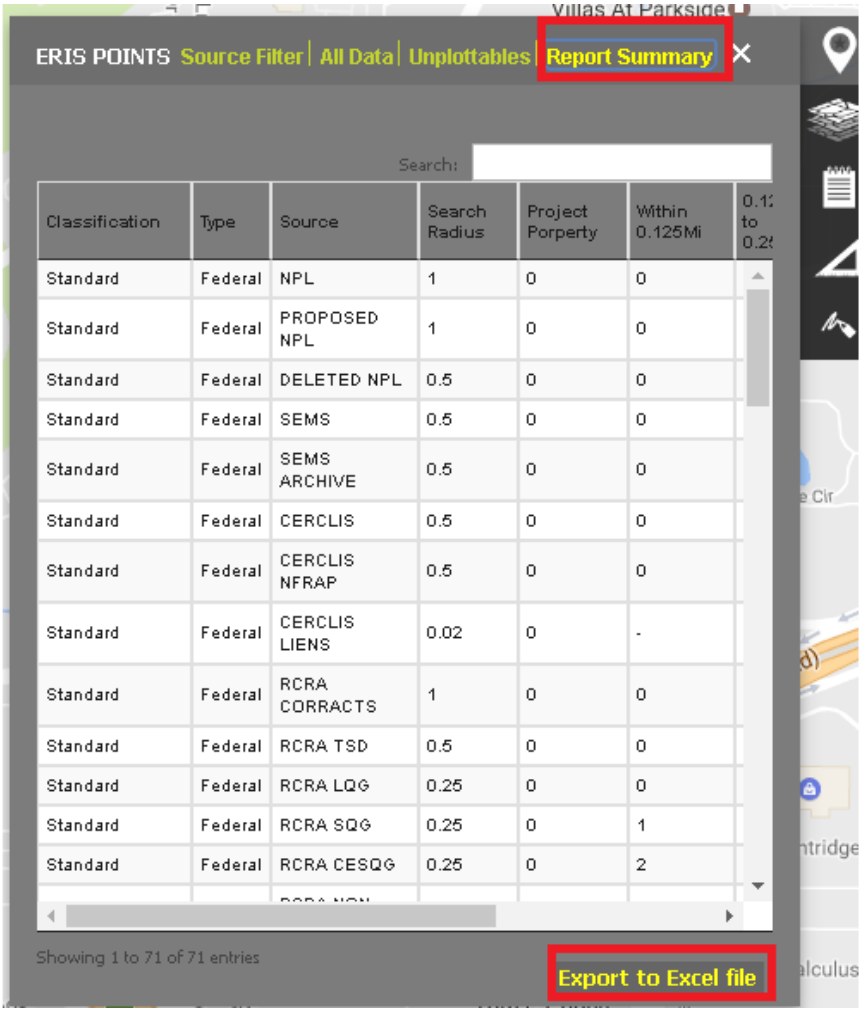
Report Summary

This section shows the data sources searched, to what distance and how many hits were recorded. A total for each column can be located at the bottom of the table. This report can also be downloaded in Excel format under the 'REPORTS' tab.



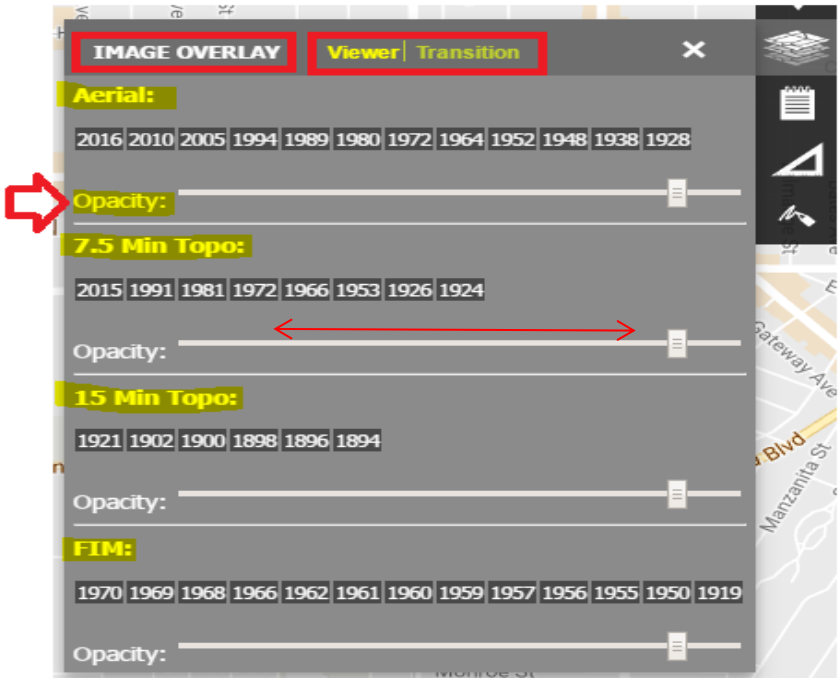
Classification	Type	Source	Search Radius	Project Porperty	Within 0.125Mi	0.1 to 0.2
Standard	Federal	NPL	1	0	0	
Standard	Federal	PROPOSED NPL	1	0	0	
Standard	Federal	DELETED NPL	0.5	0	0	
Standard	Federal	SEMS	0.5	0	0	
Standard	Federal	SEMS ARCHIVE	0.5	0	0	
Standard	Federal	CERCLIS	0.5	0	0	
Standard	Federal	CERCLIS NFRAP	0.5	0	0	
Standard	Federal	CERCLIS LIENS	0.02	0	-	
Standard	Federal	RCRA CORRACTS	1	0	0	
Standard	Federal	RCRA TSD	0.5	0	0	
Standard	Federal	RCRA LQG	0.25	0	0	
Standard	Federal	RCRA SQG	0.25	0	1	
Standard	Federal	RCRA CESQG	0.25	0	2	

▲

Image Overlay

Viewer

All ordered historical images are found in this section. You may click on any year's data to see the changes in the area over time. The *Opacity* feature (by moving the slider to the left/right) controls the transparency of the image against the base map and other layers.



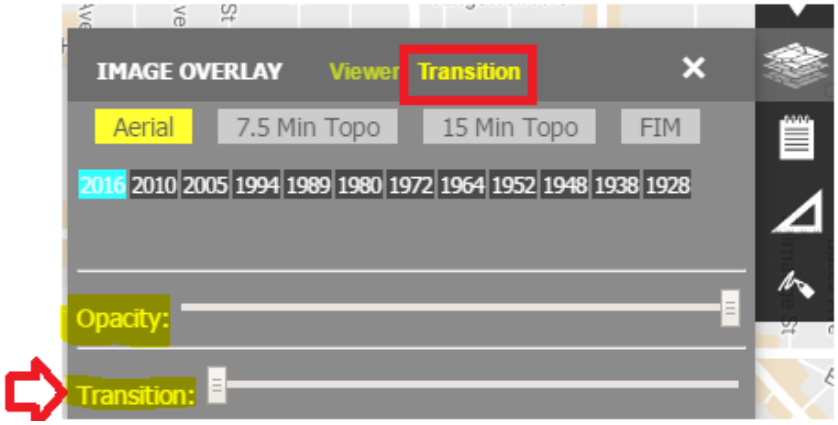
Transition

Transition is a very helpful tool to analyze year over year changes to the project property and surrounding area. Historical images can be viewed from year to year by moving the slider on the Transition bar from left to right.

As you move through the bar, years will be highlighted according to the image on the map.

Note: Opacity can be set on a desired level along with Transition, and images can be overlayed from multiple products. Example: Aerials can be overlayed on top of Fire Insurance Maps.

▲



Aerials

In this section of the Image Overlay, all of the available aerials will be displayed.

7.5/15 Min Topo Maps

Topographic Maps are displayed in 7.5 and 15 Minute series.

Fire Insurance Maps (FIM)

All available Fire Insurance Maps will be displayed in this section.

PSR – Physical Setting Report

Physical Setting Report (PSR) data will be visible in the navigation tool bar when the PSR is ordered.

PSR offers the different map views including Flood, Geologic, Soil and Wetland, and detail Well, Oil and Gas Data information, and Radon information. The PSR pdf report can be found under “Reports” off the main navigation bar.

PSR Layers

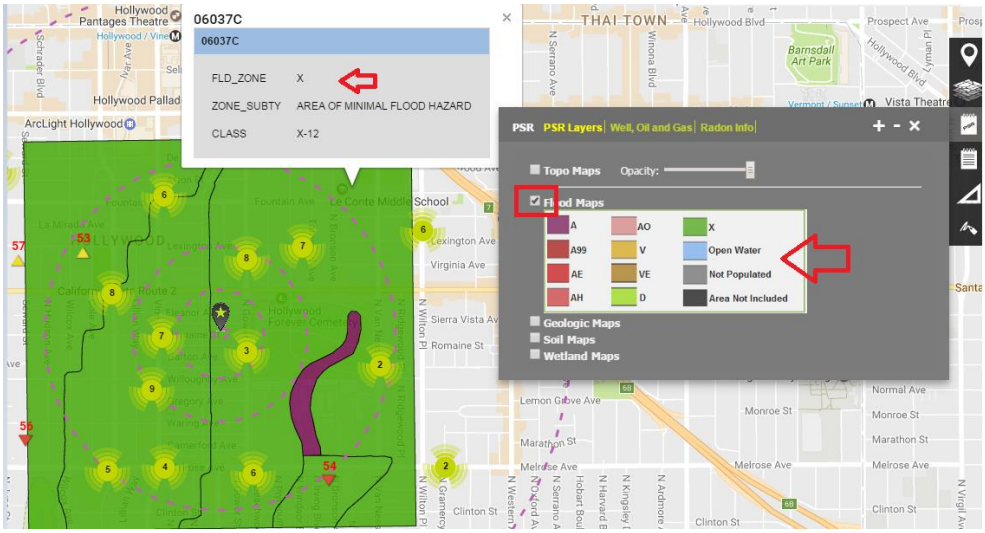
PSR Layers offers the view of Current Topo, Flood, Geologic, Soil and Wetland maps. You may overlay Flood, Geologic, Soil and Wetland maps on top of Topo maps, Aerials or FIMs.

- Layers can be selected by clicking the box in front of the map name.
- Detailed information on the layers can be viewed by clicking on the map.

▲

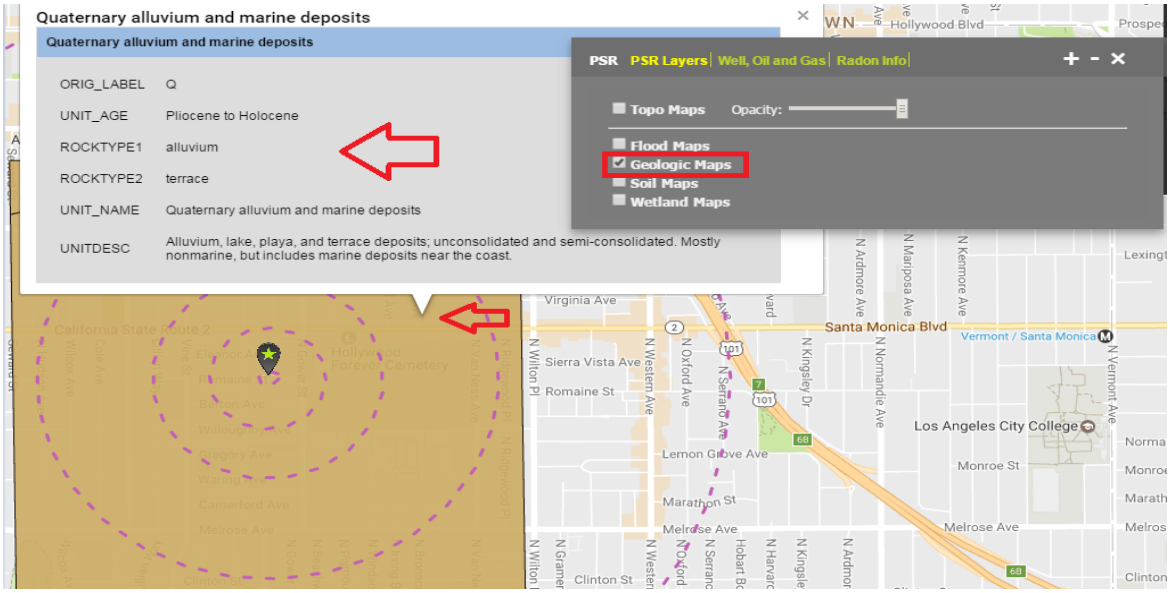
Flood Maps

This layer displays FEMA flood hazard zones. Map legend is displayed for easy viewing and analyzing once the flood layer is selected.



Geologic Maps

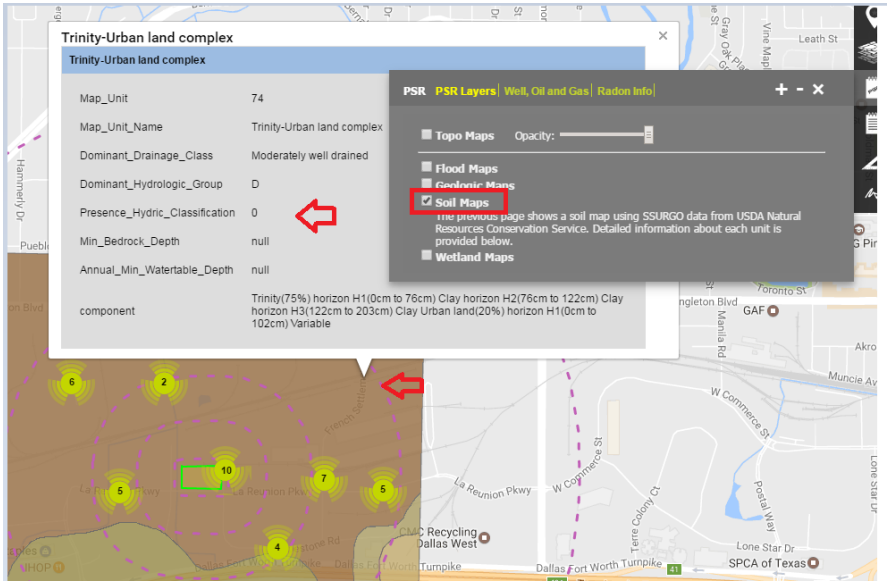
This layer displays USGS geology information, clicking on the map will display the detail information on the selected unit.



▲

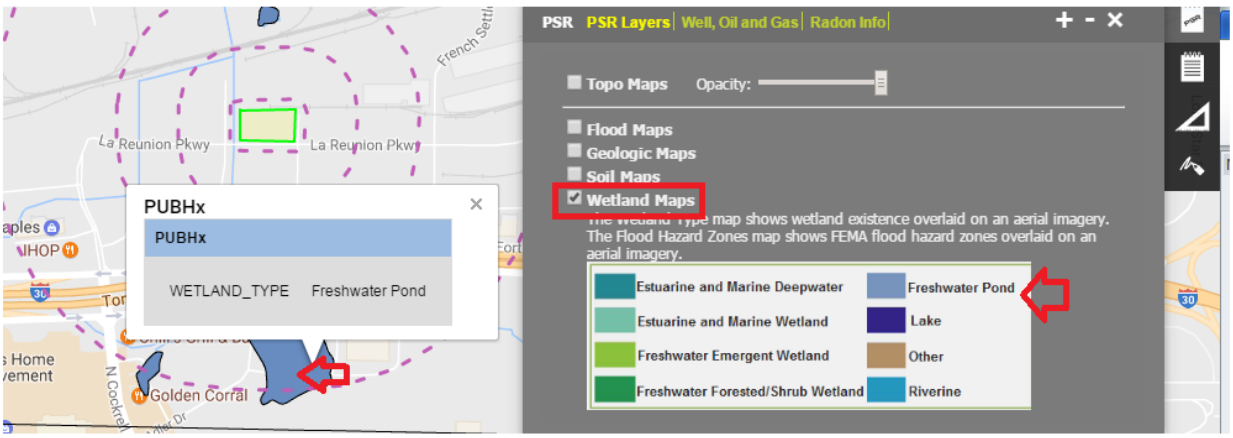
Soil Maps

This layer displays SSURGO (data from USDA Natural Resources Conversion Service) soil units around the target property, click on the layer to view more detail on the selected unit.



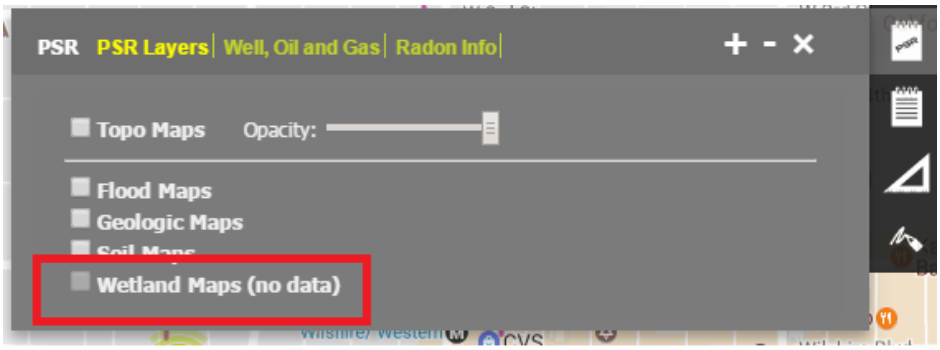
Wetland Maps

This layer displays wetland existence using data from US Fish and Wildlife. Map legend is displayed for easy viewing and analyzing once the wetland layer is selected.



[If No Data available on PSR Layers]

If data is not available on any of the PSR layers, message will appear to indicate as 'no data' and the layer cannot be selected.

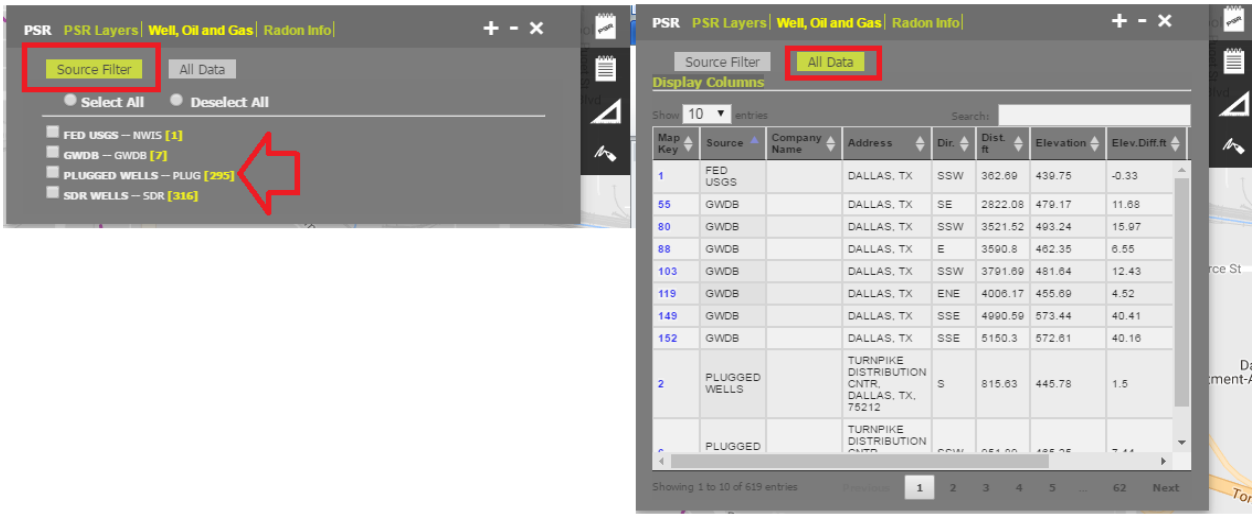


Well, Oil and Gas Data

This section of the PSR will contain information on Federal USGS, Wells, Water systems and Oil and Gas Wells.

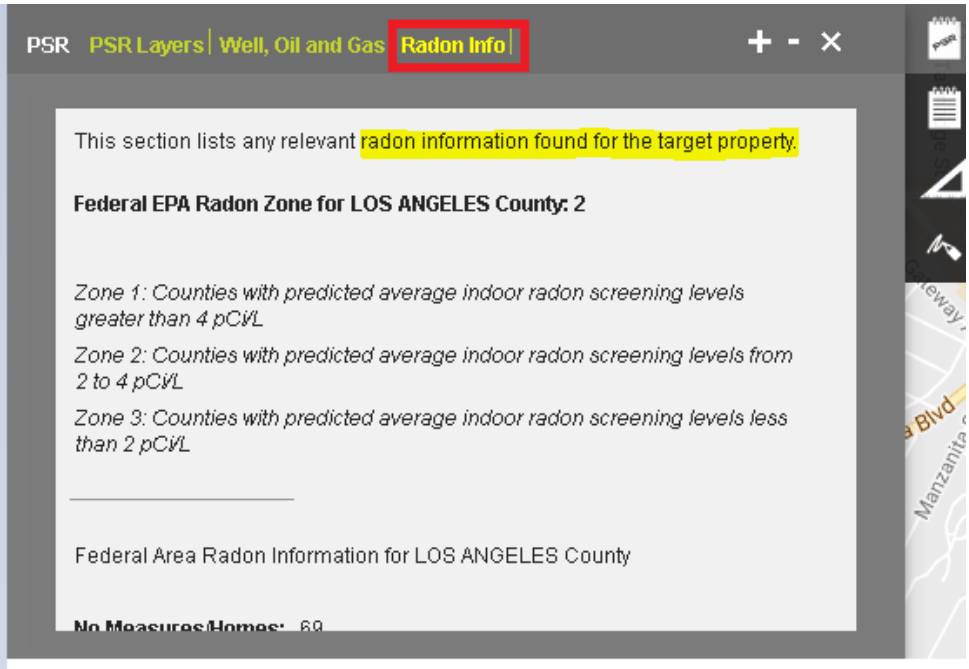
Navigation in this section is very similar to the 'ERIS Points' tool.

- Source Filter and All data table view are available for easy analyzing.
- Display Columns option available to customize the table view.
- The points will be shown with blue colored map symbols to distinguish from regular database points.
- Please see Map legend for more detailed information on map symbols.



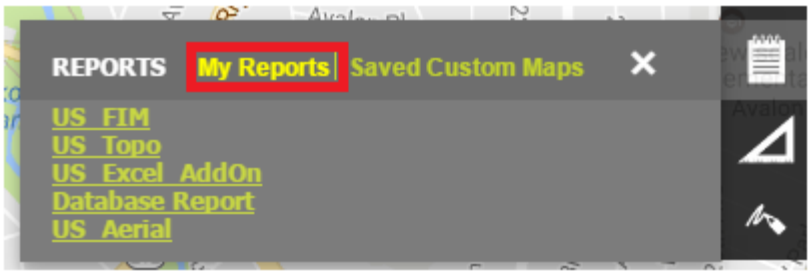
Radon Information

The radon info section provides relevant radon information for the target property and the radon screening levels.



Reports

The REPORTS tab will display the link to all ordered products and report pdf files. All reports are within one click away from ERIS Xplorer.



Excel Add-On and Report Summary reports (xls) are included in every order placed with ERIS Xplorer.

Excel Add-On

Excel Add-on will include a list of database hits along with Map Key, Company Name, Address, Coordinates, Distance, Direction and Status fields of Tank and Spill related sources.

▲

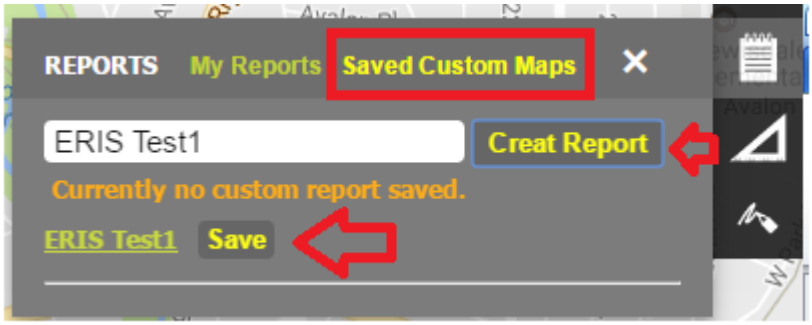
Excel Add-On
Order Number: 20170322022
Project Property: 01-8287-0-0001
789 N Telegraph Road Monroe MI
Elevation: 601.9601706 ft

ID	SOURCE	MAP_KEY	MAP_KEY	COMPANY	ADDRESS1	ADDRESS2	CITY	PROV	POSTAL_C	X_NAD_83	Y_NAD_83	DISTANCE	DISTANCE	DISTANCE	DIRECTION	ELEV_MET	ELEV_FEET	ADDITION	ADDITIONAL_INFO2
8.19E+08	AST	8	1	Floral City	720 Huber Dr		Monroe	MI	48162-332	-83.4075	41.93188	208.052	0.129278	682.5854	ESE	182.6063	599.102	Facility ID	Tank ID | Tank Status

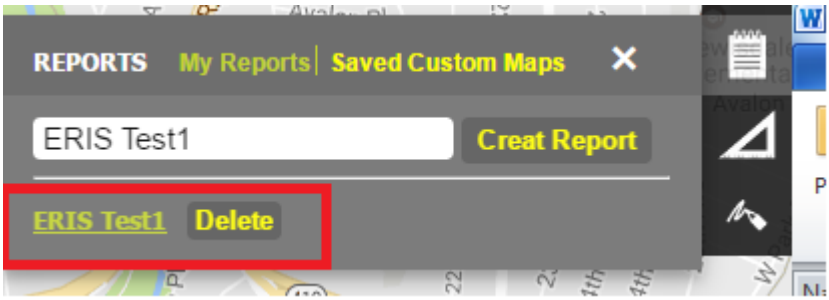
Custom Saved Maps

Custom printed reports will display the customized maps created and saved by the users along with their annotations.

- Once desired comments/drawings are added to the map, click on 'Create Report'.
- Custom named report will be created; click on the 'Save' button to keep reports.



- Once the file is saved, click on 'Delete' to remove unwanted files.

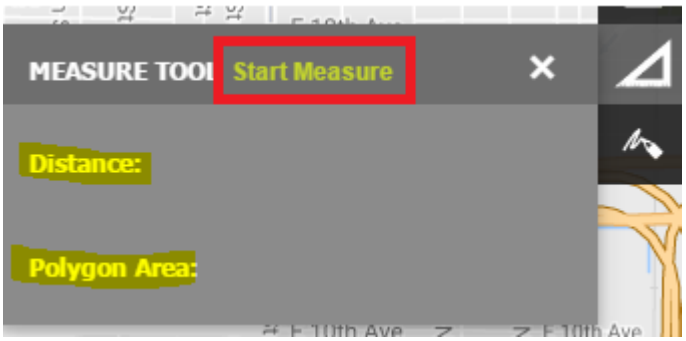


Note: There is a limit of five files that can be saved at one time. Saved files will be available for 30 days from the date they are created.

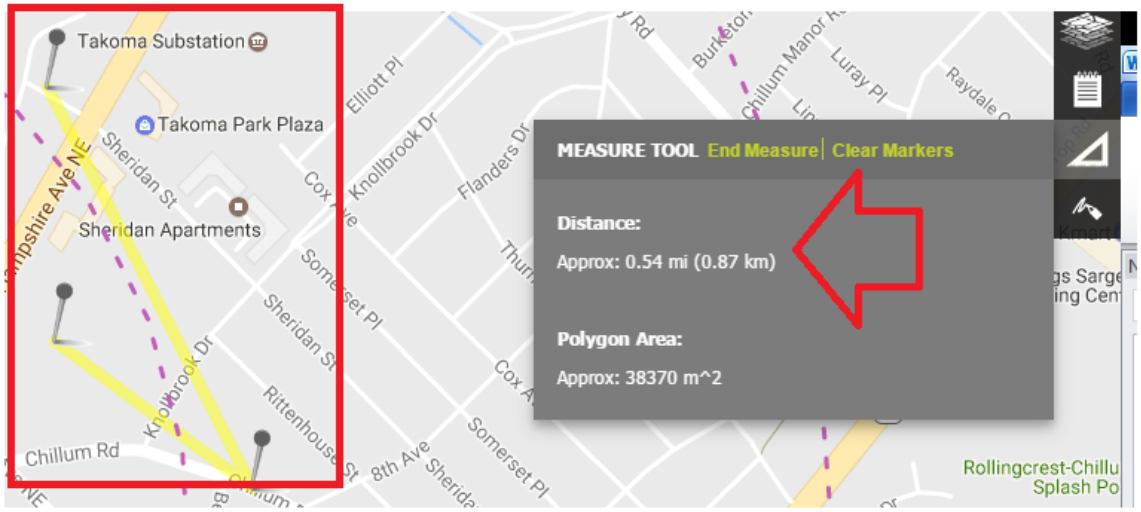
Measure Tool

The Measure tool measures distances between sites or the area of a drawn object.

Clicking on the Measure Tool will open up the measure widget.



- Click on 'Start measure'.
- Place pins on the map by clicking the desired locations.
- Measured distance/area will be displayed in the Measure Tool box.
- The number of pins placed on the map is not limited.
- Clicking on 'Clear Markers' will clear the pins on the map.



Clicking on 'End Measure' will bring you back to 'Start Measure'. The Measure Tool widget can be closed by clicking on the 'X'.

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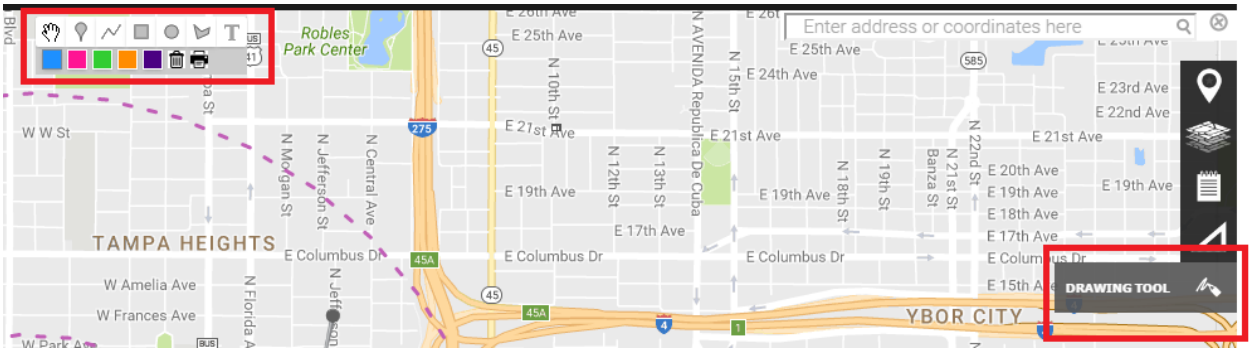
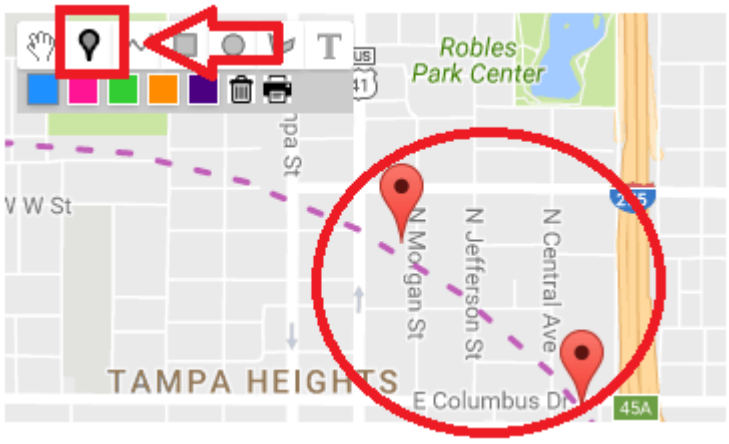
Drawing Tool

Clicking on the Drawing tool will open up the drawing bar at top of the Xplorer window.



Location Marker

Specific locations can be marked using this map pin icon.



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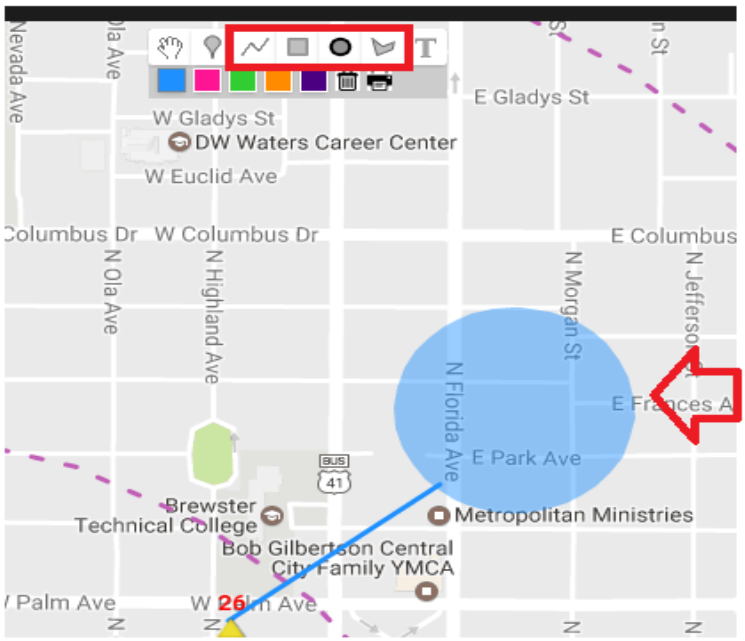
Shapes

Shapes can be drawn by clicking on the desired shapes from the tool box.



Adding Comments

Click on the 'Text' tool, and then click on the desired location on the map.

- Enter text in the text box and click on 'save' to display the text directly on the map. It can move to any desired location on the map.

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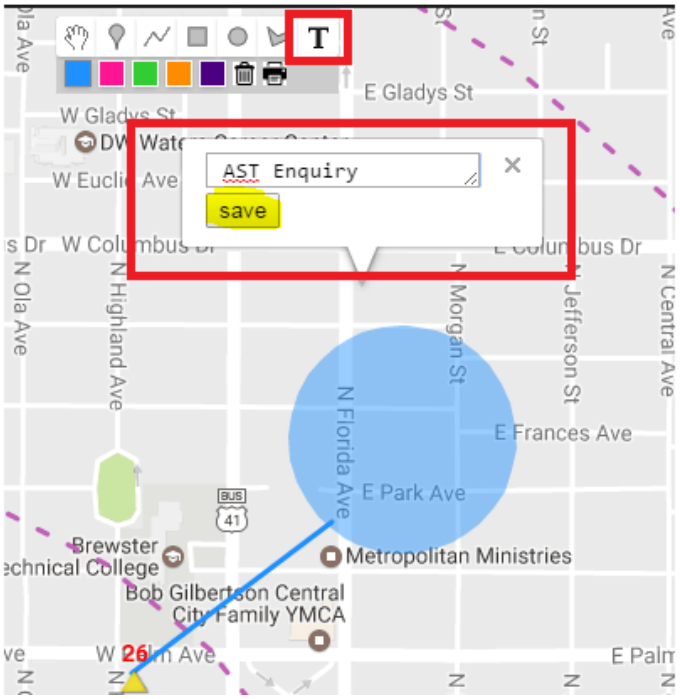
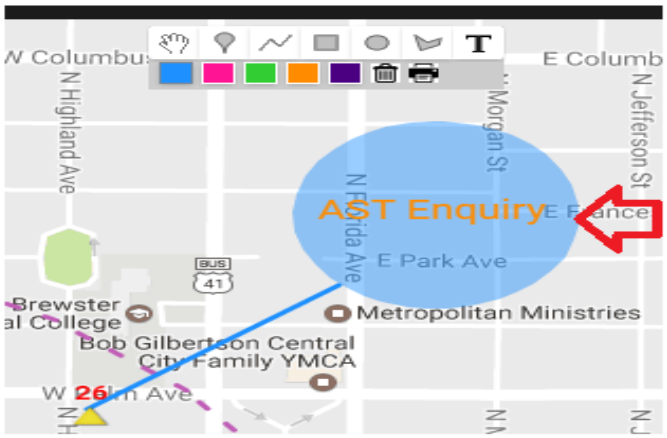
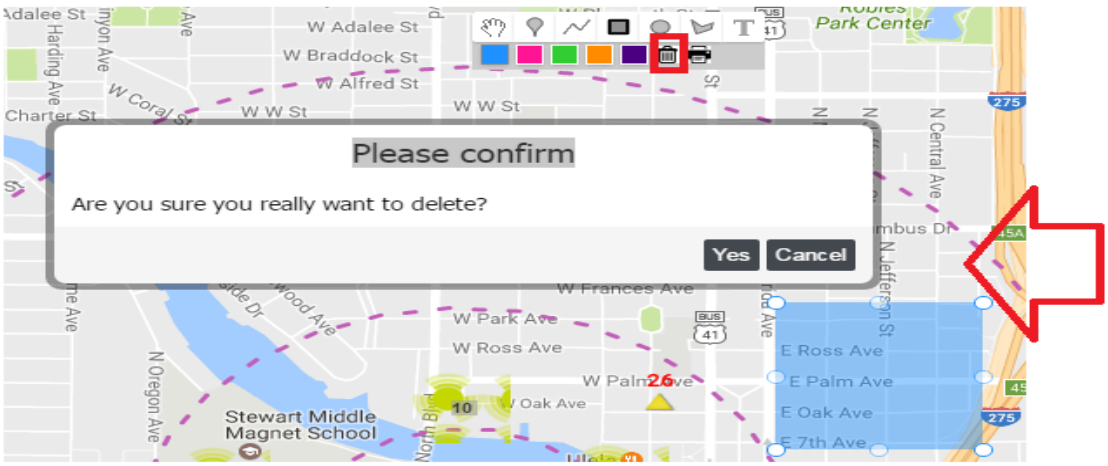




The Drawing tool bar contains a variety of colors for drawing shapes and adding comments.

Delete

Any drawn shape or text can be deleted from the map by selecting the shape/text and clicking on the Delete option. A warning message will appear to confirm the user's request.



▲

Hand Icon

Once you have completed editing the map with the selected drawing tool, ensure to click on the 'hand icon' to end the drawing mode.

Print

Once the desired comments have been added to the map, users need to do 2 things before they are able to print, namely save the image and open the saved image as a pdf.

When the printer icon is clicked, the screen capture will open in a new window as an image file. At the same time the Report navigation bar will open to "Saved Custom Maps', which will allow the user to save any image files for future reference. After the image is saved, the user may click it to open it as a pdf file, and print it.

Note: Please refer to 'Custom Saved Maps' section for more detailed information.

Layers

The LAYERS button is located on the top right hand corner of the header.

You may turn ON / OFF the display of Project site, Point Of Interest (POI), Street names, Tax Parcel or report Buffers on the map.

Customer Service/Contact

Should you have any issues or comments, Please feel free to contact us by email: support@erisinfo.com

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REFERENCES

[1] American Petroleum Institute, Bulletin No. 8, Characteristics of Dissolved Petroleum Hydrocarbon Plumes: Results from Four Studies, Newell, C.J.; Connor, J.A.; December 1998.

[2] Mace, R.E.; Fisher, R.S.; Welch, D.M.; Parra, S.P.; Extent, Mass and Duration of Hydrocarbon Plumes from Leaking Petroleum Storage Tank Sites in Texas, Geological Circular 97-1, Bureau of Economic Geology, University of Texas at Austin, 1997.

[3] Newell, C.J.; Hopkins, L.P.; Bedient, P.B.; A Hydrogeological Database for Ground-Water Monitoring, Ground Water, Vol. 28, No. 5, September/October 1990, 703-714.

[4] State Coalition for Remediation of Dry Cleaners, www.drycleancoalition.org.

[5] Domenico, P.A., An Analytical Model for Multidimensional Transport of a Decaying Contaminant Species, J. Hydrology, Vol. 91, 1987, 49-58

[6] Gelhar, L.W.; Welty, C.; Rehfeldt, K.R.; A Critical Review of Data on Field- Scale Dispersion in Aquifers, Water Resources Research, Vol. 28, No. 7, 1992, 1955-1974

[7] Newell, C.J., McLeod, R.K., Gonzales, J.R., BIOSCREEN Natural Attenuation Decision Support System, August 1996; EPA/600/R-96/087.