Nebraska Conservation and Environmental Review Tool (CERT) Accounts and Map Features: User Guide

Nebraska Natural Heritage Program
Nebraska Game and Parks Commission
April 20, 2018

This guide includes information on using the core mapping functions of the Nebraska Conservation and Environmental Review Tool.

For instructions on how to provide the necessary information to submit a project for review, consult the separate documentation available on the CERT help page.

This document is a customized version of the help documentation produced by NatureServe, Arlington, VA for users of its Environmental Review Tool platform.

Table of Contents

Tutorial

This tutorial is meant to be a general guide to functionality - the intention is not to cover all functionality but expose the user to various tools for further exploration. Additional documentation can be found by navigating the Contents. Clicking a link will navigate you directly to the help topic, which provides detailed information on the use and functionality of the components of the application.

1. If you are new to the system, **Create new account**, otherwise, **log in**.
   a. If you have forgotten your password, **Request new password**.
   b. To update your account settings, including Password, edit **My Account**.

2. Click the **Map** menu to navigate to the map.

3. Familiarize yourself with the **Map Navigation**.
   a. Use the **Find address or place** tool 

to find **Chadron State Park**.
   b. Using the **Zoom to Coordinates or Scale** tool  , zoom in to a **Scale** of **1:18,056**.
   c. Add a **Spatial Bookmark**  for **Chadron State Park** (by typing in the name and pressing the Enter key)
   d. Zoom to the Default Extent  of the map.
   e. Perform a **Feature Search** using the *Resource*: 'Sections' under 'Townships and Sections' **to** find *trs*: **T11R06WS03** and **Zoom** to the feature.
   f. Click Reset to remove the highlighting from the feature.
   g. Using the previously created **Spatial Bookmark**  , zoom to **Chadron State Park**.

4. Alter the content of the map:
   a. **Switch Basemap** 

to **USGS National Map** to determine where campsites and picnic areas are located within the state park.
   b. Using the **Zoom to Coordinates or Scale** tool  , zoom out to a **Scale** of **1:144,448**.
   c. **Switch Basemap** 

to **Light Gray Canvas**.
   d. Work with the **Layers** to make them visible/invisible, view their symbology, alter the layer transparency, etc.
   e. Use the **Add Resource** tool 

to add a map service to the map via URL: https://www.fws.gov/wetlands/arcgis/rest/services/Wetlands/MapServer

This third-party map service shows the National Wetlands Inventory (NWI) data (note that It may take a while to load).

f. Use the **Find address or place** tool 

to find **Funk, NE** and use the Identify tool to identify some of the NWI features near Funk.

g. Use the **Add Resource** tool 

to add another map service to the map via URL: **https://maps.outdoornebraska.gov/arcgis/rest/services/OpenData/OpenDataLayers/MapServer/50**

h. The **Lake Contours** map service is added within the *Added Resources* section of the *Layers* tab.

i. Hover over the **Lake Contours** layer name and click the dropdown  icon to the right and select **Zoom To** to zoom to the extent of the layer. Notice that it is not visible: this is because this map service only displays when you are zoomed in.

j. Using the **Zoom to Coordinates or Scale** tool  , zoom to a **Scale** of **1:36,112**, **Latitude/Longitude (Decimal), and** coordinates of *Latitude*: **41.9212** and *Longitude*: **-99.3219** at a **Scale** of **1:36,112**.

k. Close the Zoom to Coordinates or Scale Window, and use the **Identify**  tool to view various attributes of the **Lake Contours** at this location, including a buffer of 1 Mile to retrieve all contour features within a mile of the point on which you clicked.

l. Select Show Table/Results. Note: Table can be printed or downloaded as a CSV file into an Excel spreadsheet

5. Click on the **Make a Map** tab and add **Points**, **Lines**, **Polygons** and/or **Text** to the map.

a. To add a **Point**:

- Select Drawing Type of Points and click Add. Click on the default **Draw Shape** tool  and click on the map.

- Enter **Coordinates** via the **Additional Mapping Options** tool  .

b. To add a **Polygon**:

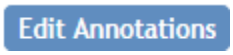
- Select the default **Draw Shape** tool  and digitize a polygon.

- Upload a shape from a zipped shapefile using the **Upload Shapes**  tool.

c. To add a **Line**:

- Digitize a line after selecting the **Use Freehand** option from **Draw Settings**  .

d. Add **Text** to the map of various colors, sizes, and styles.

e. Switch back to Drawing Type of 'Lines,' and **Edit Annotations** 

to edit the **Line** to change the **Line Style**, **Line Color**, and **Line Thickness**.

8. After **Making a map** by adding various annotations, **Print**  the map.

9. **Clear All Annotations** 

from the map.

10. **Log out** to close your session.

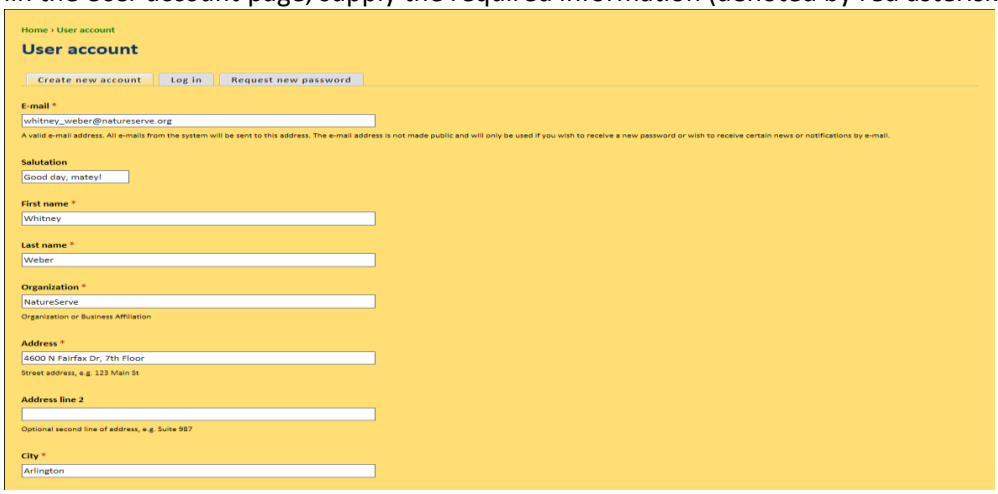
User Accounts

Create New Account

Steps:

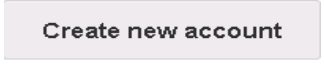
1. Within the *Home* page, click **Create New Account**. Alternatively, click **Register** in the top right corner of any page.

2. Within the *User account* page, supply the required information (denoted by red asterisks *).



a. Once the form is filled out, read and **Accept** Terms & Conditions of Use 

.

b. Click **Create new account** 

at the bottom of the page.

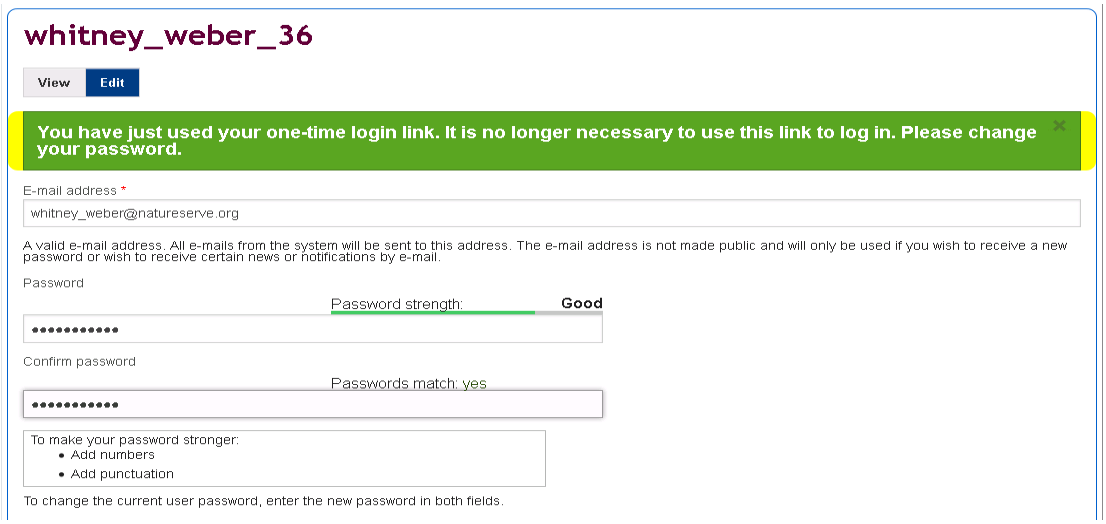
A message is displayed on the *Home* page, indicating that further instructions have been sent to the email address entered during account creation. This verifies that the email address is

valid and minimizes spam submissions.

3. Open the email and click on the link provided to activate the new account.

4. Within the *Reset password* page, click the **Log in**  button.

   a. Create a new password and confirm it.



   b. If desired, upload a picture and set the local **Time zone**.

   c. Click **Save**  at the bottom of the form.

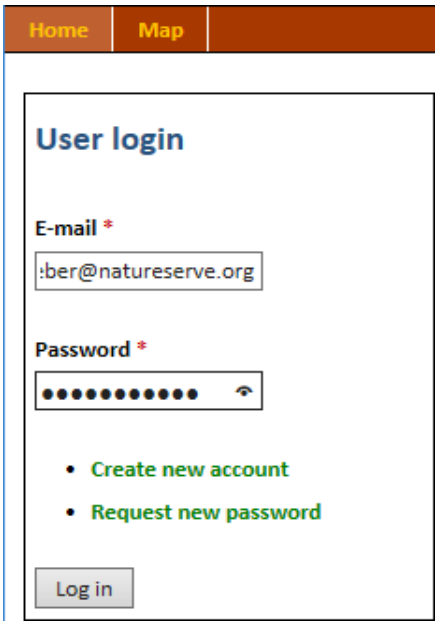
   d. A message will appear at the top of the page indicating the changes have been saved; the new account is now enabled.

5. Proceed to the desired menu to begin working.

Log In

Steps:

1. Within the *Home* page, enter your **E-mail** and **Password**.



2. Click the **Log in** Log in button.

3. Once logged in, proceed to the desired menu to begin working.

Log Out

Steps:

1. From any page, click **Log out** in the upper right corner.

2. You will be returned to the *Home* page.

My Account

Allows user to update account settings, including **Password**.

Steps:

1. From any page, click **My account** in the upper right corner.

2. Within your account page, click the **Edit** Edit button to modify your user settings.
   - To change the **E-mail address** or **Password** associated with the account, enter the **Current Password**.
   - **NOTE**: If you have forgotten your password, click **Request new password** under the **Current password** text box.

3. Click **Save** Save at the bottom of the form.

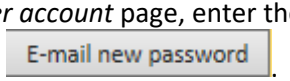
4. A message will appear at the top of the page indicating the changes have been saved; the new account is now enabled.

5. Proceed to the desired menu to begin working.

Request new password

Steps:

1. Within the *Home* page, click **Request new password**.

2. In the *User account* page, enter the **E-mail** associated with your account and click **E-mail new password** 

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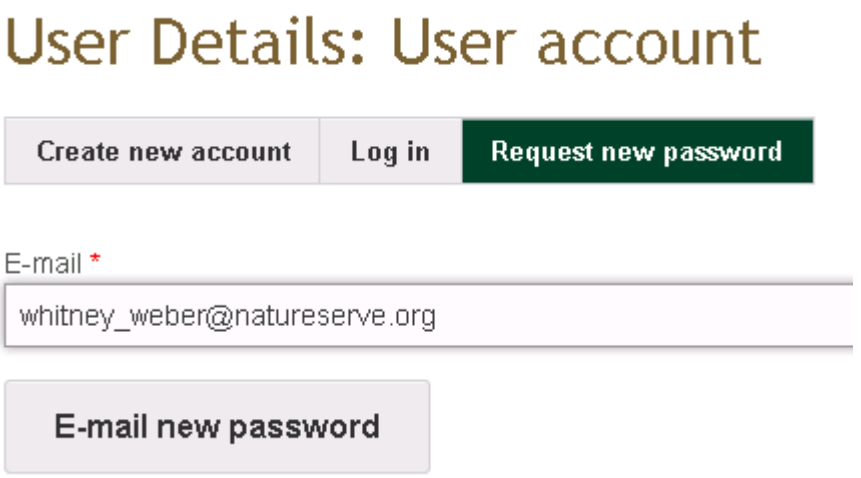
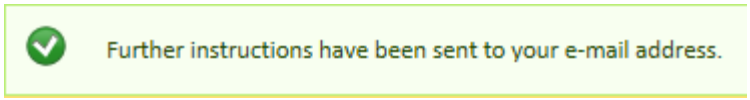


3. A message will be displayed indicating that further instructions have been sent to the e-mail address entered.



4. Open the email and click on the link provided to activate the new account.

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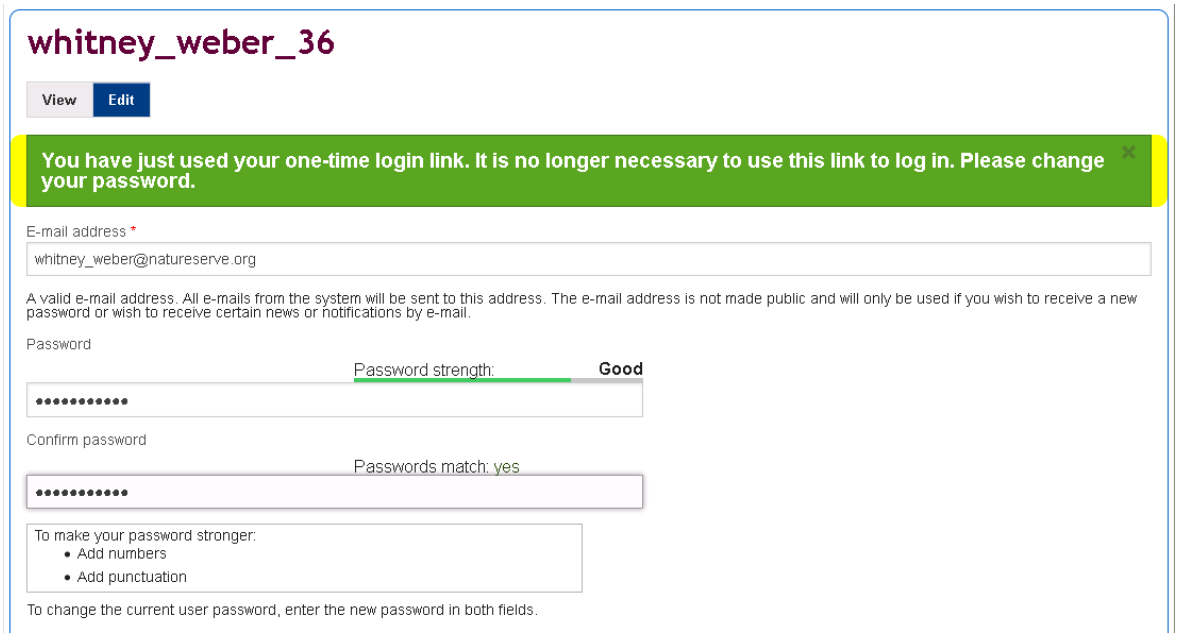
button.

   a. Create a new password and confirm it.



b. If desired, upload a picture and set the local **Time zone**.

c. Click **Save**  at the bottom of the form.

d. A message will appear at the top of the page indicating the changes have been saved; the new account is now enabled.

6. Proceed to the desired menu to begin working.

Map Navigation

Several categories of tools are available for efficiently moving to specific locations and changing the display in the map viewer.

- Navigation Tools:
  - **Find Address or Place**
  - **Scale bar**
  - **Zoom to Coordinates or Scale**
  - **Overview map**
  - **Spatial Bookmarks**
- Extent tools:
  - **Default Extent**

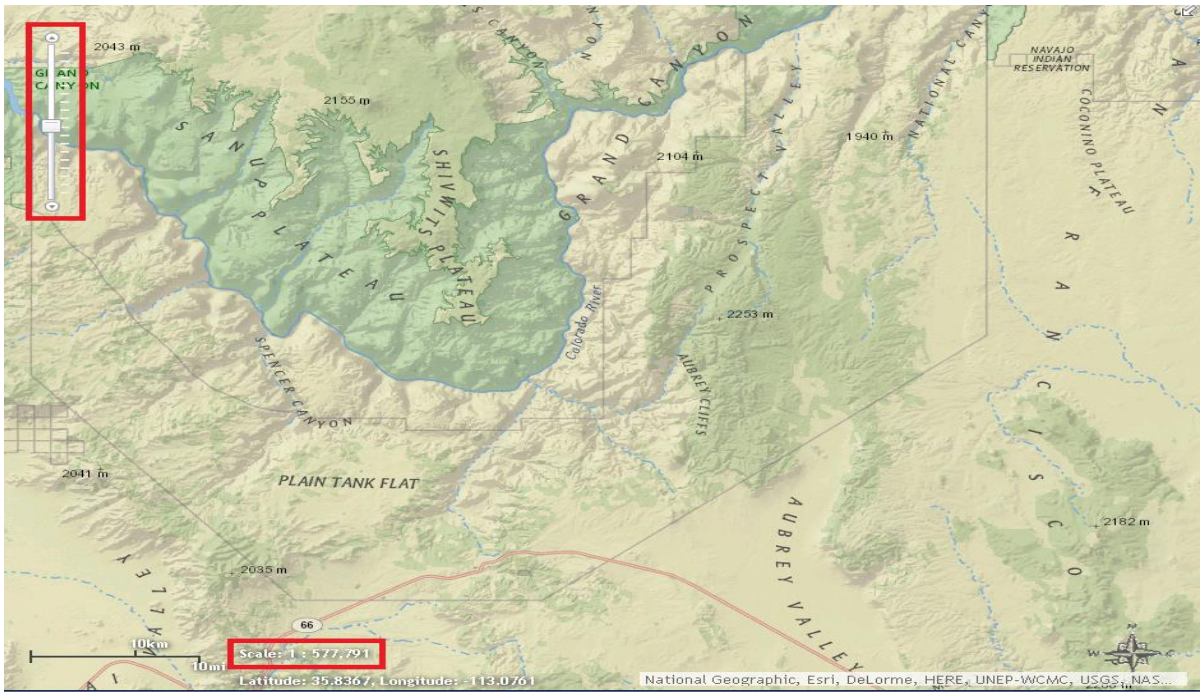
- **Previous Extent**
- **Next Extent tools**

- Shortcuts:
  - **Zoom In**
  - **Zoom Out**

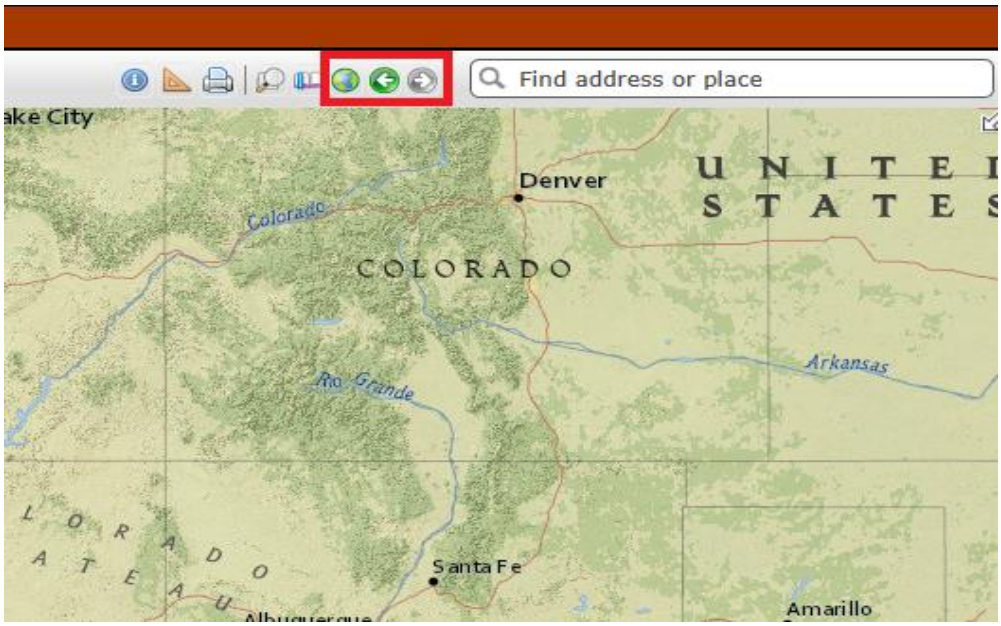
Scale Bar

Slide the scale bar up and down to zoom in and out respectively, changing the map extent.

NOTE: the map scale and coordinates are visible in the bottom left hand corner of the map viewer (example below) and change accordingly when the scale bar or any other navigation tools are used.



Extent tools



Default Extent

To zoom to the initial extent of the map, click the **Default Extent** icon located in the upper right corner of the map title bar.

Previous Extent

To zoom to the previous extent of the map, click the **Previous Extent** icon located in the upper right corner of the map title bar.

Next Extent

To zoom to the next extent of the map, click the **Next Extent** icon located in the upper right corner of the map title bar.

Shortcut Tricks

Zoom in - Hold the SHIFT key while dragging a box on the map.

Zoom out - Hold SHIFT and CTRL keys while dragging a box on the map.

Find Address or Place

This tool navigates to locations on the map using the **ArcGIS Geocoder** as the source of the data.

Steps:

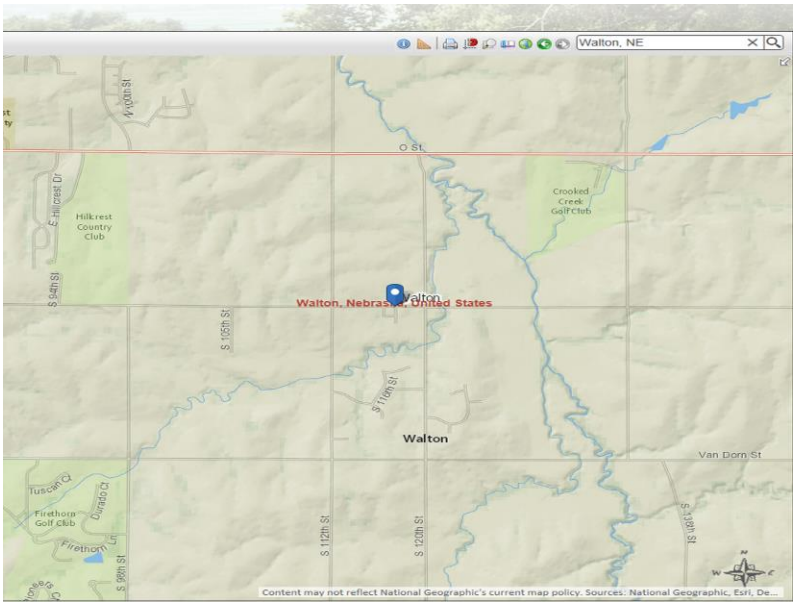
Found in the upper right corner of the Map, the **Find address or place** tool uses the ArcGIS Geocoder as the source of the search, by default.

1. Enter the desired location (i.e., **Walton, NE**) in the *Find address or place* text box 

.

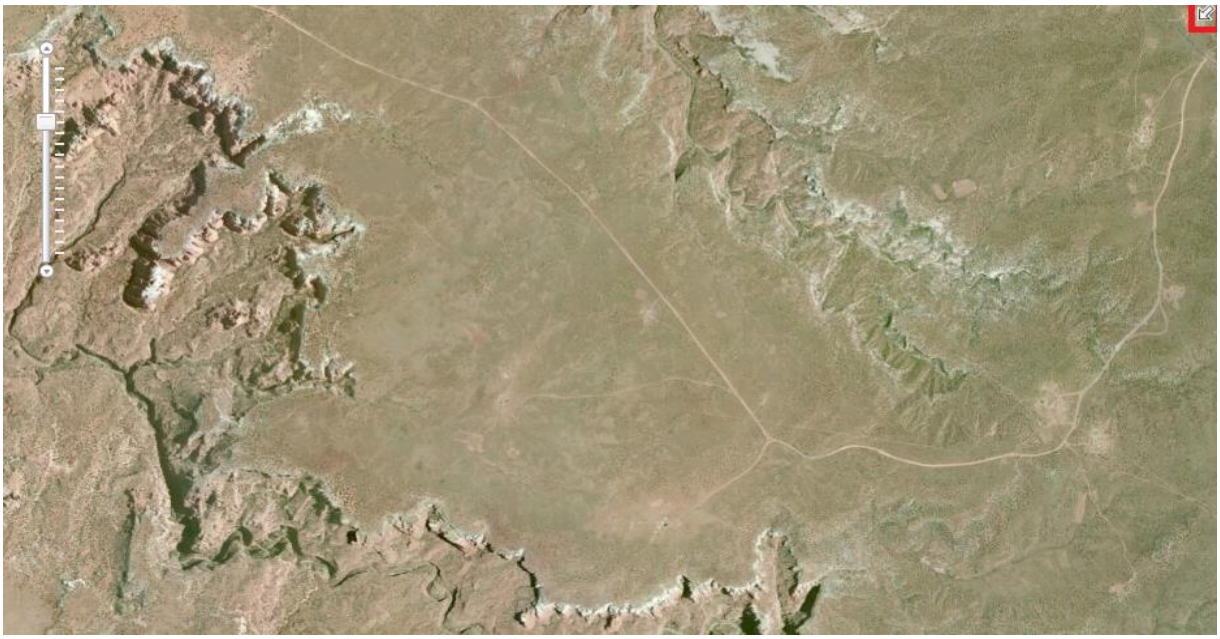
2. Click <**Enter**> or click the **Find**  icon to zoom to the specified location on the map.

NOTE: An alternate mode of zooming to a specific location, in cases when the desired location is not found, is to use the **Feature Search** tool to find the location within one of the map layers, and then zoom to it.



Overview Map

The Overview Map, located in the upper right corner of the map, is useful for keeping track of your location within the state when zoomed into an area on the main map.



- Show the Overview Map by clicking the arrow  icon.
- Hide the Overview Map by clicking the arrow  icon in the upper right corner.
- Change the map extent by dragging the gray box within the Overview Map. The main map adjusts when the mouse button is released.

Spatial Bookmarks

Bookmark the map at a particular extent and location to return to for later use during the same logged in session.

Steps:

1. Within the *Map* menu, navigate to the desired location.
2. Click the **Spatial Bookmarks**  icon located in the upper right corner of the map title bar.
3. Within the *Spatial Bookmark* dialog:

o**Add** a bookmark by clicking **Add Bookmark** to enter a name for the bookmark. Hit the *TAB* or *ENTER* key on the keyboard to save the bookmark.

o**Edit** a bookmark name by clicking the Edit icon and editing the name of the bookmark. Hit the *TAB* or *ENTER* key on the keyboard to save the bookmark.

o**Remove** a bookmark by clicking the Remove icon

o**Zoom to** an existing spatial bookmark by clicking its name.

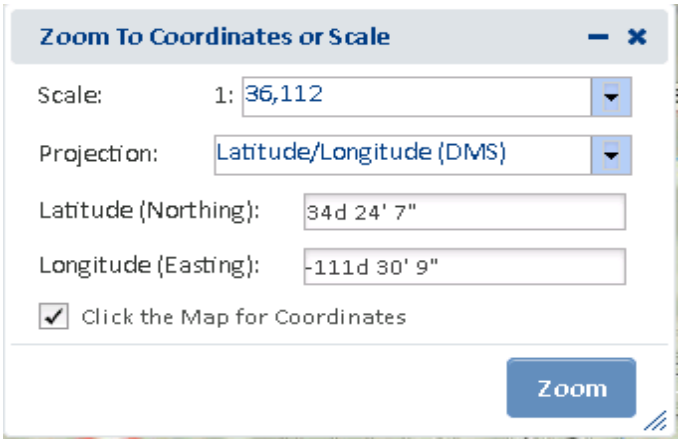
Zoom to Coordinates or Scale

This navigation tool is used to quickly adjust the map display according to either the coordinates or map scale specified by the user.

Steps:

1. Within the *Map*, click the **Zoom To Coordinates or Scale** icon located in the upper right corner of the map title bar.

The *Zoom To Coordinates or Scale* dialog opens, displaying the current map scale and coordinates, as indicated on the map by a red diamond.



2.Select the desired **Scale**.

3.To zoom to a different location, select the **Projection** and enter the desired **Latitude (Northing)** and **Longitude (Easting)**. Alternatively, with the **Click for the Map for Coordinates**

checkbox indicated, click anywhere on the map to view the coordinates of that location, in the selected **Projection**. Coordinates can be entered in the following projections in the formats shown:

- **Latitude/Longitude (DMS)**
  - Latitude (Northing): 42d 42' 44"
  - Longitude (Easting): -75d 38' 38"
- **Latitude/Longitude (Decimal)**
  - Latitude (Northing): 42.712326430204115
  - Longitude (Easting): -75.64402639639827
- **UTM Zone 17** or **UTM Zone 18**
  - Latitude (Northing): 4254911.012366921
  - Longitude (Easting): -2346228.775082956
- **Define Projection**

NOTE: WKID and WKT values can be found **here**.

- **By Well Known ID (WKID):3857**
  - Latitude (Northing): 5268287
  - Longitude (Easting): -8420654.5
- **By Well Known Text (WKT):**

The WKT can be copied directly from a projection file (.prj). Below is an example.

- PROJCS["WGS_1984_Web_Mercator_Auxiliary_Sphere",GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Mercator_Auxiliary_Sphere"],PARAMETER["False_Easting",0.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",0.0],PARAMETER["Standard_Parallel_1",0.0],PARAMETER["Auxiliary_Sphere_Type",0.0],UNIT["Meter",1.0],AUTHORITY["ESRI","102100"]]
- Latitude (Northing): 5268287
- Longitude (Easting): -8420654.5

4. Click **Zoom**. A red diamond indicates the location on the map. This is removed when the dialog is closed.

   - If only a new map scale is selected, the map viewer will automatically zoom in or out to the selected scale, while remaining in the same location.

- If only coordinates are edited (regardless of a change in projection), the map viewer will zoom to the location defined by the coordinates but remain at the same scale.
- If both map scale and coordinates were changed, the map viewer adjusts location and scale accordingly.

Map Interface

The tabs within the Map can be minimized by clicking the Close Pane  icon to the right of the tabs. To display the tabs, click the Open Pane  icon. The active tab, or the tab currently in use at any given time, is shown in white.

The Map includes options to:

Alter **Map Layers**

Switch Basemap

Add Resources

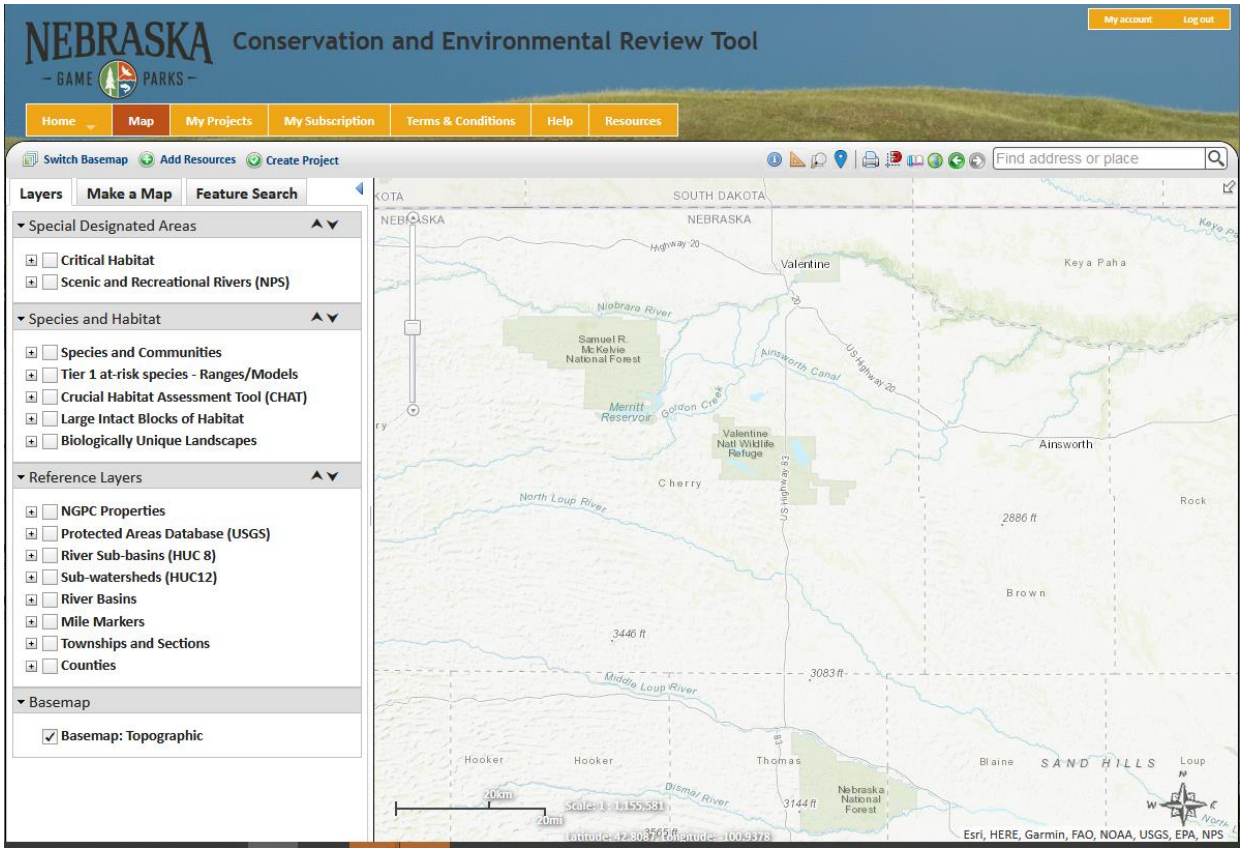
Create a Project (see "Create and Submit a Project for Review" document in the Help tab of CERT)

Perform a **Feature Search**

Make a Map

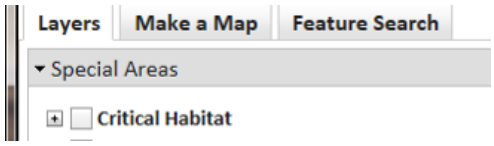
Map Layers

Within the *Layers* tab of the map, layers are segregated into accordion sections. These accordion sections can be contracted by clicking the button or expanded by clicking the button. Individual layers can be made visible/invisible, their symbology displayed, transparency altered, zoomed to, and details viewed.



Steps:

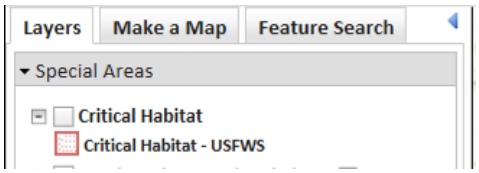
1. Within the *Map*, navigate to the *Layers* tab, if not already there.
2. Make a layer visible/invisible by clicking the checkbox left of its name.



IMPORTANT NOTES:

- Certain layers are only visible at certain map scales. If a map is not available at a given map scale, the layer will be grayed out. To determine the minimum and maximum scale at which a scale will be displayed, **View Details**.
- Certain layers have sublayers, so there may be more than one box that needs to be checked in order for the data to display.

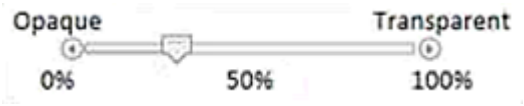
3. Click the ⊞ icon to expand a layer to view its symbology.



4. Collapse the layer by clicking the icon.

5. Hover over a layer name and click the dropdown icon to the right to view the tasks available for the layer.

   o**Transparency** – allows the transparency of the layer to be adjusted by sliding the indicator along the bar.

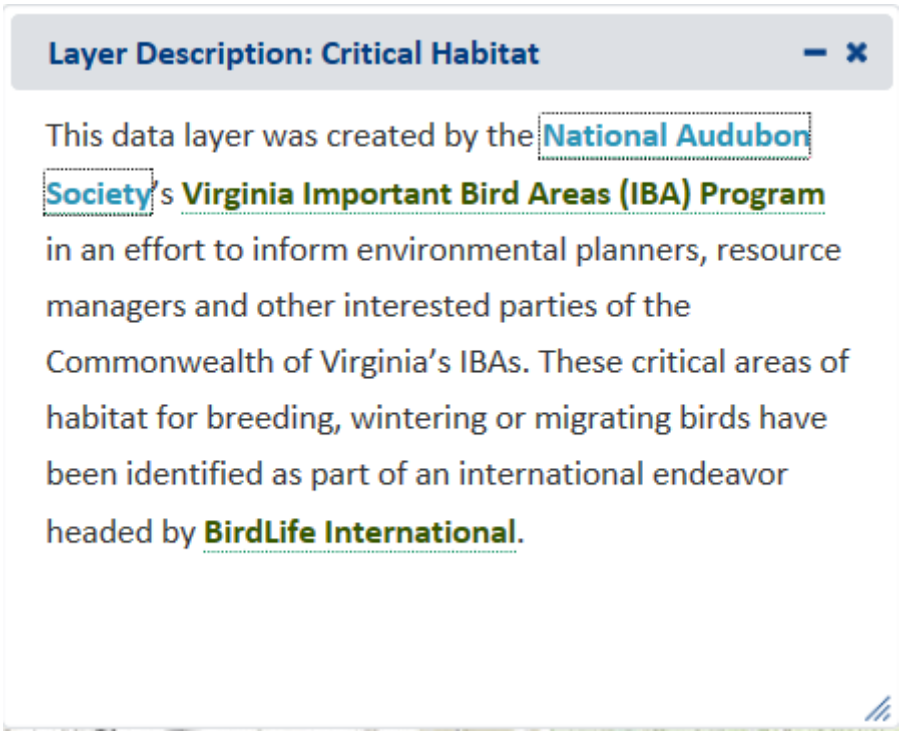


   o**Zoom To** – zooms to the full extent of the layer.

   o**Remove** - removes the layer from the map. **NOTE**: this option is only available for layers added by the user.

   o**View Details** – opens the details for the layer within the ArcGIS Services Directory. If a secured service, a user name and password will be required to view the information. See the **Min Scale** and **Max Scale** values to determine a layers scale dependency.

   o**View Description** - if information has been configured within the *Layer Description* section of the **Layer**, the description (metadata) will be displayed in the *Layer Description* dialog.



Switch Basemap

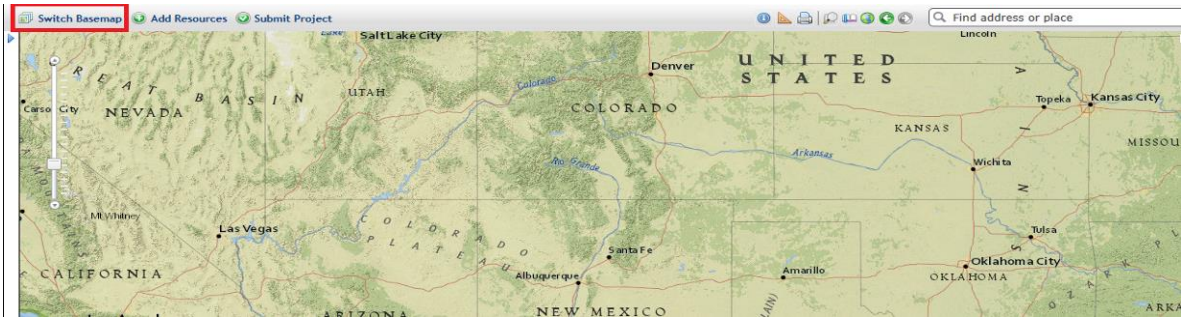
A basemap provides a background geographical context for the content displayed on a map. Within the map viewer, the basemap can be changed at any time by choosing a layer from the basemap gallery (e.g., topography, imagery, streets) or made invisible.

NOTE: Upon initiating the **Create Project** process, the Switch Basemap tool becomes unavailable. If you wish to change the basemap during this process, open the Switch Basemap tool prior to initiating the process and leave it open or minimize it until needed.

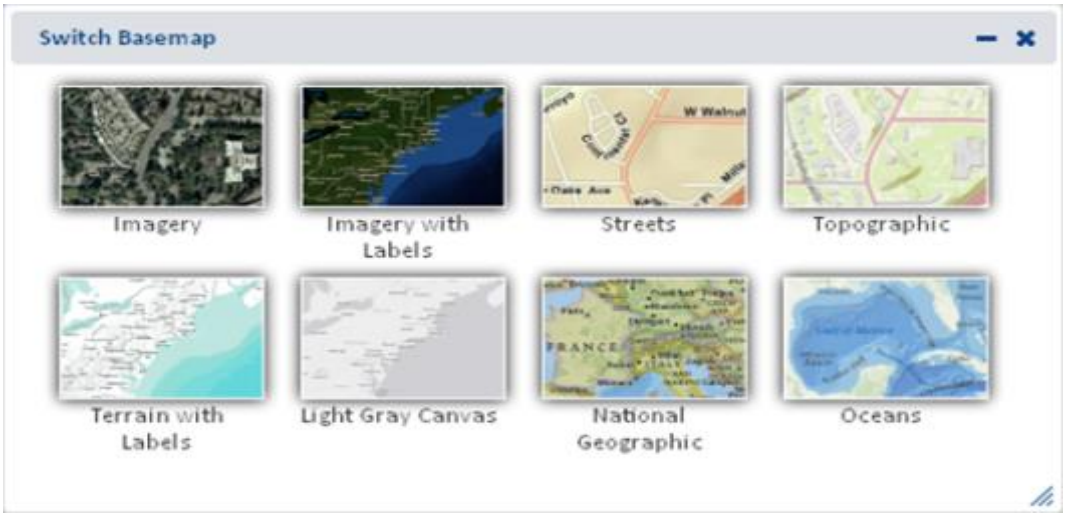
Steps:

1. Within the Map, click the **Switch Basemap** 

button, located in the upper left corner of the map title bar.



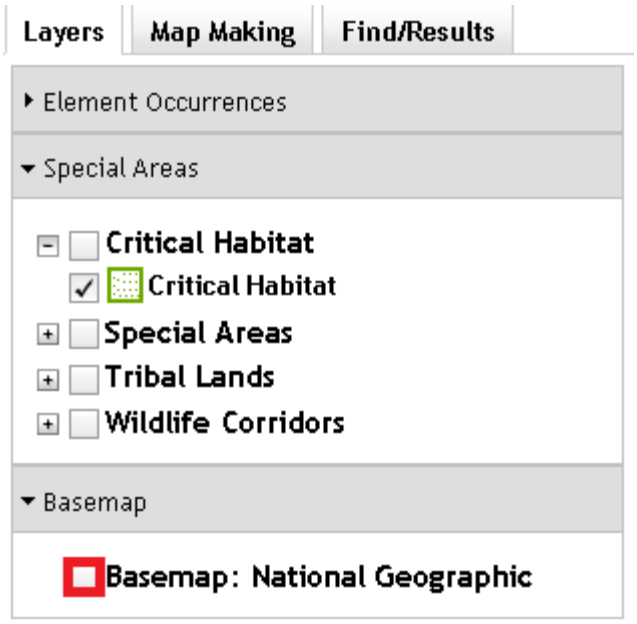
2. Within the *Switch Basemap* dialog, click the thumbnail of the basemap to be used in the map.



3. The basemap in the main map will change accordingly.

NOTE: The overview map retains the National Geographic basemap in order to ensure that there is always a geographic context, which may not be so evident using the other basemaps.

4. To turn off or make the base map invisible, uncheck the toggle box associated with the **Basemap** layer within the *Basemap* accordion section of the *Layers* tab.



Add Resources

Note: If, during your work using the Map, you need to access other tabs in the CERT (e.g. My Projects, Help, Resources), you should right click on the tab and select Open Link in New Tab or Open Link in New Window. If you left click on the tab you will exit the Map and any features you have drawn or layers you have uploaded will be lost.

Content can be added to the map viewer from:

- a map service (via its **URL**)
- **File** (zipped shapefile or geodatabase)

Note: You can not change the symbology of uploaded map services or uploaded files (other than the transparency).

Steps:

1. Within the map, click the **Add Resources** 

button, located in the upper left corner of the map title bar.

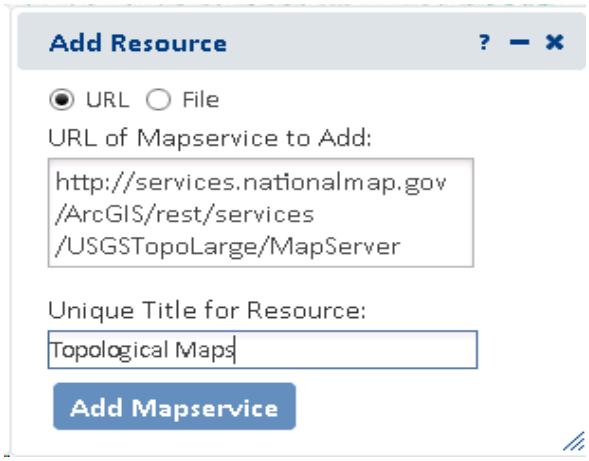
2. The resulting *Add Resource* dialog provides options to add resources to the map, either a map service via its **URL** or a shapefile

URL:

Both Map Services and Image Services published on ArcGIS Online, on GIS servers that are available on a local machine or network, or from servers publicly available on the Internet are available for use. Cached services must be in the WGS 84 Web Mercator (Auxiliary Sphere) projection, because ArcGIS Server cannot reproject cached services, and use the standard scale levels supported by Google, Bing, and ESRI's arcgis.com. To test the map service prior to adding it to the map viewer, see the **Test Map Service** help topic.

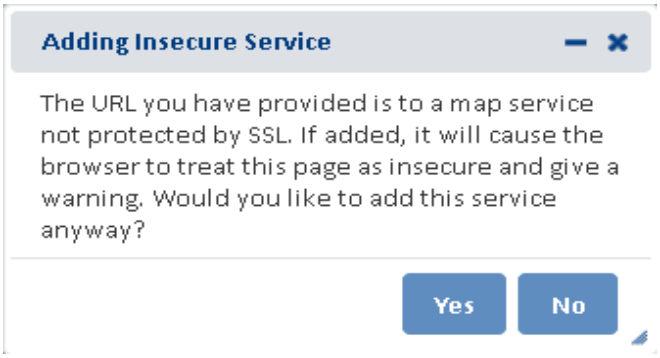
NOTE: Cached map services published through ArcGIS Online do not support all of the capabilities of cached map services published through ArcGIS Server. Since the underlying data is not retained, the Identify tool is not supported.

1. On the *Add Resource* dialog, select the **URL** radio button, if not already selected.
2. Enter the **URL of Mapservice to Add** (i.e., **http://services.nationalmap.gov/ArcGIS/rest/services/USGSTopoLarge/MapServer**).
3. Enter a **Unique Title for Resource**.



4. Click **Add Mapservice**  button to add the service to the map.

NOTE: If the map service is not protected, the following prompt will be displayed. Click **Yes** to continue.



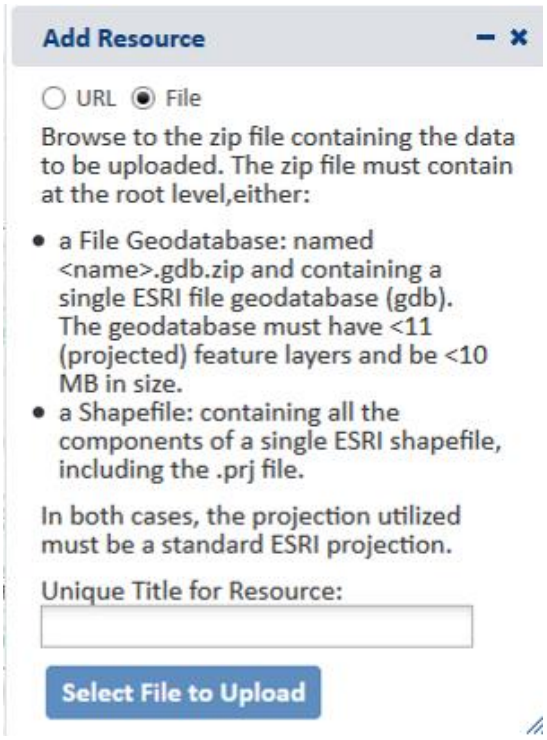
NOTE: If the map service does not successfully add to the map (i.e. the spinner spins endlessly and the map service is not added to the map viewer or a **Register Layer Failed: Request Timeout** error is received, consult the **Test Map Service** help topic.

For more information on map services, see the **About Map Services** section.

File:

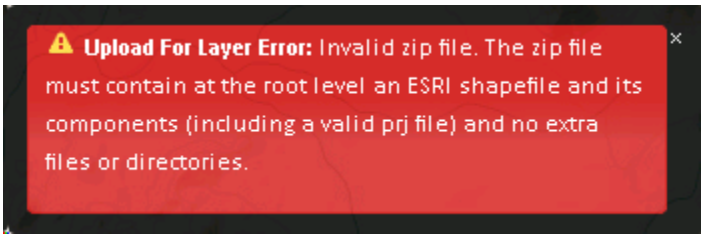
Current functionality allows for shapefiles or geodatabases to be added. All component files must be zipped into a zip file with no additional directories or files. The data must be projected and the projection must be a standard ESRI projection. Maximum file size must not be exceeded.

1. On the *Add Resource* dialog select the **File** radio button, if not already selected.
2. Enter a **Unique Title for Resource** (optional)**.**

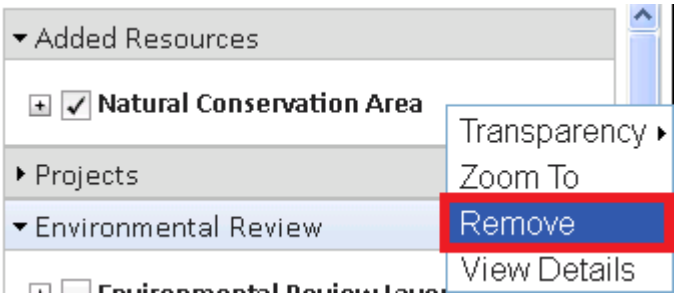


3. Click **Select File to Upload** button  and navigate to the file containing the layer to add to the map viewer.

4. If the uploaded zip file does not contain all components of the shapefile, including a valid .prj file, the following error will be displayed:

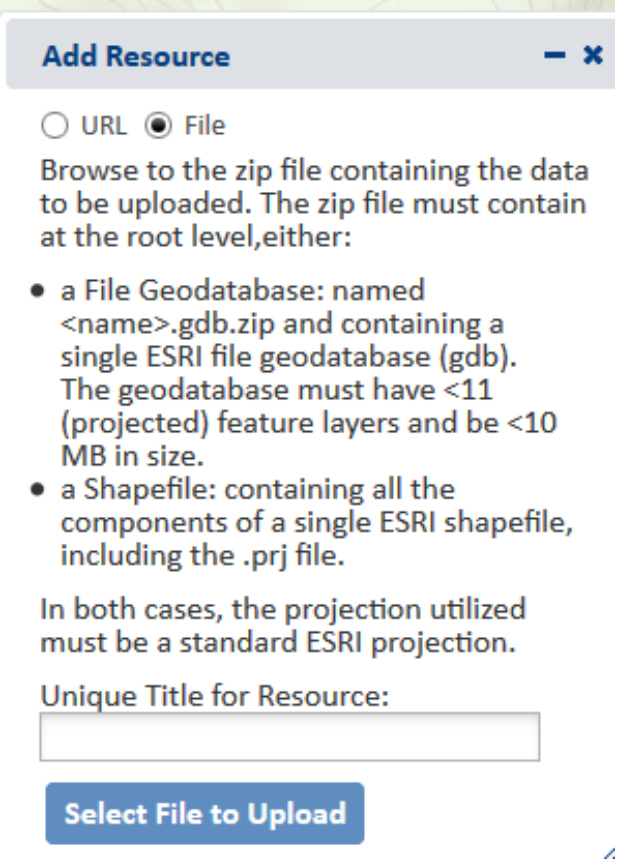


5. To remove a map service from the map, click on the dropdown  icon to the right of the resource in the *Map Resources* dialog and choose **Remove**.



Troubleshooting issues encountered when adding a file

Your file upload must adhere to the requirements shown in the 'Add Resource' window.



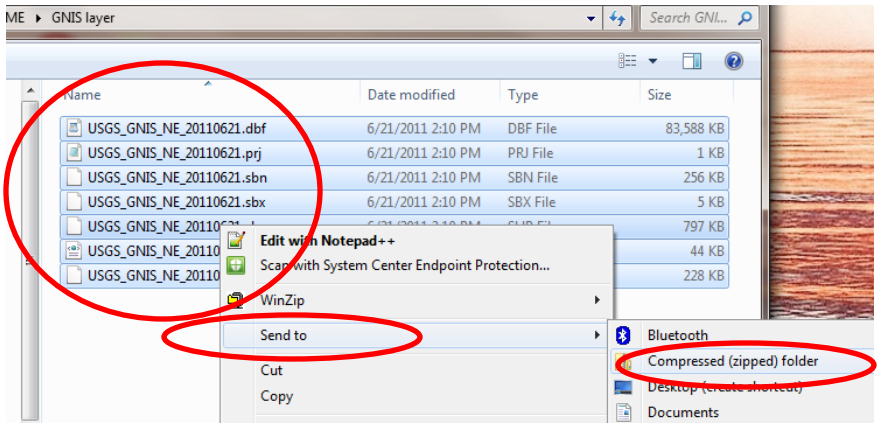
If your upload fails, here are things that you (with the help of your organization's GIS support staff if needed) should check for to help you troubleshoot the issue.

1. If a geodatabase, it must not have more than 11 feature layers and must not be >10 MB in size (the limitations as of the publication date of this document).

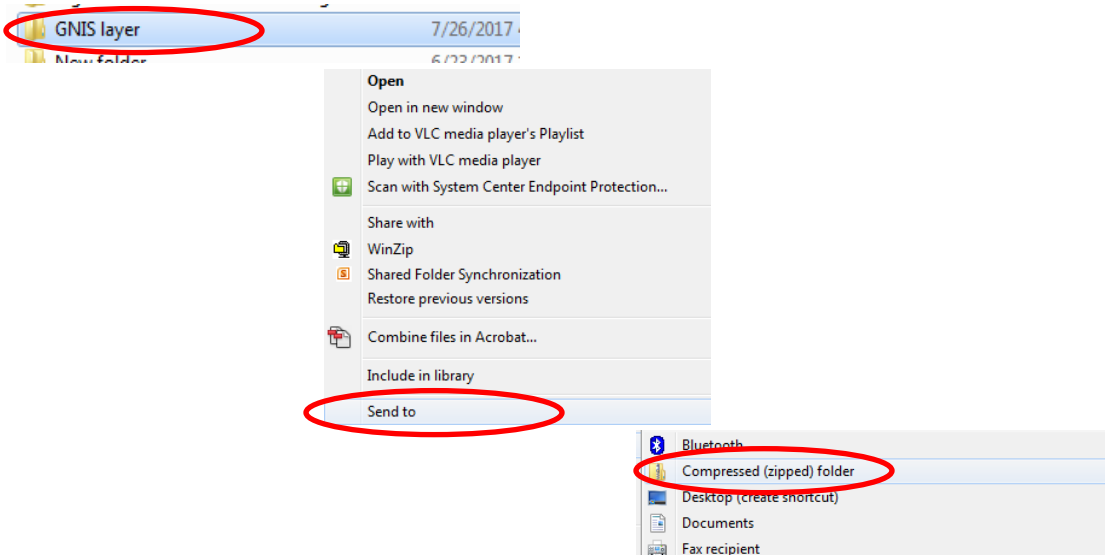
2. Zipfile must contain the data at the root level.

For a shapefile, this means that when you prepare the data by zipping/compressing the files, you need to compress the files that comprise the shapefile (rather than, for example, the folder that the files are in).

> Below are screenshots of the right way to send a shapefile to a zipped/compressed folder and the wrong way. In these examples the shapefile is inside a folder called 'GNIS layer.'
>
> The right way is to select the shapefile components, right-click, choose Send to, and then choose Compressed/zipped folder:

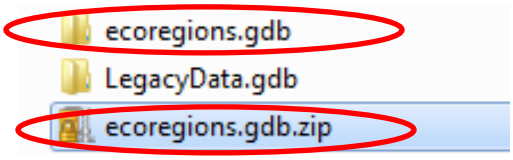


The wrong way is to select the folder that the shapefile components are inside and send the folder to a compressed/zipped folder.



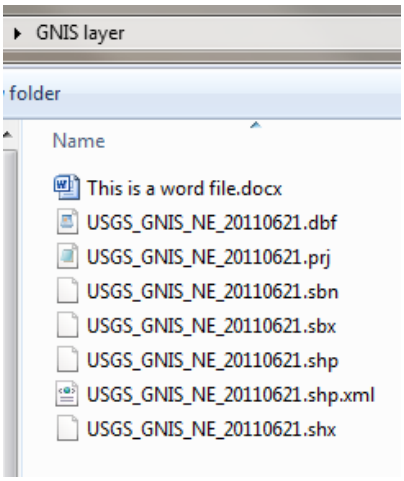
For a geodatabase, when you prepare the data by zipping/compressing the files, you need to compress the folder that has the .gdb extension.

The screenshot below shows a geodatabase called ecoregions, as well as the zipped geodatabase.



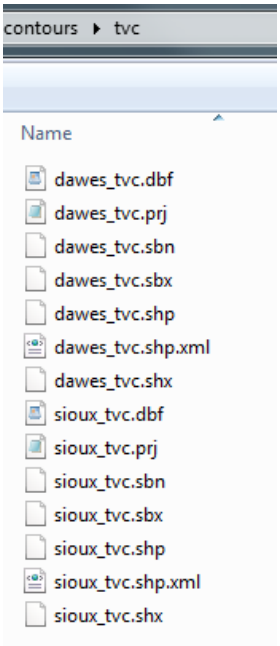
3. The zipfile must contain only spatial data (no Word documents etc).

Example of contents of a zipfile that would not work:



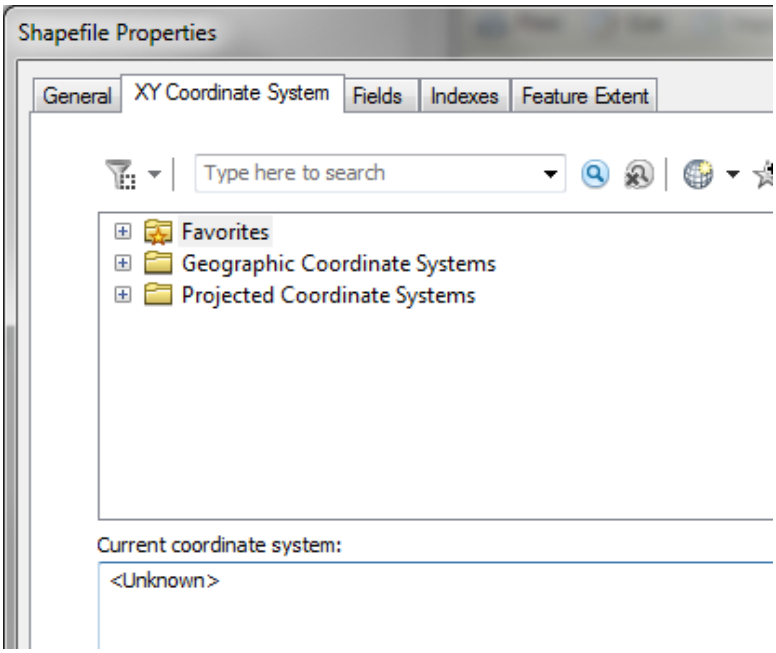
4. The zipfile must contain only one shapefile or one geodatabase.

   Example: This screenshot shows 2 shapefiles (one for Dawes and one for Sioux County); a zipfile containing both of these shapefiles would not work.

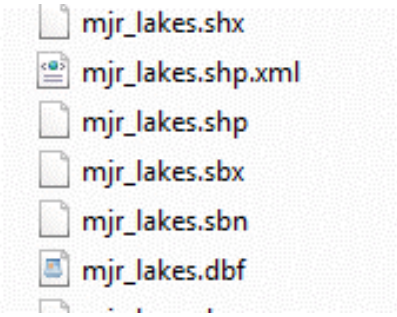


5. The spatial data must have a projection defined.

   If the projection is not defined, the XY coordinate system as viewed in ArcCatalog (or ArcMap) will appear as 'Undefined.' Example:



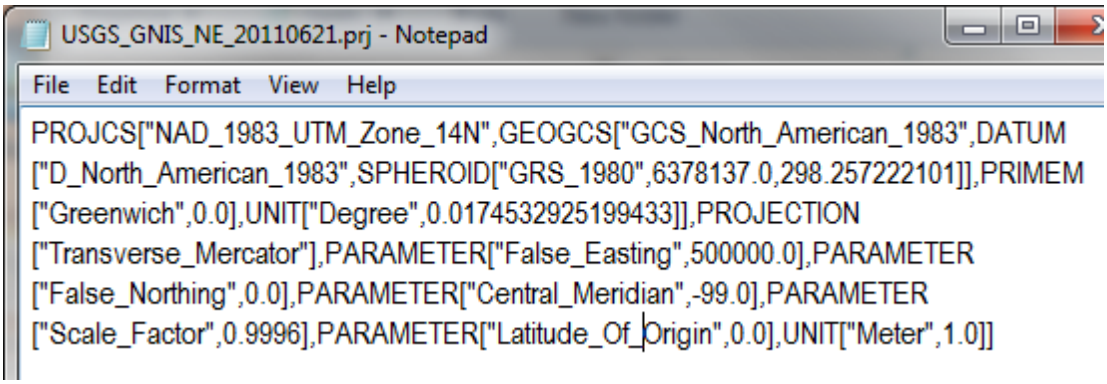
If the data set is a shapefile, a quick check to see if there is a prj file among the components of the shapefile will reveal whether you have a projection defined. In the example below there is no file with a .prj extension. Therefore this data set would not work with the CERT until the projection is defined.



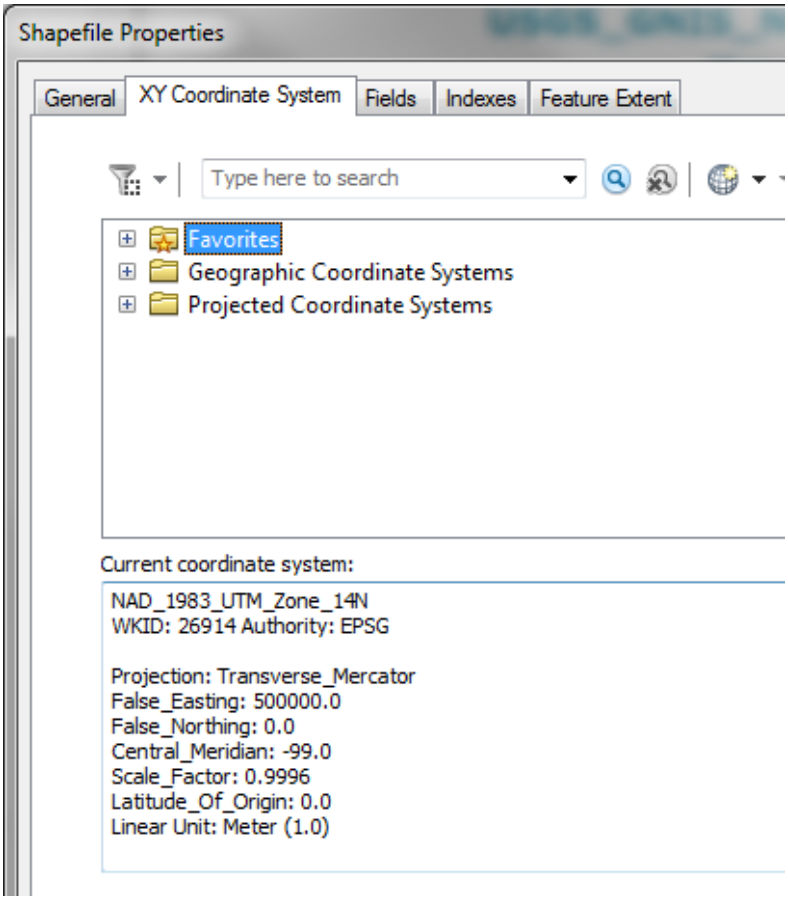
6. The spatial data must be in a valid ESRI projection. Data may <u>not</u> be in a geographic coordinate system.

<u>Examples of projection information for a projected coordinate system</u>

Prj file (viewed in Notepad)

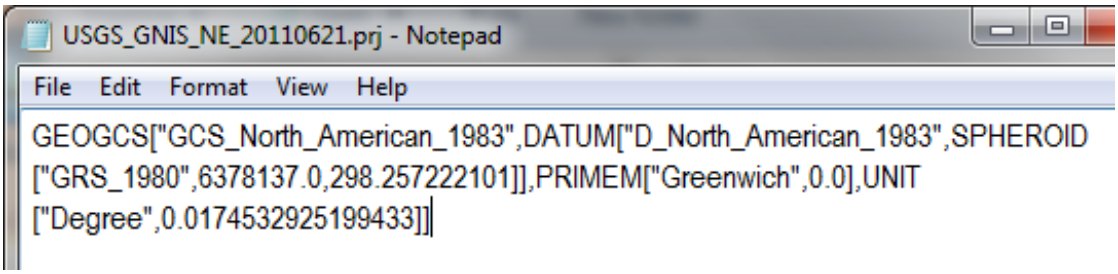


Projection viewed in ArcCatalog (layer properties)

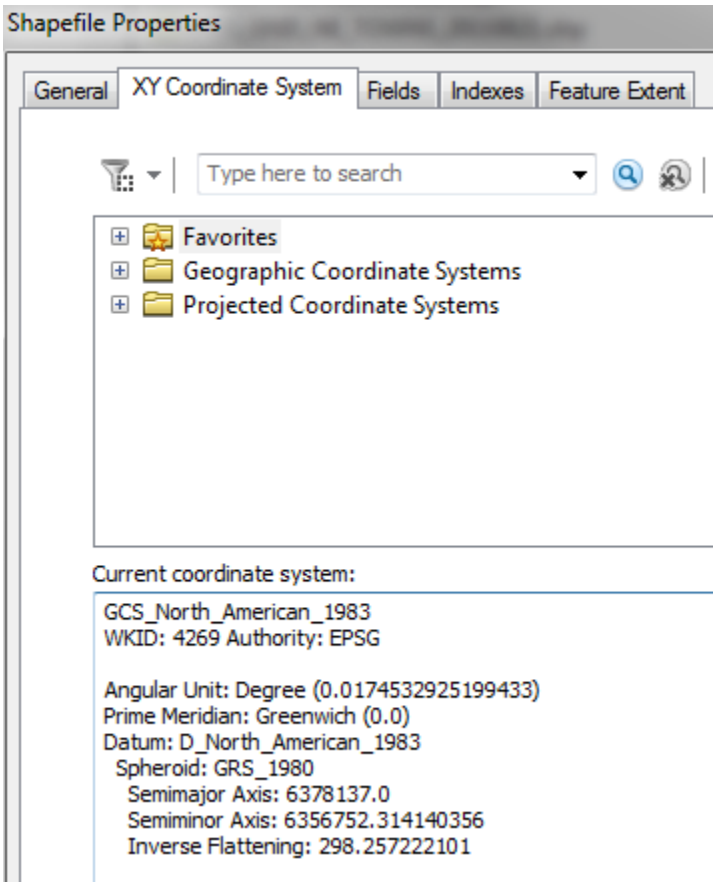


Examples of projection information for geographic coordinate system

Prj file (viewed in Notepad)



Projection viewed in ArcCatalog (layer properties)



Feature Search

The **Feature Search** tab provides the ability to identify features in a layer, including those added to the Map via the **Add Resources** tool, according to criteria specified by a query.

You can zoom to the results of the feature search, which are highlighted in the map window.

Once a search has been completed, the search criteria are saved for your convenience. Therefore, the next time the *Feature Search* tab is opened, the previously used search criteria still applies. If you want to define a new search, click **Reset** Reset.

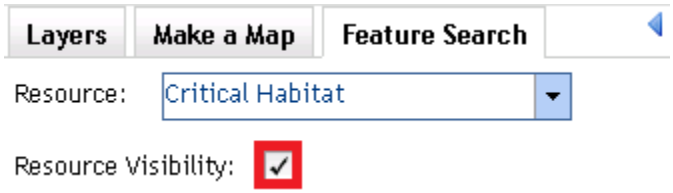
NOTE: The Feature Search option is not available for cached map services published from ArcGIS Online because such services do not support all of the capabilities of those published through ArcGIS Server.

Search for a feature based on:

- **Attribute Search**
- **Spatial Search**
- or a combination thereof

Steps:

1. Within the Map, navigate to the **Feature Search** tab.
2. In the *Feature Search* tab, select the **Resource**, the layer on which the search is to be performed, from the dropdown menu.
3. The layer will automatically be displayed and the **Resource Visibility** checkbox indicated. **NOTE**: If the default **Resource** is the desired layer, manually indicate the **Resource Visibility** checkbox to display the layer.



3. Define search criteria according to an **Attribute Search** and/or designating a location in which to perform a **Spatial Search**.
4. To clear the defined expression, click the **Reset** Reset button.
5. **NOTE**: A green check mark icon on a section indicates that criteria have been defined within that section of the *Feature Search* tab.

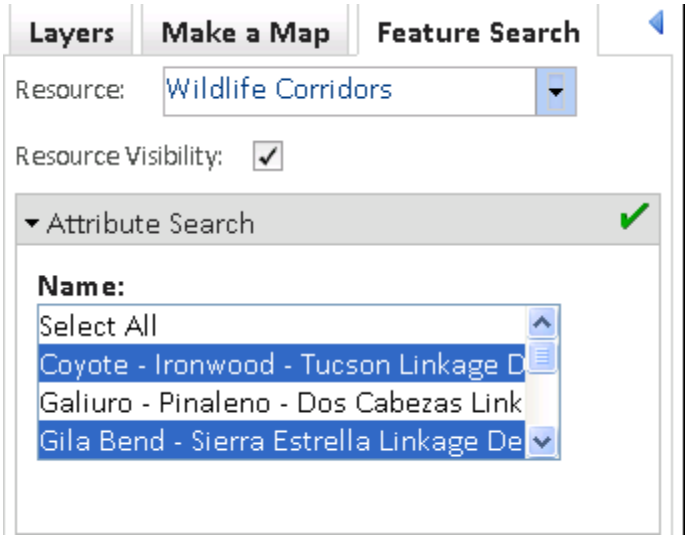
Attribute Search:

The fields in the Attributes section differ according to the layer specified in **Resource** dropdown.

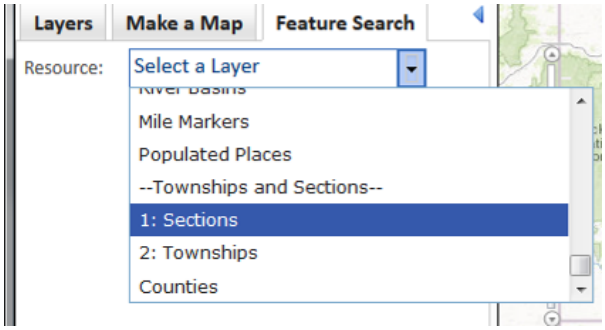
If not already expanded, click the **Attribute Search** label to expand the section.

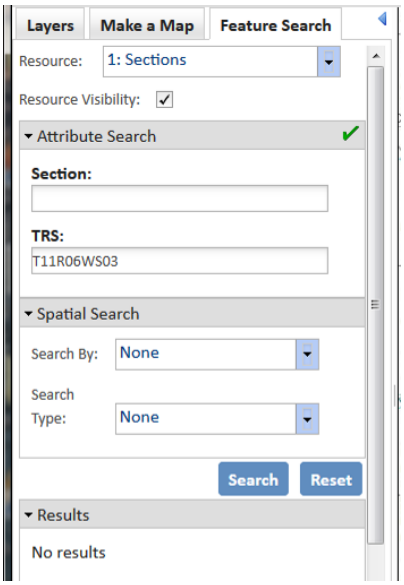
Define the search criteria by typing in and/or selecting values to search on. Then click 'Search.'

If there are drop-down menus, select the appropriate value(s).
Select multiple values by holding down the **SHIFT** key and selecting the values.
Select specific values by depressing the **CTRL** key and selecting the values.

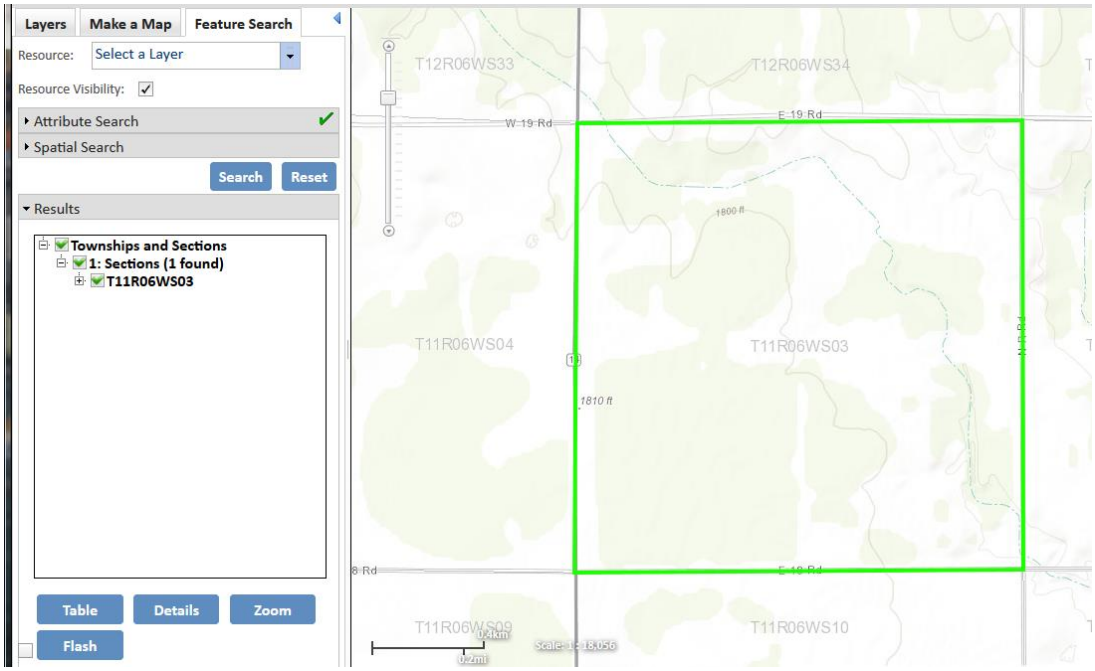


Example 1. Search for a township/range/section using the Sections layer.



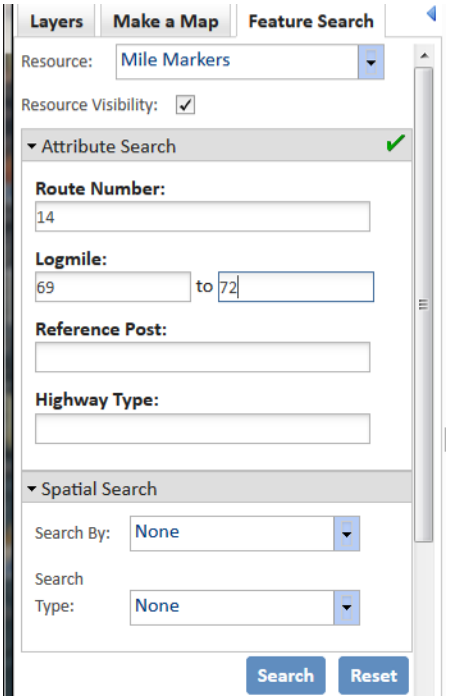


Zoom to result, which is highlighted in map.

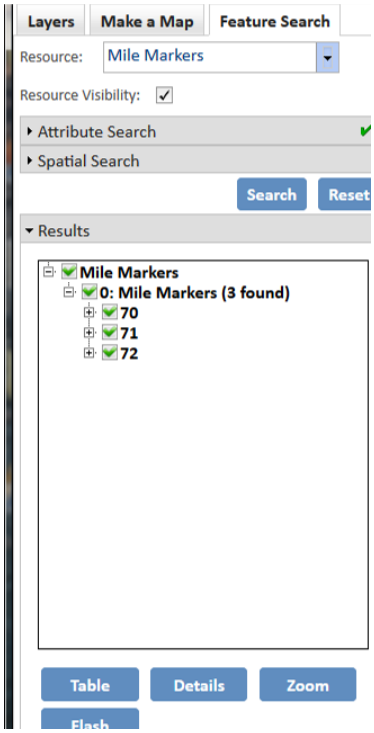


Example 2. Search on the Mileposts layer.

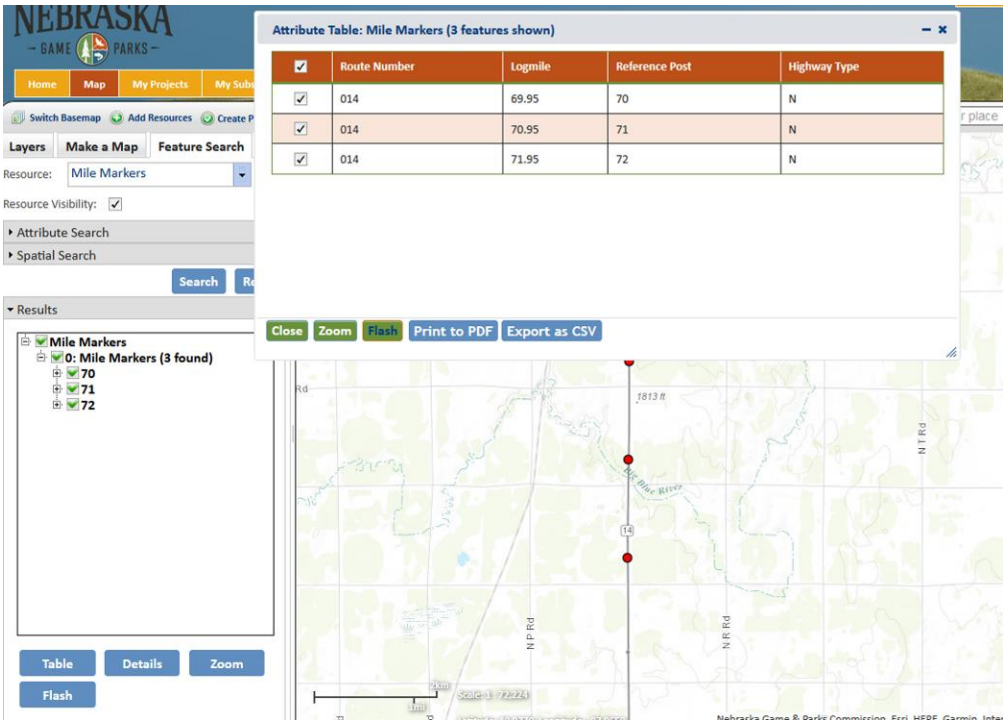
Your search can include multiple fields. In the example below, the user is searching for Mileposts between miles 69 and 72 on Route 14.



From the **Results** choose **Table** to view the results in tabular form.



Click **Zoom** to zoom to the area and click **Flash**



Spatial Search:

The **Spatial Search** enables selection of *Resource* features based on their location in relation to the selected features defined within *Search By*; in an ad-hoc manner.

1. Click **Spatial Search** to expand the accordion section.
2. From the **Search By** dropdown, select how the search area will be defined.

▪a**. Box**, **Polygon**, **Point**, or **Line**

i. digitize the search area according to the tooltip instructions.

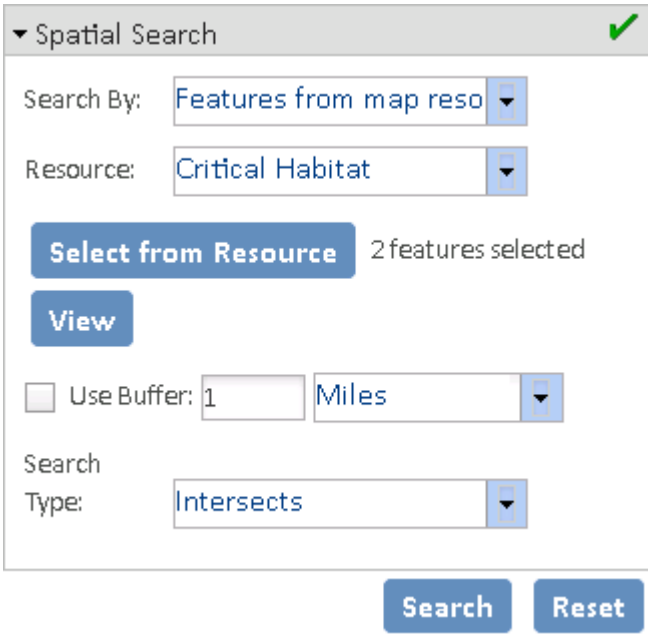
ii. To re-define the search area, click the **Select by Drawing** Select by Drawing button to digitize the search area.

▪b**. Features from map resource**:

i. From the *Resource* dropdown menu, select the layer from which to copy the shape(s).

NOTE: If the chosen Resource is comprised of multiple layers, an additional *Layer* dropdown list will be displayed from which to select the given layer to copy the shape(s).

ii.Click the **Select From Resource** Select from Resource button.



iii. Holding the mouse button down, draw a box on the map to select the features within the layer.

iv. The *Details* dialog of the selected features will be displayed. To remove a feature from the selection, within the *Details* dialog, from the *Tasks* menu select **Remove from Include List**.

v. The number of features selected will display in the Spatial Search section to the right of **Select From Resource**.

vi. To display the *Details* dialog of the selected features again, click the **View** 

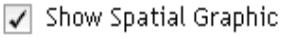
button.

c. Indicate **Use Buffer** to buffer the selected spatial feature(s). Enter the desired buffer distance and select the distance unit from the dropdown. A graphic will display the buffered area.

NOTE: A positive distance will buffer outside the feature whereas a negative distance will buffer within the feature. Negative distances cannot exceed the size of the shape, nor can they be used with Point or Line features. The following error will be displayed when the negative distance exceeds the size of the shape.

d. From the **Search Type** dropdown, define how features within the **Resource** will be selected by the shape(s) specified within the Spatial Search:

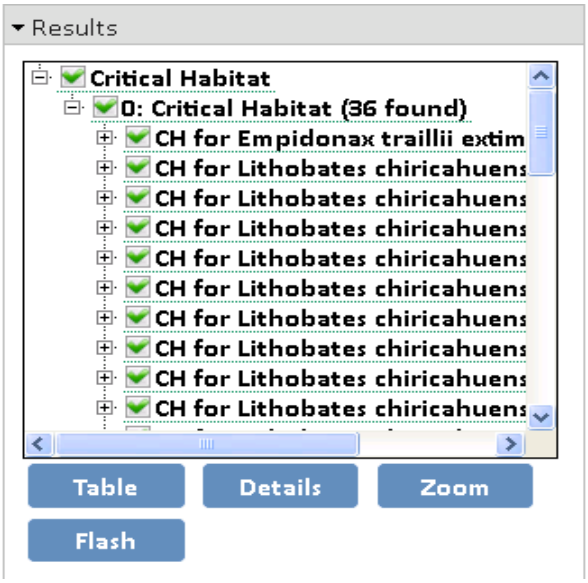
- **Intersects** - selects features from the **Resource** which are crossed by or are contained within the search selection
- **Contains** - selects features from the **Resource** which are completely contained by the search selection (nothing outside the search selection).
- **Within -** selects features from the **Resource** which the search selection falls entirely within (nothing outside the Resource shape).
- **Touches** - selects features from the **Resource** which the search selection touches, even by sharing a border or vertex.

e. To clear the spatial graphic representing the search area, uncheck the **Show Spatial Graphic**  checkbox.

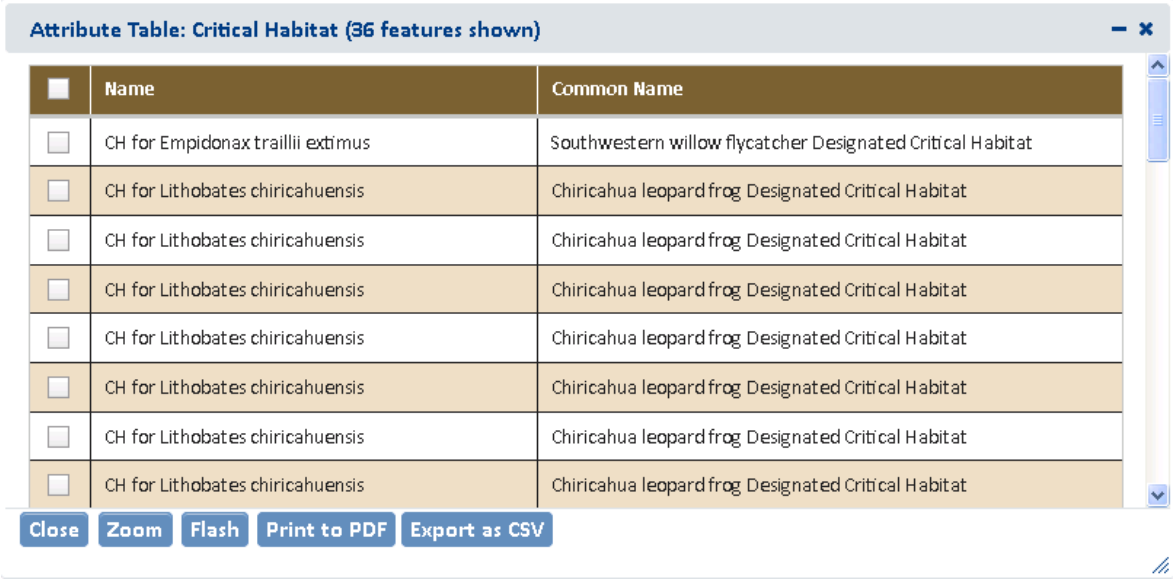
Results

1. Click **Search**  to run the search based on the defined criteria.

2. The search results will be displayed within the **Results** accordion section at the bottom of the *Feature Search* tab.
3. The **Results** section provides the following functionality, which will be applied to selected records. Select/deselect records by checking/unchecking individual records. Alternatively, select/deselect all records within a level of the tree by checking/unchecking the higher level entry.



- **Table** - displays the results within a table format. In addition to the same **Zoom** and **Flash** functionality below, the table format also enables the user to **Print to PDF** and **Export as CSV**.



o**Details** – to view the **Details** dialog of the indicated feature(s).

o**Zoom** to indicated feature(s) 

o**Flash** indicated feature(s)

NOTE: The search criteria are saved, for your convenience. Therefore, the next time the *Feature Search* tab is opened, the previously used search criteria still applies. If you want to define a new search, click **Reset** 

.

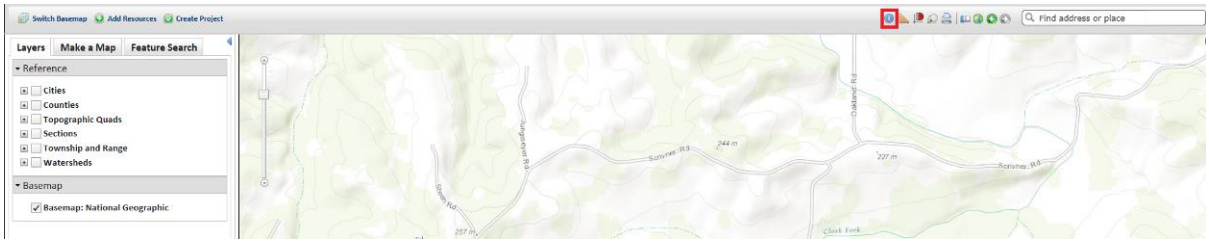
Identify

The Identify tool is used to display the details of the geographic feature(s) or place(s) selected in the Map.

NOTE: The Identify tool cannot be used with cached map services published from ArcGIS Online because such services do not support all of the capabilities of those published through ArcGIS Server.

Steps:

1. Within the Map, click the  icon located in the upper right corner of the map title bar.



2. Within the *Identify* dialog,

- Select a resource: Select to **Identify Visible Resources** or a specific resource from the dropdown list. If a specific resource is selected, it will be displayed on the map if it was not previously visible.
  NOTE: Cached map services published from ArcGIS Online will not be available within the dropdown list because such services do not support all of the capabilities of those published through ArcGIS Server.

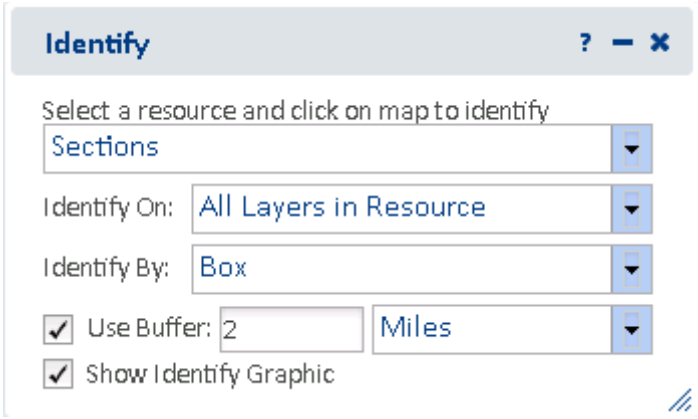
- **Identify On**: indicate whether the Identify should be applied to **All Layers in Resource**, **Visible Layers in Resource**, or **Top Visible Layer in Resource. NOTE**: Results will only differ when a Resource contains multiple layers.

- **Identify By**: select means (**Point**, **Box**, **Polygon**, **Line**) of indicating the area to identify

  - **Use Freehand**: provides the ability to digitize a **Polygon** or **Line** feature freehand rather than by clicking to add individual vertices.

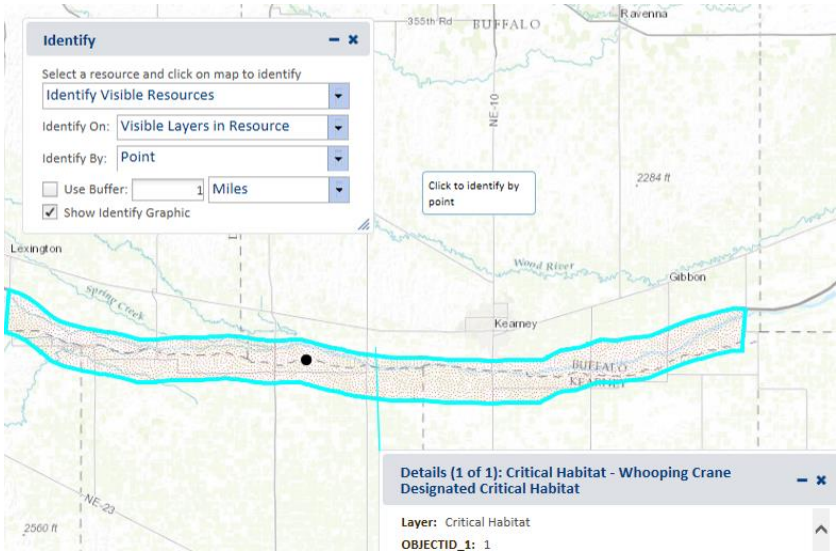
- **Use Buffer**: indicate to apply a buffer to the location of interest. Enter the desired buffer distance and select the distance unit from the dropdown. A dashed-line graphic will illustrate the buffered area utilized for Identifying.
  NOTE: A positive distance will buffer outside the feature whereas a negative distance will buffer within the feature. Negative distances cannot exceed the size of the shape, nor can they be used with Point or Line features. The following error will be displayed when the negative distance exceeds the size of the shape.

- **Show Identify Graphic**: indicate to display the spatial feature utilized to demarcate the identifiable area. Uncheck to clear the spatial graphic representing the search area.



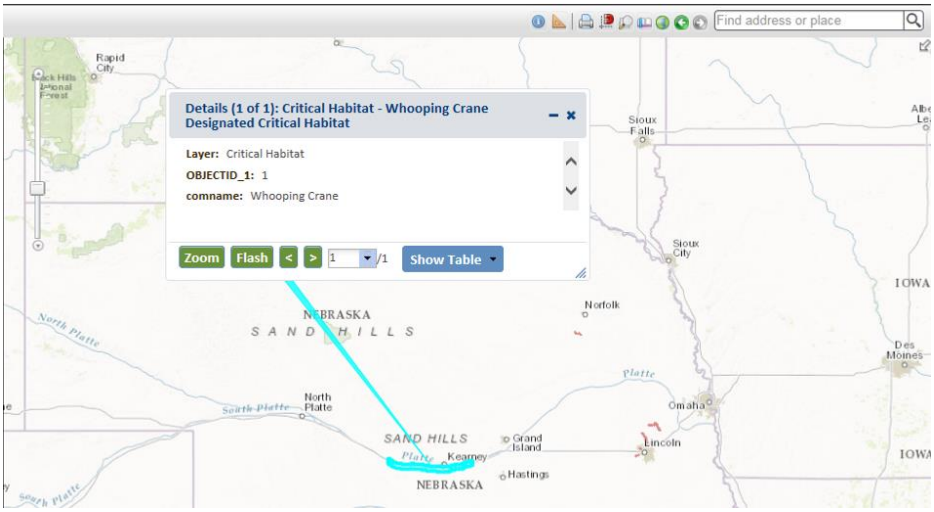
3. Click on the feature/location to be identified.

4. The **Details** dialog displays attributes of the target feature(s). A turquoise callout points to the specific feature, highlighted in turquoise.



Details Dialog Box

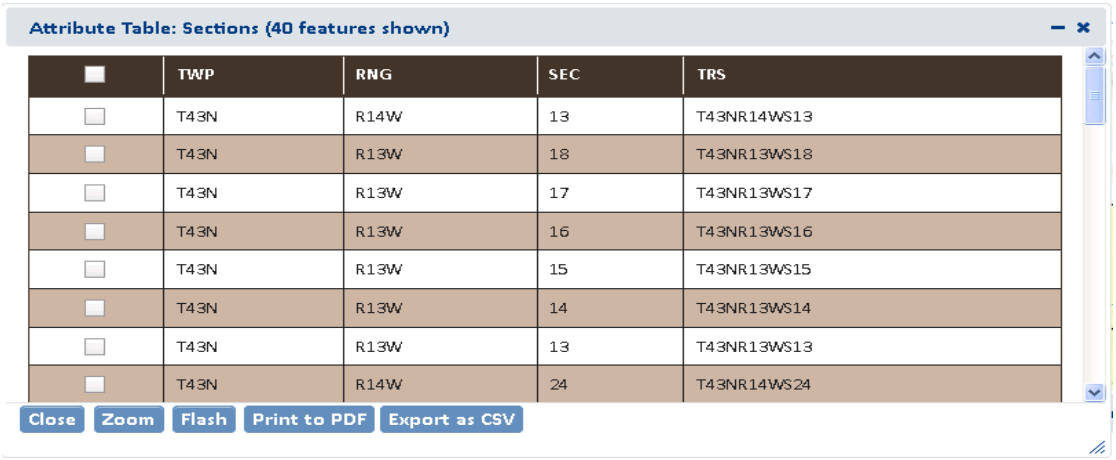
The *Details* dialog displays the results of the **Identify** and **Feature Search** tools, and indicates the feature associated with each dialog by highlighting and pointing with a turquoise call-out.



- **Zoom** to feature
- **Flash** feature
- **Navigate** between features using *Details* dialogs, if more than one, by:
    - Stepping backward or forward through the set of dialogs

- Selecting the desired feature dialog from the dropdown list

- **Show Table** menu allows the **Results** to be displayed within a table format. In addition to the same **Zoom** and **Flash** functionality above, the table format also enables the user to **Print to PDF** and **Export as CSV**.



- **Tasks** menu - displays in conjunction with the **Draw/Edit** toolbar.

  - **Remove from Include List** - removes the selected feature from the list.

Filter

The Filter tool is available for specific layers. In a filter(unlike a features search) only features that meet the search criteria will be displayed.

Note that there is not currently a way to automatically zoom to the results of the filter (Zoom to' zooms to the full extent of the layer rather than the result of the filter). Therefore if you need to find a feature, the **Feature Search** is a better choice.

A filter can be applied to individual layers (with the exception of cached map services published from ArcGIS Online) in order to limit the features displayed on the map to those that meet the filter definition/criteria. More specific details on how to develop queries that define filter criteria (e.g., querying numbers, combining expressions, using nulls), are provided in the **Build a Query** topic.

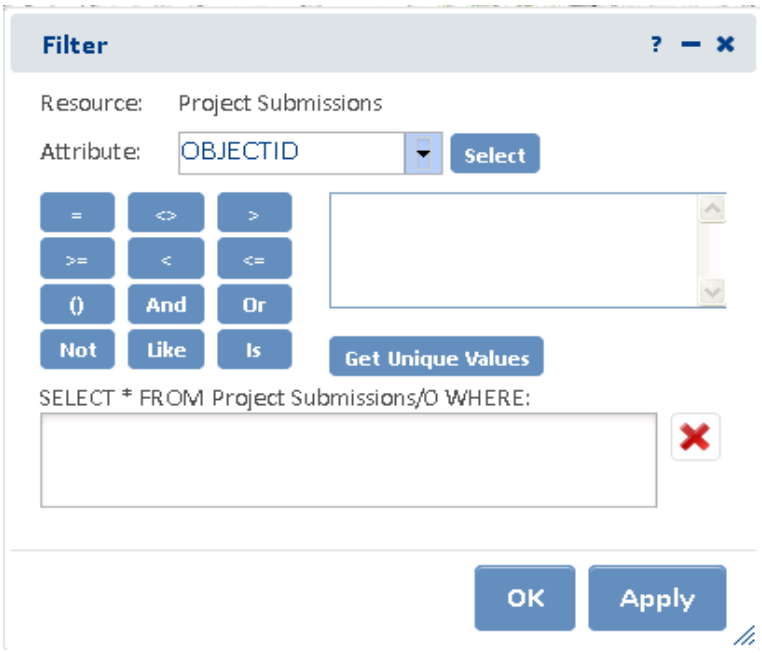
- **Create Filter**
- **Modify or Remove Filter**

NOTE: The Filter option is not available for cached map services published from ArcGIS Online because such services do not support all of the capabilities of those published through ArcGIS Server.

Create a Filter

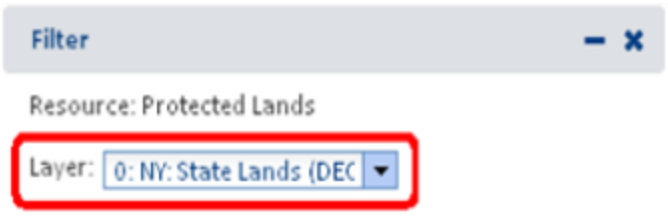
1. Within the *Layers* tab of the **Map**, click the dropdown  icon to the right of the service to be filtered and choose **Filter** from the available options.

NOTE: The Filter option is not available with cached map services, only dynamic services.

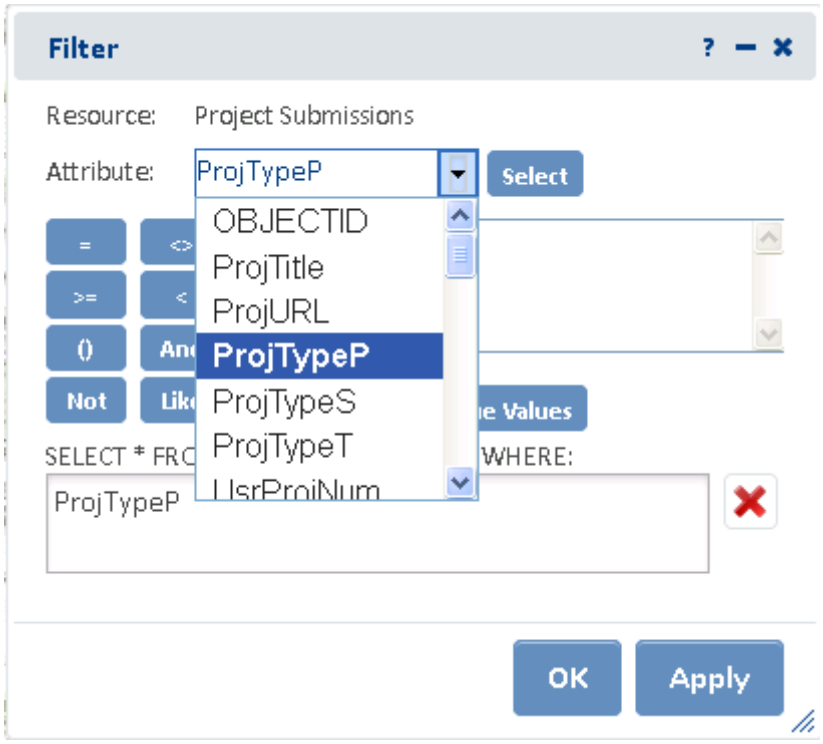


2. If the Resource contains multiple layers, a dropdown identifying the layers will be displayed. Select the layer to be filtered from the *Layer* dropdown list.

   NOTE: If the Resource contains only a single layer, the *Layer* dropdown will not be displayed.



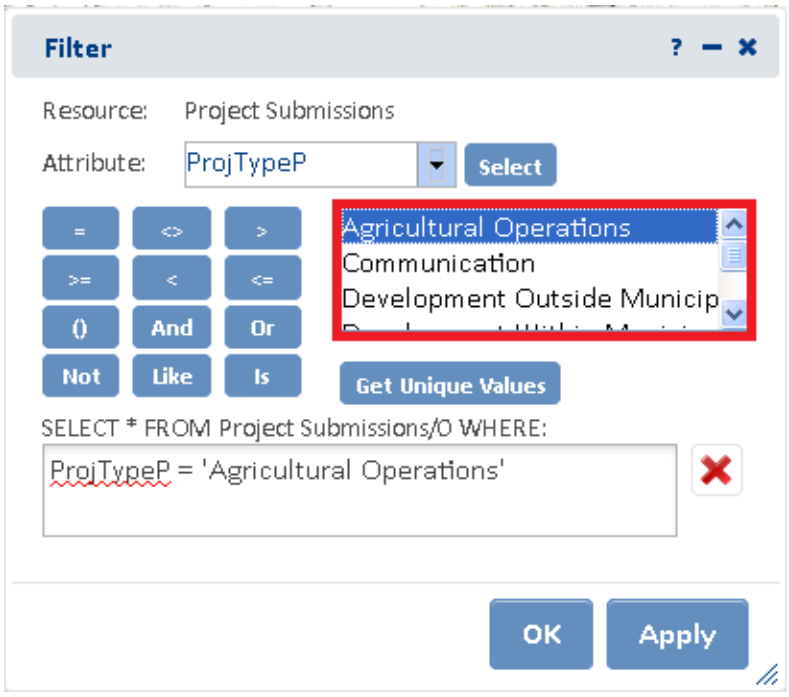
   a. Select the attribute to use in the query from the *Attribute* dropdown, and then click **Select**.



b.Click an operator (=, <>,..)

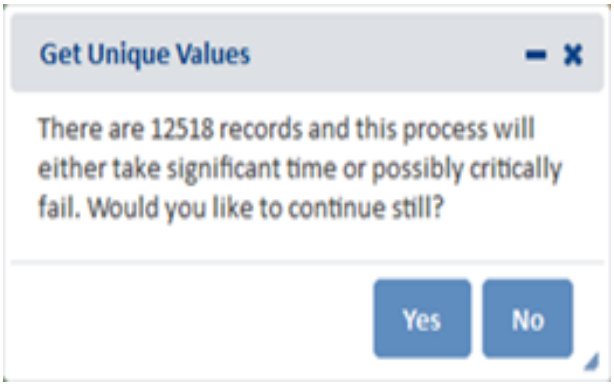
c.To see a list of values for the attribute, click **Get Unique Values** 

. Double-click one of the values or alternatively, type an expression directly into the query field.



NOTE: If Get Unique Values returns no records for lack of data in the attribute, a message will be displayed to indicate that **No unique values were found for this attribute.**

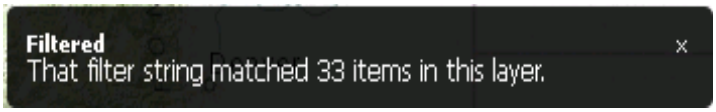
NOTE: If **Get Unique Values** is used on a layer with many records, the following message is likely to be displayed. Respond **Yes** to continue or **No** to cancel the search for unique values.



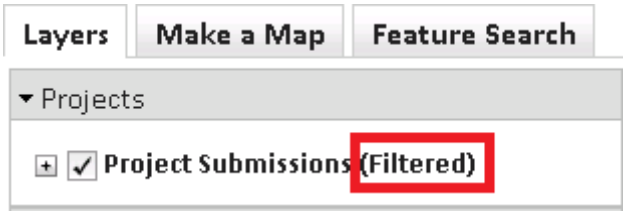
3. Click **Apply** to apply the filter and keep the *Filter* dialog open or click **OK** to apply the filter and close the *Filter* dialog.

   NOTE: If there is a typographical error, or the filter has been improperly defined (i.e., 'Vascular plant' instead of 'Vascular Plant'), no records will be displayed.

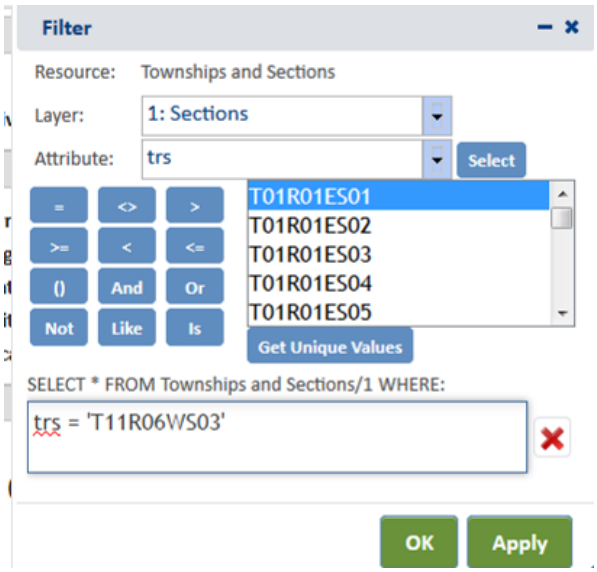
4. The number of records resulting from the Filter will be reported.



5. Within the *Map Resources* dialog, **(Filtered)** will be displayed next to the service name to indicate that the service has been filtered.



Example: Query to filter on Sections layer.



Modify or Remove Filter

To change or remove a filter, in the *Layers* tab, click the dropdown icon to the right of the layer that is filtered, and choose **Filter** from the available options.

- To remove the filter, click the **Clear Attribute Filter Parameters** icon in the *Filter* dialog.
- To modify any part of the filter expression:

  oPlace the cursor within the sequence and use either the <**Delete**> or <**Backspace**> keys to remove the desired part(s).

  oClick **Apply** to apply the revised filter and keep the *Filter* dialog open, or click **OK** to apply the filter and close the *Filter* dialog.

Build a Query

A query enables the identification of records that meet criteria specified for selected attribute(s) of a resource (layer).

- **Strings**
- **Wildcard Characters**
- **Null values**
- **Querying numbers**
- **Calculations**
- **Operator precedence**

- **Combining expressions**
- **Querying dates**

Strings

Strings must always be enclosed within single quotes. For example:

PC_NAME_EN = 'Ivvavik National Park of Canada'

Strings in expressions are case sensitive. To make a case insensitive SQL search, an UPPER or LOWER function can be used to convert all values to the same case. For example, the following expression will select managed area names stored as either BIRD ISLANDS SANCTUARY or Bird Islands Sanctuary.

UPPER(MANAGED_AR) = 'Bird Islands Sanctuary'

The LIKE operator (instead of the = operator) is used to build a partial string search. For example, the following expression would select both New Brunswick, and Newfoundland and Labrador among CA province names:

NAME Like 'Ne%'

Greater than (>), less than (<), greater than or equal (>=), less than or equal (<=), and BETWEEN operators can be used to select string values based on sorting order. For example, the expression below will select all provinces in a resource that have names starting with the letters R to Z:

NAME >= 'R'

The not equal (<>) operator can also be used in query strings.

Wildcard Characters

A wildcard character is a symbol that stands for one or more unknown characters.

When searching file-based data, a '%' wildcard is used to indicate that anything is acceptable in its place: one character, multiple characters, or no character. Alternatively, a '_' wildcard is used to represent a single character in a search. For example, the expression below would select any National Park name starting with the letters Au, such as Aulavik and Auyuittuq:

PC_NAME_EN Like 'Au%'

Null Values

If a column (attribute) of a type that supports null values is selected, and if that column contains any null values in the records displayed in the **Values** list of the *Feature Search* dialog, the second entry from the top of the list will be ' '. Double-clicking this value will add it to the expression and, by using the = operator, the query on the column will select all records with a null value for the attribute. For example, Element Occurrence records with a null value for ELCODE would be returned with the following expression.

ELCODE = ' '

To select all records for which an attribute is not null, the <> (not equal) operator is used. The query shown below would return all occurrences that have ELCODE values, that is, where the ELCODE attribute is not null.

```
ELCODE <> ' '
```

Querying numbers

Numbers can be included in a query using the equal (=), not equal (<>), greater than (>), less than (<), greater than or equal to (>=), and less than or equal to (<=) operators. The example below would return the provinces having 2001 populations that were greater than 100,000.

```
POP_2001 > 100000
```

A point is always used as the decimal delimiter regardless of regional settings. However, the comma cannot be used as a decimal or thousands delimiter in a query.

Calculations

Calculations can be included in queries using the arithmetic operators for addition (+), subtraction (-), multiplication (*), and division (/).

Calculations can be performed between fields and numbers. In the example below, any feature having an area greater than or equal to its length multiplied by 100 would be returned by the query.

```
SHAPE_AREA >= SHAPE_LEN * 100
```

Calculations can also be performed between fields. For example, to find the provinces with a population density of less than or equal to 25 people per square kilometer, the following expression could be used:

```
POP_2001 / AREA_KM <= 25
```

Operator precedence

Expressions are evaluated according to standard operator precedence rules. For example, the part of an expression enclosed in parentheses is evaluated before the part that is not enclosed.

This example:

```
HOUSEHOLDS > MALES * POP90_SQMI + AREA
```

is evaluated differently, and thus produces different results, than:

```
HOUSEHOLDS > MALES * (POP90_SQMI + AREA)
```

To use parentheses in a query expression, either click to add the parentheses and then enter the expression to be enclosed, or highlight the existing expression to be enclosed and then press the Parentheses button to enclose it.

Combining expressions

Expressions can be combined together with the AND and OR operators. When the AND operator is used, both of the expressions separated by the AND operator must be true for a record to be selected.

AREA_KM > 100000 AND DWELL_2001 < 50000

When the OR operator is used, at least one of the two expressions separated by the OR operator must be true for a record to be selected.

AREA_KM > 100000 OR POP_2001 > 750000

Use the NOT operator at the beginning of an expression to find features or records that do not match the specified expression. NOT expressions can be combined with AND and OR.

AREA_KM > 100000 AND NOT POP_2001 < 750000

Querying dates

The syntax required for querying dates depends on the data type. True DATE fields will be stored in the format: 'yyyy-mm-dd hh:mm:ss'. Specify the format within your query as shown below.

Given the format, even a single date requires querying for a range, due to the inclusion of time. Utilize the following query to return data mapped on July 1, 2013:

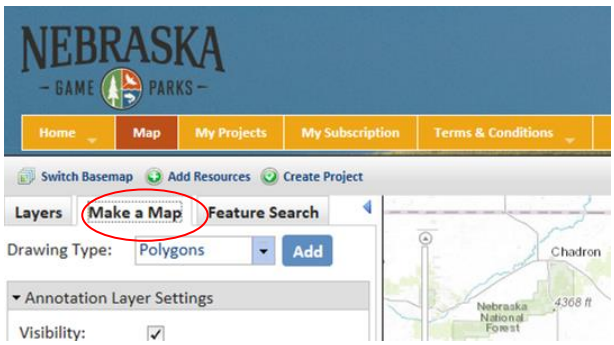
DIGITAL_MAPPING_DATE >= DATE '2013-07-01 00:00:00' AND DIGITAL_MAPPING_DATE <= DATE '2013-07-01 23:59:59'

Similarly, to find data mapped anytime in July 2013:

DIGITAL_MAPPING_DATE >= DATE '2013-07-01 00:00:00' AND DIGITAL_MAPPING_DATE <= DATE '2013-07-31 23:59:59'

Make A Map

Note: If, during your work using the Map, you need to access other tabs in the CERT (e.g. My Projects, Help, Resources), you should right click on the tab and select Open Link in New Tab or Open Link in New Window. If you left click on the tab you will exit the Map and any features you have drawn or layers you have uploaded will be lost.

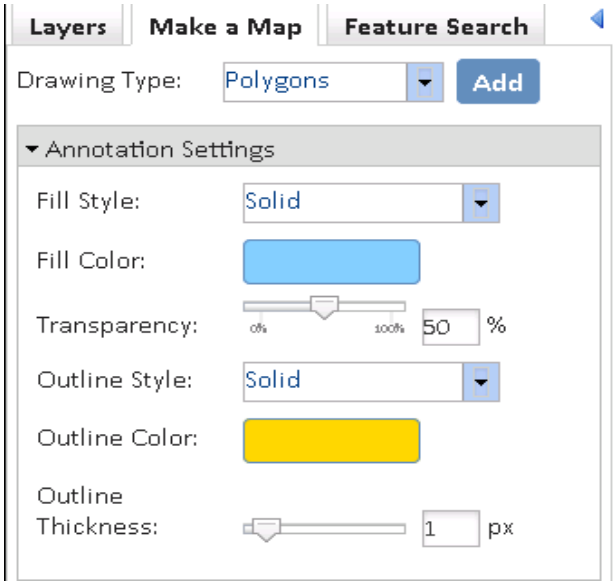


The *Make a Map* tab within the map enables the addition of annotation (graphics and text) to the map. The contents of the tab are segregated into accordion sections which can be contracted by clicking the button or expanded by clicking the button.

- **Polygons**
- **Lines**
- **Points**
- **Text**
- **Annotation Layer Settings**

Polygons

1. Zoom to the area of interest.
2. From the **Drawing Type** dropdown, select **Polygons**.
3. Click **Add** Add to start drawing. The *Draw/Edit* toolbar and *Annotation Settings* section will appear.
4. Within the *Annotation Settings* section, select the desired **Fill Style**, **Fill Color**, **Transparency**, **Outline Style**, **Outline Color** and **Outline Thickness**.

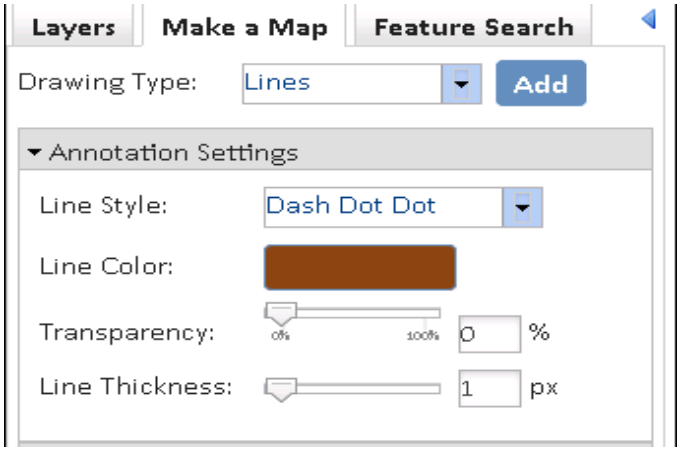


5. Draw a polygon(s) or use the **Additional Mapping Options** tool to copy a polygon(s) from an existing **Map resource**.
6. Within the *Draw/Edit* toolbar, click **Accept**.

7. To change the annotation, click the **Edit Annotations** Edit Annotations button within the *Annotation Layer Settings* section and click the annotation to edit.

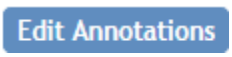
Lines

1. Zoom to the area of interest.
2. From the **Drawing Type** dropdown, select **Lines**.
3. Click **Add** Add to start drawing. The *Draw/Edit* toolbar and *Annotation Settings* section will appear.
4. Within the *Annotation Settings* section, select the desired **Line Style**, **Line Color**, **Transparency**, and **Line Thickness**.



5. Draw a line(s) or use the **Additional Mapping Options** tool to copy a line(s) from an existing **Map resource**.

6. Within the *Draw/Edit* toolbar, click **Accept**.

7. To change the annotation, click the **Edit Annotations** 

button within the *Annotation Layer Settings* section and click the annotation to edit.

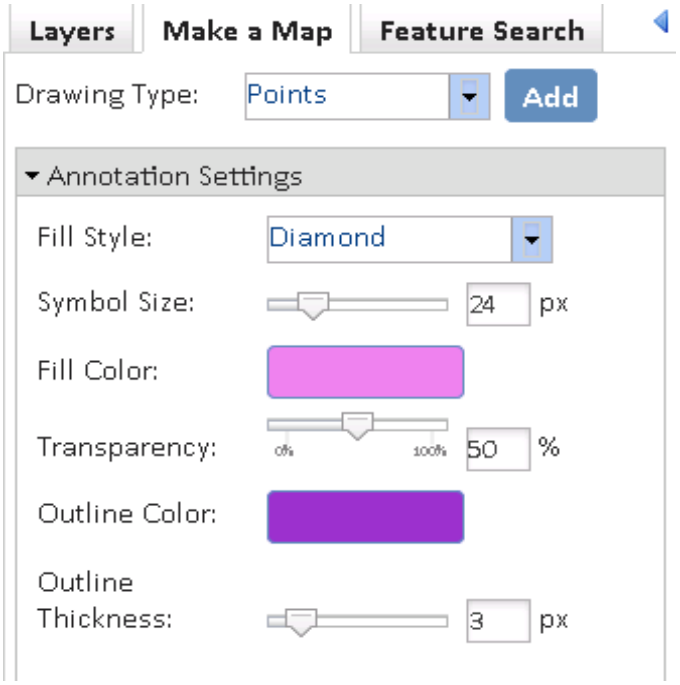
Points

1. Zoom to the area of interest.

2. From the **Drawing Type** dropdown, select **Points**.

3. Click **Add**  to start drawing. The *Draw/Edit* toolbar and *Annotation Settings* section will appear.

4. Within the *Annotation Settings* section, select the desired **Fill Style**, **Symbol Size**, **Fill Color**, **Transparency**, **Outline Color** and **Outline Thickness**.



5. Click the map to place the point(s) on the map or use the **Additional Mapping Options** tool to copy a point(s) from an existing **Map resource**.

6. Within the *Draw/Edit* toolbar, click **Accept**.

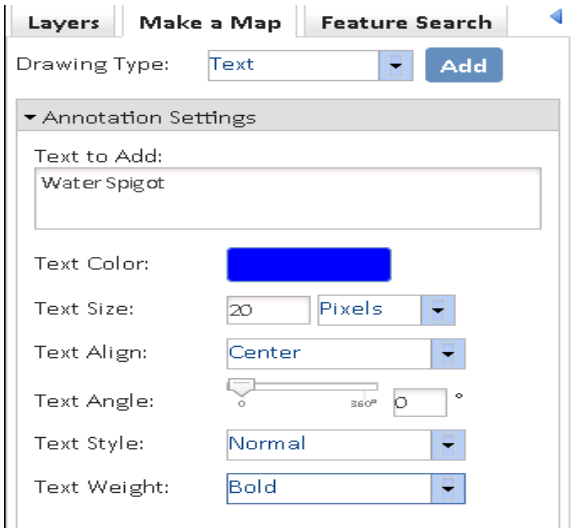
7. To change the annotation, click the **Edit Annotations** Edit Annotations button within the *Annotation Layer Settings* section and click the annotation to edit.

Text

1. Zoom to the area of interest.

2. From the **Drawing Type** dropdown, select **Text**.

3. Within the *Annotation Settings* section, enter the **Text to Add** within the text box and then select the desired **Text Color**, **Text Size**, **Text Align**, **Text Angle**, **Text Style**, and **Text Weight**.



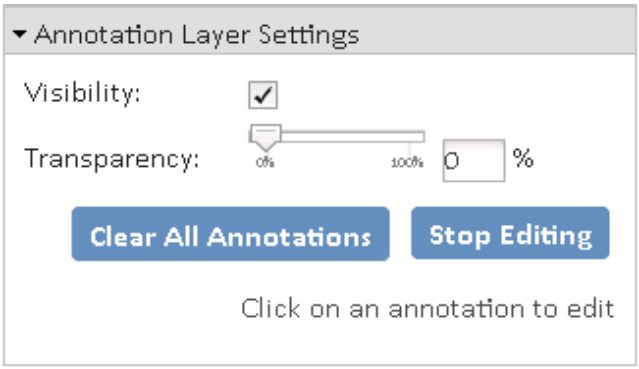
4. Click **Add** Add and then click on the map where you would like the text placed.

5. Repeat steps 3 & 4 to add the same text in multiple locations or enter different text.

6. To change the annotation, click the **Edit Annotations** Edit Annotations button within the *Annotation Layer Settings* section and click the annotation to edit.

Annotation Layer Settings

The configurations within the *Annotation Layer Settings* section apply to all annotations added to the map.



- **Visibility** - set to display annotation by default. Uncheck the Visibility checkbox to turn off all annotation.

- Visibility: ☑

- **Transparency** – allows the transparency of the layer to be adjusted by sliding the indicator along the bar.

- Transparency: 0%–100% 0 %

- **Clear All Annotations** - Clear All Annotations removes all annotations from the map.

- **Edit Annotations** - Edit Annotations allows for editing of individual annotations:

1. Click the **Edit Annotations** button

2. Select the desired annotation to edit - the accordion section for the annotation type will be expanded to provide access to the appropriate settings.

- **Point** - change the settings of the Point or change its location by clicking on it and dragging the point to the desired location.

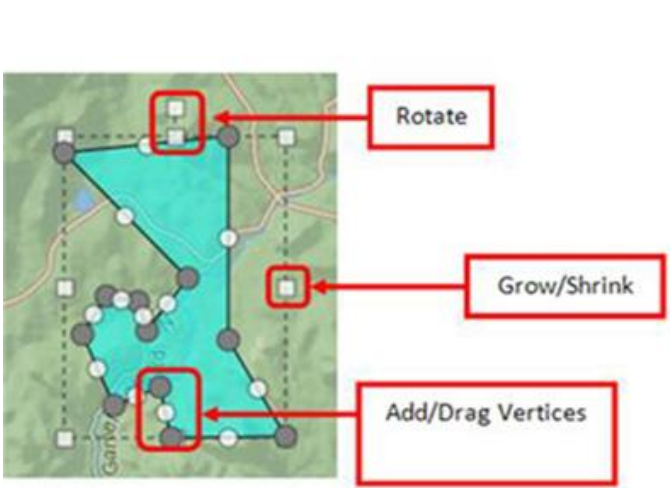
- **Line** - change the settings of the Line or change its location by clicking on it and editing the spatial feature.

- **Polygon** - change the settings of the Line or change its location by clicking on it and editing the spatial feature.

Edit spatial feature by:

- Dragging, rotating, expanding, or shrinking the entire feature; and/or by

- Adding, deleting, or dragging vertices.



- **Text** - change the Alignment or Color of the Text or change its location/angle by clicking and dragging the text to the desired location.

3. Click Stop Editing 

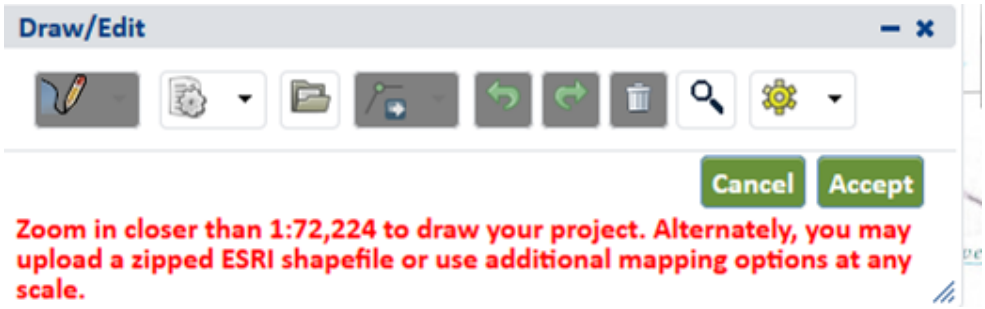
after making the desired changes or the Delete Annotation 

button to delete the feature.

Draw/Edit

The *Draw/Edit* toolbar opens automatically upon choosing to **Create a Project** or add a spatial feature via **Make a Map**.

If the map is not zoomed in closer than 1:72,224, the Draw Shape tool will not be available (but other ways to develop a shape will still be available). To use the Draw Shape tool, zoom in to 1:72,224 or closer using the mouse, the **Scale Bar, or the Zoom to Coordinates or Scale** tool.



A number of different tools are provided on the *Draw/Edit* toolbar, enabling various actions ranging from digitizing a shape, to moving boundaries, to removing an area from within feature, to buffering a polygon. Some of these tasks require different modes, which are displayed on the lower left of the toolbar.

Draw Shape

- Edit Shape:
  - **Edit Geometries**
  - **Erase Inside Drawn Area**
  - **Crop Outside Drawn Area**
- **Upload Shapes**
- **Buffer Shape**
- **Additional Mapping Options:**
  - **Copy Shape from Map Layers**
  - **Copy Shapes Created via Make A Map**

- **Coordinates**
- **Drawing** a point or line feature(s)

- Other Draw/Edit Tools:
  - **Undo**
  - **Redo**
  - **Clear Shape**
  - **Draw Settings**
    - **Use Freehand**
    - **Disable Navigation while Drawing**

Draw Shape

The default tool within the *Draw/Edit* toolbar, **Draw Shape**, is limited to drawing polygonal features. To digitize a point or line feature(s), utilize the **Drawing** option within the **Additional Mapping Options** tool.

Features can be digitized using either the default drawing tool, which utilizes vertices, or a freehand tool.

Use default Draw Shape tool:

a. If not already in Draw mode, click the  **Draw Shape** icon.

b. Single click to draw a point.

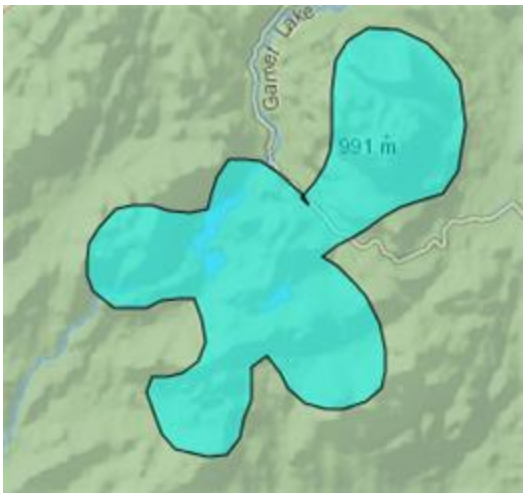
c. For lines and polygons, click every location a vertex is to be placed and double-click to complete feature.

Use Freehand drawing tool:

1. From the *Draw Settings* dropdown, select **Use Freehand**.

   a. Holding down the mouse button, draw the feature.

   b. Release the mouse button to finish digitizing the feature.



2. Click **Accept** to complete the feature.

3. Alternatively, use the edit tools described in the following sections to make changes to the feature before clicking **Accept** to save.

Edit Shape

Edit Entire Shape and/or Vertices

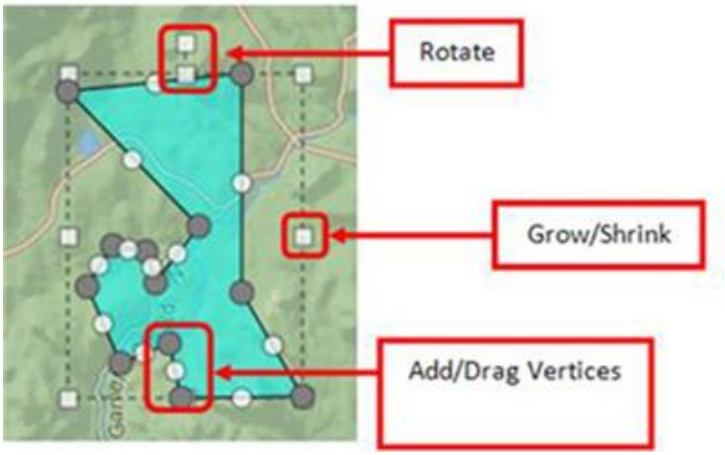
1. Enter Edit mode by clicking the  **Edit Shape** icon.

   The vertices and extent of the feature will be displayed.

2. Edit feature by:

   oDragging, rotating, expanding, or shrinking the entire feature; and/or by

   oAdding, deleting, or dragging vertices.



Erase Inside Drawn Area

1. Enter Erase mode by clicking the  **Erase Inside Drawn Area** icon.

2. Digitize a polygon circumscribing the area to be cut from the feature by single-clicking to add each vertex, and double-clicking to complete the polygon.

3. The area circumscribed by the polygon will be clipped from the original feature.

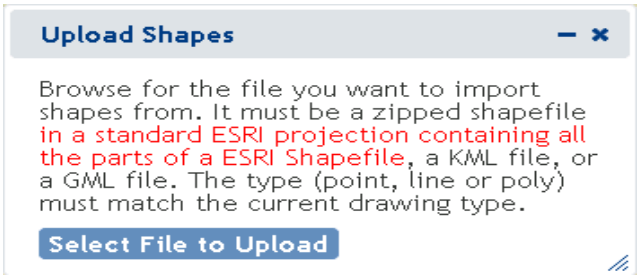
Crop Outside Drawn Area

1. Enter Crop mode by clicking the **Crop Outside Drawn Area** icon.
2. Digitize a polygon that contains the portion of the feature to be retained, by single-clicking to add each vertex, and double-clicking to complete the polygon.
3. The area within the polygon drawn in Crop mode will be retained, while that portion of the feature outside the polygon will be deleted.
4. Polygon drawn overlapping feature... area of feature within polygon remains after cropping.

Upload Shapes

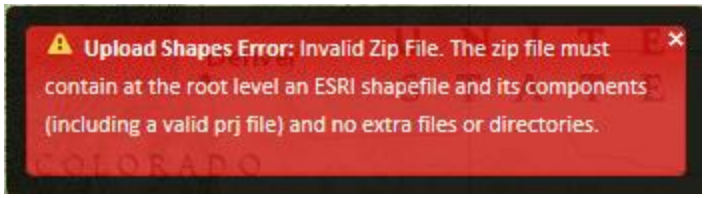
Current functionality allows for an ESRI shapefile to be added from the Draw/Edit toolbar. To upload the data, all component files must be zipped into one zip file with no additional directories or files. The data must be projected, i.e. data in units of degrees are not compatible with the system. A valid .prj file must be included in the zip file of the shapefile.

1. Enter *Upload Shapes* mode by clicking the Upload Shapes icon.
2. Within the *Upload Shapes* dialog, click Select File to Upload Select File to Upload.



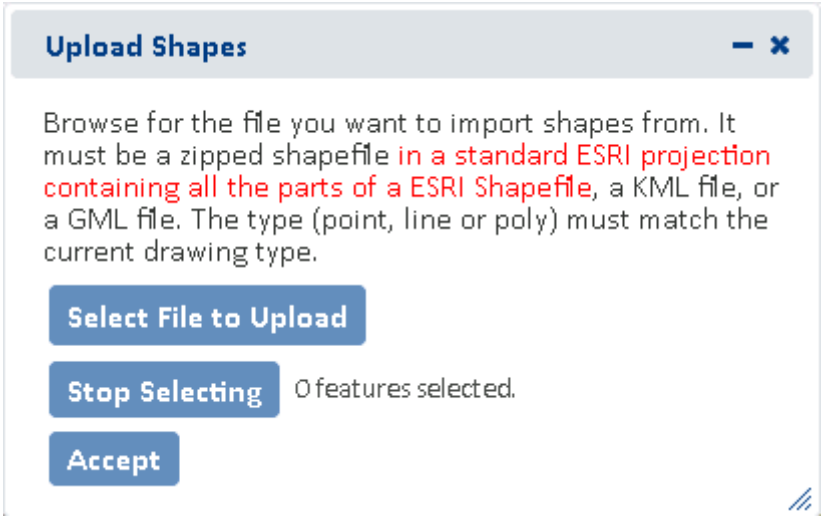
3. Navigate to and select the shapefile to add.

NOTE: The following message will appear if a projection file (.prj) is not included in the zip file.



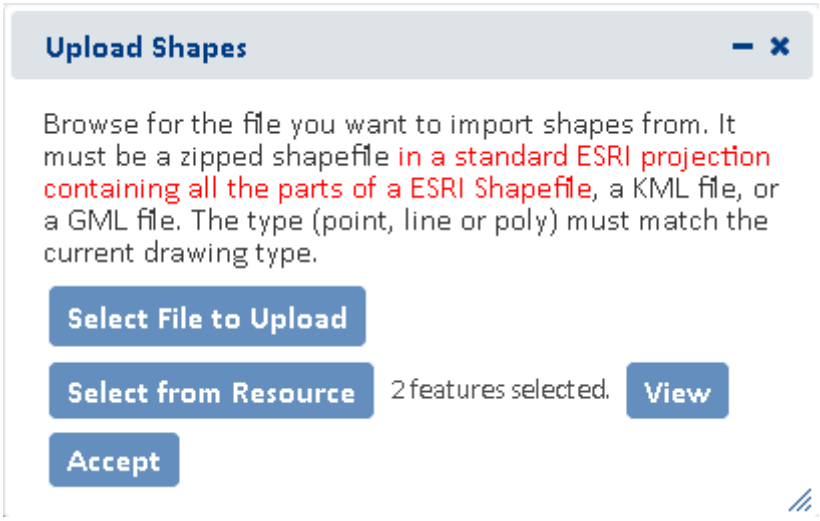
4. The map will zoom to the extent of the spatial feature(s) within the uploaded file.

   a. If a file with multiple shapes has been selected, draw a box on the map to select the desired feature(s) within the uploaded layer.



   b. The *Details* dialog of the selected feature(s) will be displayed. To remove a feature from the selection, from the *Tasks* menu, select **Remove from Include List**. Once removed, the option to **Add to Include List** becomes available in the *Tasks* menu.

c. The number of features selected will be displayed in the section to the right of the *Select From Resource* button along with a **View** button, which allows the user access to the *Details* dialog again if they need to remove additional features from the selection. Alternatively, create a new selection by clicking the **Select from Resource** button again (return to Step 4a for instructions).



d. Click **Accept** within the *Upload Shapes* dialog.

5. In the *Draw/Edit* toolbar click **Accept**.

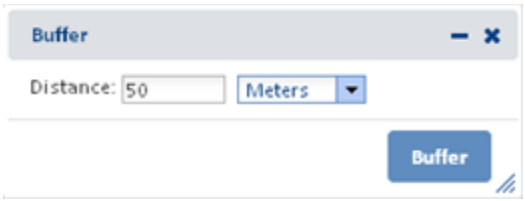
Buffer Shape

The Buffer Shape tool can be used in conjunction with the **Draw Shape** tool or **Additional Mapping Options**.

1. Either draw a shape using the **Draw Shape** tool or create a shape using the **Additional Mapping Options** tool.

2. Enter Buffer mode by clicking the  **Buffer Shape** icon.

3. In the *Buffer* dialog, enter a buffer *Distance* and select the desired distance unit from the dropdown. Click **Buffer**.



4. Use of Buffers

   - A positive distance will buffer outside the feature whereas a negative distance will buffer within the feature. Negative distances cannot exceed the size of the shape, nor can they be used with Point or Line features. The following error will be displayed when the negative distance exceeds the size of the shape.

   - Buffers are additive. Thus, if one distance is used to buffer a polygon and then another distance is entered, the second buffer will be added to the first buffer rather than to the original feature. For example, if a feature is first buffered by 5000 m, and then a second buffer distance of 2500 m is specified, the original feature ends up being buffered by 7500 m; the second distance does not replace the first.

   - To apply different buffers to a polygon without combining them,  **Undo Last Drawing Change** must be used before specifying the second buffer distance. This will cause the original buffer to be removed prior to applying the second.

5. The buffer will be applied and the user is returned to the *Draw/Edit* toolbar to further modify the feature, if desired. Click **Next** to continue the process.

Additional Mapping Options

The **Additional Mapping Options** dialog allows the user to:

- **Copy Shape from Map Layers**
- **Copy Shapes Created via Make a Map**
- enter **Coordinates**
- create a **Drawing**

This tool can be used reiteratively for multiple edits and use of various tools within a given editing session. As such, the *Additional Mapping Options To:* is used to indicate how to use the new shape:

- **Add to original drawing**
- **Replace original drawing**
- **Erase areas of overlap**
- **Crop to copied feature**

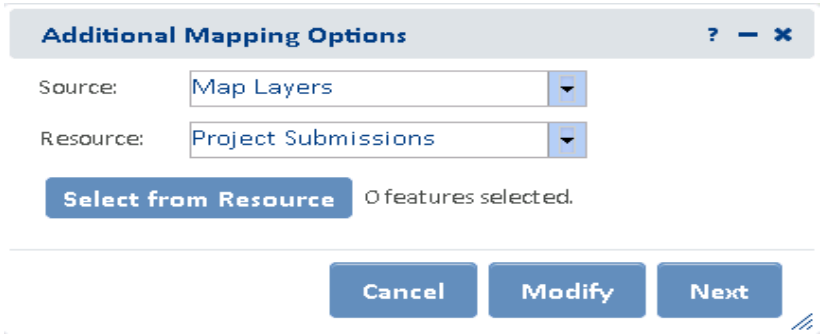
Following are the instances when this dialog will be displayed:

- If there is a drawing in the primary draw toolbar whose feature type (point, line, polygon) is the same as the current shape, then the **Add to original drawing** and **Replace original drawing** options will be available.
- If there is a drawing in the primary draw toolbar and the feature type of the current shape is a polygon, then the **Erase areas of overlap** and **Crop to copied feature** options will be available.
- If the feature type of the drawing in the primary draw toolbar is polygon, as is that of the current shape, then all 4 options will be available.

Copy a Shape from Map Layers

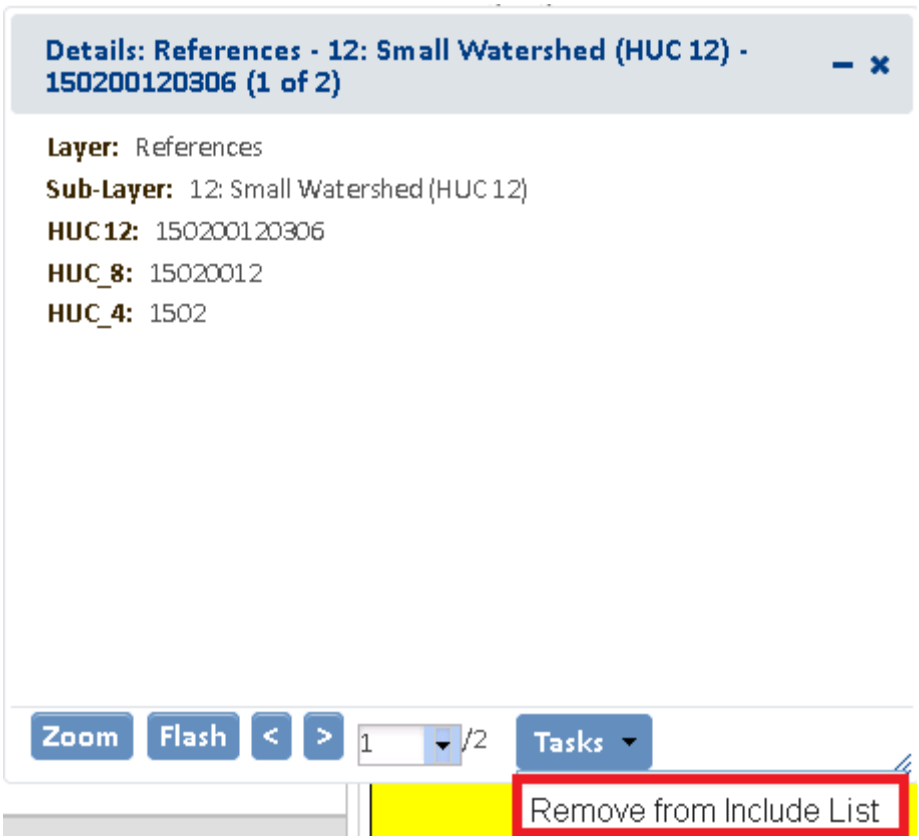
1. Click the **Additional Mapping Options**  icon.
2. In the *Additional Mapping Options* dialog, from the *Source* dropdown menu, select **Map Layers**.
3. From the *Resource* dropdown menu, select the map resource from which to copy the shape(s). The options depend on the layers available within the **Layers** section of the map.

NOTE: If the chosen Resource is comprised of multiple layers, an additional *Layer* dropdown list will be displayed from which to select the given layer to copy the shape(s).



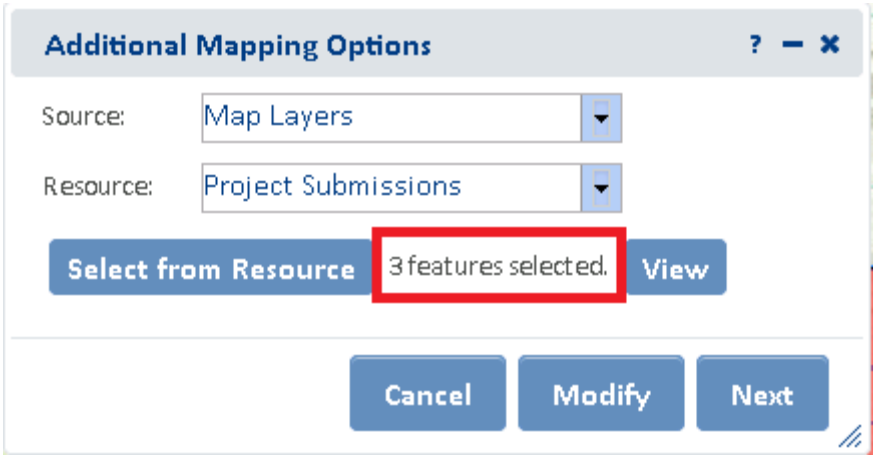
4. Click the **Select from Resource** button and holding the mouse button down, draw a box on the map to select the desired feature(s) within the Resource/Layer.

5. The *Details* dialog of the selected feature(s) will be displayed. To remove a feature from the selection, from the *Tasks* menu, select **Remove from Include List**. Once removed, the option to **Add to Include List** becomes available in the *Tasks* menu.



6. The number of features selected will be displayed to the right of the *Select From Resource* button along with a **View**  button, which allows the user access to the *Details* dialog again if they

need to remove additional features from the selection. Alternatively, create a new selection by clicking the **Select from Resource** button again (return to Step 4 for instructions).



7. To further modify the selected features, click **Modify** or **Next** to use the features as they exist.

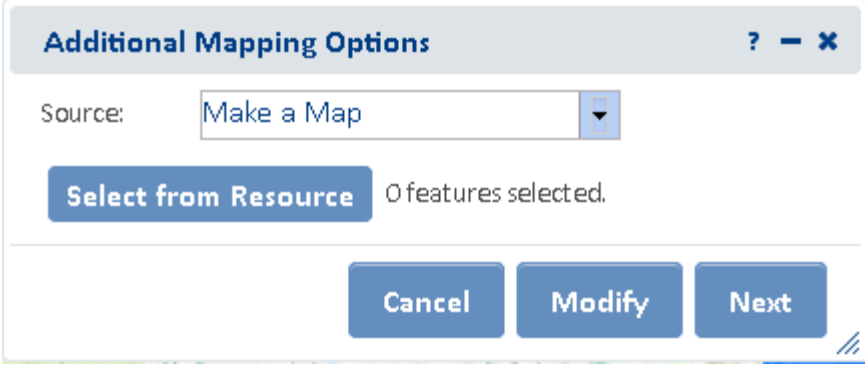
8. In the *Draw/Edit* toolbar click **Accept** unless further edits are needed.

Copy Shapes Created via Make a Map

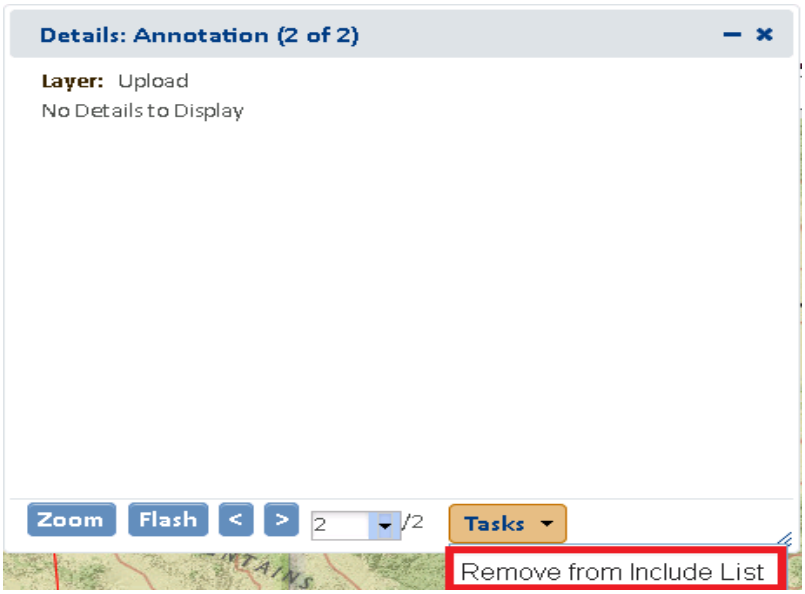
1. Click the **Additional Mapping Options**  icon.

2. In the *Additional Mapping Options* dialog, from the *Source* dropdown menu, select **Make a Map**.

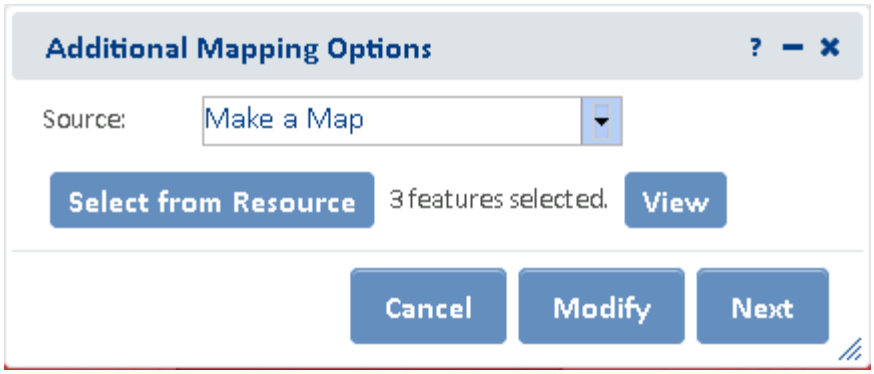
3. Click the **Select from Resource** button and click on the desired feature(s).



4. The number of features selected will be displayed in the Spatial Search section to the right of the *Select From Resource* button along with a **View** button, which allows the user access to the *Details* dialog again if they need to remove additional features from the selection. Alternatively, create a new selection by clicking the **Select from Resource** button again (return to Step 2 for instructions).



5.To further modify the selected features, click **Modify** or **Next** to use the features as they exist.



6.In the *Draw/Edit* toolbar click **Accept** unless further edits are needed.

Enter Coordinates

1. Click the **Additional Mapping Options**  icon.

2.In the *Additional Mapping Options* dialog, from the *Source* dropdown menu, select **Coordinates**.

3.Select the desired **Projection** and enter in the formats shown:

- **Latitude/Longitude (DMS)**
  - Latitude (Northing): 42d 42' 44"
  - Longitude (Easting): -75d 38' 38"

o**Latitude/Longitude (Decimal)**

4. Latitude (Northing): 42.712326430204115

   ▪Longitude (Easting): -75.64402639639827

o**Subnational Projection** - the projection used by your HP/CDC within the Biotics application. Contact your Biotics Administrator for further information.

o**Define Projection**

NOTE: WKID and WKT values can be found **here**.

▪By Well Known ID (WKID): 3857

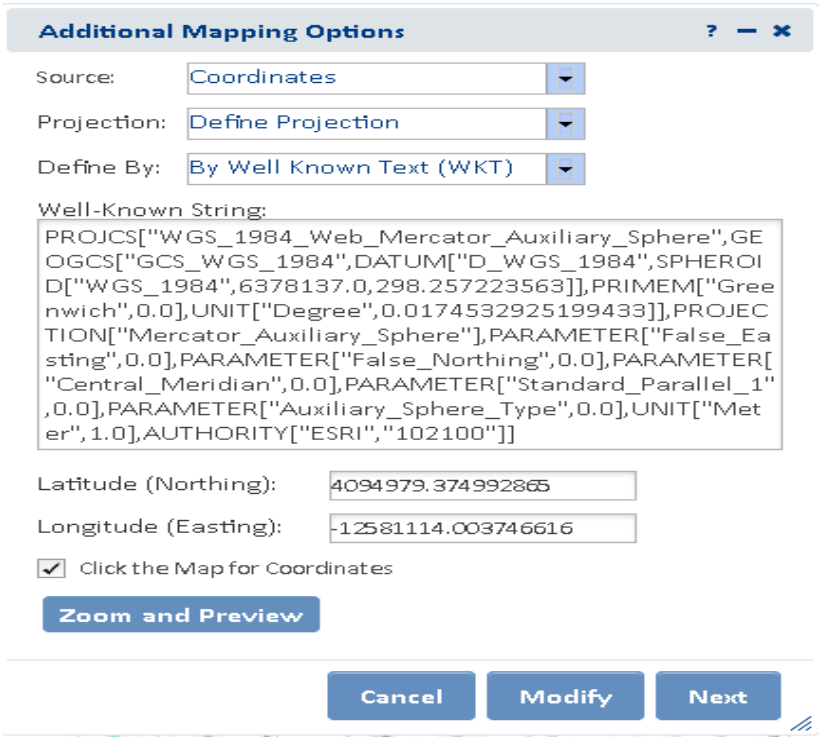
5. Latitude (Northing): 5268287

   •Longitude (Easting): -8420654.5

▪By Well Known Text (WKT):

The WKT can be copied directly from a projection file (.prj). Below is an example.

PROJCS["WGS_1984_Web_Mercator_Auxiliary_Sphere",GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Mercator_Auxiliary_Sphere"],PARAMETER["False_Easting",0.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",0.0],PARAMETER["Standard_Parallel_1",0.0],PARAMETER["Auxiliary_Sphere_Type",0.0],UNIT["Meter",1.0],AUTHORITY["ESRI","102100"]]



6. Click **Zoom and Preview**.

7. To further modify the selected features click, **Modify** or **Next** to use the features as they exist.

8. In the *Draw/Edit* toolbar click **Next** unless further edits are needed.

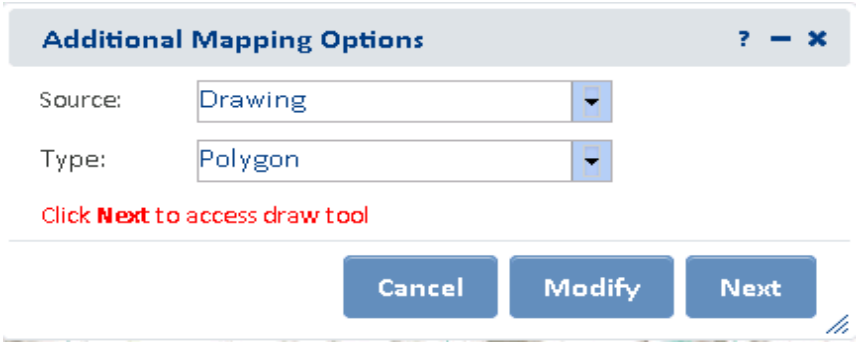
Create a Drawing

This option enables drawing of any feature type (Point, Line, Polygon) whereas the default **Draw Shape** tool within the Draw/Edit toolbar is limited to polygonal features.

1. Click the **Additional Mapping Options**  icon.

2. In the *Additional Mapping Options* dialog, from the *Source* dropdown menu, select **Drawing**.

3. From the *Type* dropdown menu, select the type of spatial feature (**Point**, **Line**, or **Polygon**) to draw and click **Next**.



4. The *Draw shape to use as other Source* dialog will be displayed. Draw the desired shape and click **Next**.

5. Single click to draw a point.

   - For lines and polygons, click every location a vertex is to be placed (unless the **Use Freehand** option is selected) and double-click to complete feature.

   In the case of a line or polygon feature, the *Draw/Edit* toolbar will be displayed, allowing the user to edit the feature further.

6. Click **Next** to continue.

Other Draw/Edit Tools

- **Undo** 
- **Redo** 
- **Clear Shape** 

Draw Settings  The *Draw Settings* dropdown menu includes two options:

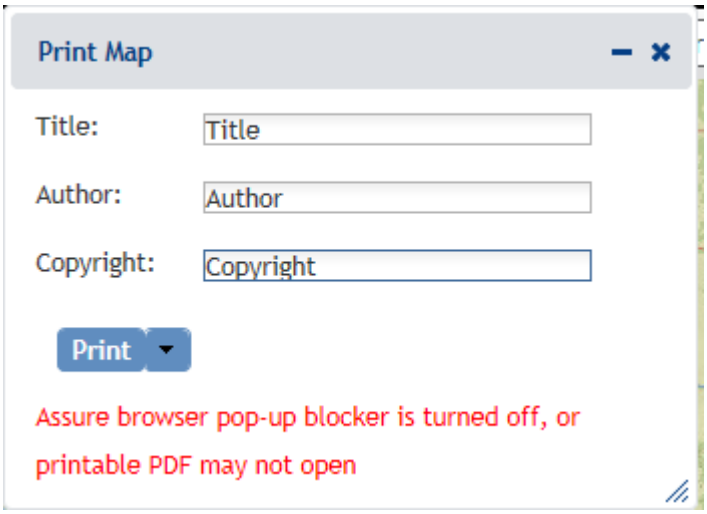
- **Use Freehand** provides the ability to digitize a feature freehand rather than by clicking to add individual vertices.
- **Disable Navigation while Drawing** - a setting that is on by default - improves drawing performance by switching map navigation (i.e., pan and zoom functionality) off once the first vertex of a shape has been placed, and re-enabling navigation when the shape is closed. Leaving this draw setting enabled prevents the application from interpreting a longer touch on the cursor while digitizing as an attempt to pan, which would cause the map to be refreshed and any vertices digitized to be lost.

Print

Allows the user to create a printable version of the map view.

Steps:

1. Within the *Map* menu, click the  icon located in the upper right corner of the map title bar.
2. Within the *Print Map* dialog, enter pertinent information within the **Title**, **Author**, and **Copyright** text boxes only if intending to print to **Landscape Layout**. This information is not utilized by the **Map Only** print options and hence need not be included if printing the Map Only.



3. From the **Print** dropdown menu  , select the desired print option:
   - **Landscape Layout (PDF)** - provides a PDF of the map including the Title, Author, and Copyright information provided.
   - **Map Only (PDF)** - provides a PDF just of the map itself. Neither Title, Author, nor Copyright information is utilized.

- **Map Only (PNG)** - provides a PNG just of the map itself. Neither Title, Author, nor Copyright information is utilized.
- **Map Only (JPG)** - provides a JPG just of the map itself. Neither Title, Author, nor Copyright information is utilized.

4. The Print dropdown reflects **Printing** 

while the map is being generated.

5. The map opens in a separate tab within the web browser. **NOTE**:The printed map cannot be opened in a new tab unless the pop-up blocker is turned off. If prompted, choose to **Always allow** pop-ups from this site.

6. From the *File* menu of the web browser, select **Save As** and indicate where (and with what name the map document should be saved.

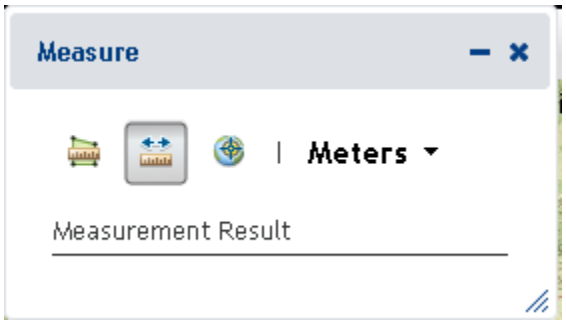
Measure

The measure tool is used to determine the size of a designated area, the distance of a digitized line, and the coordinates of a specific location.

Steps:

1. Within the map, click the **Measure**  icon, located in the upper right corner of the map title bar.

2. Select the desired measurement tool and the appropriate unit of measure from the dropdown list.



oArea 

oDistance 

oLocation 

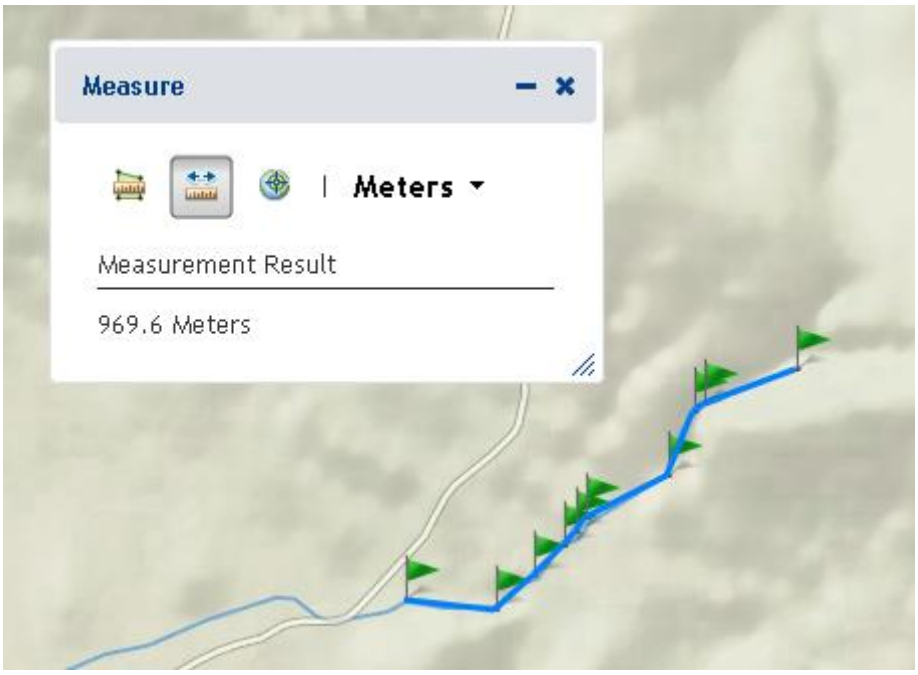
3. Digitize the feature to be measured:

   Point - click the desired location

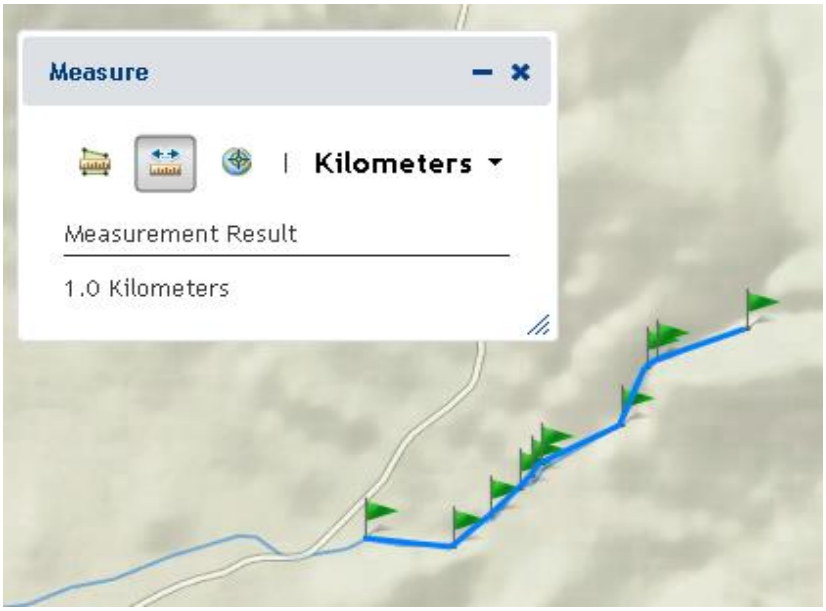
   Line - digitize a line, double-clicking to complete the feature

   Polygon - digitize a polygon, double-clicking to complete the feature

4. The *Measurement Result* is reported in the specified units once the line/polygon has been completed.



NOTE: The measurement unit can be changed after the feature has been digitized and the measurement result will be displayed in the newly selected unit.



Snapping Settings

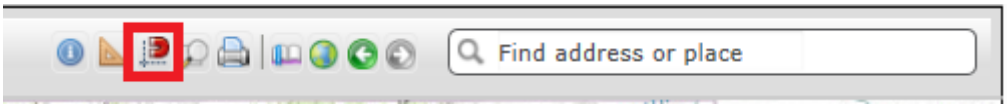
Snapping allows you to create features that connect to each other so your edits are more accurate, with fewer errors. When snapping is turned on, your pointer will jump, or snap to, edges, vertices, and other geometric elements when your pointer is near them and within a certain tolerance. This enables you to position a feature easily in relation to the locations of other features.

Snapping is not limited to being used while editing, as it is utilized in other areas such as the Measure tool on the Tools toolbar.

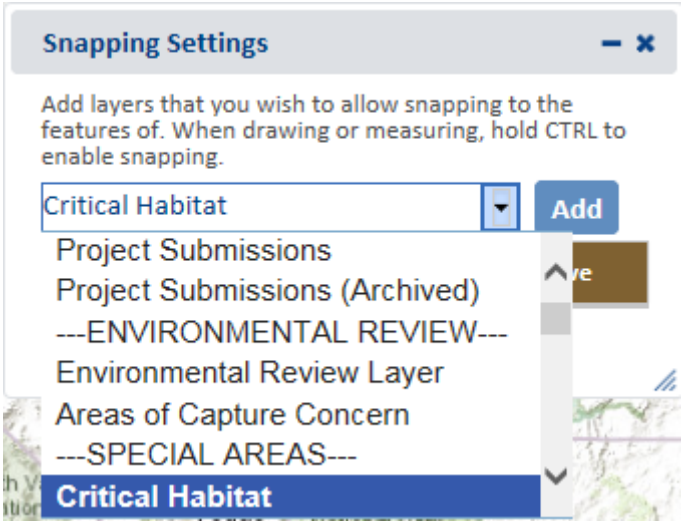
Snapping is useful with many editing operations, such as creating polygons that do not overlap or have gaps between them, drawing lines that connect to each other, or placing a point exactly along an existing line.

Steps:

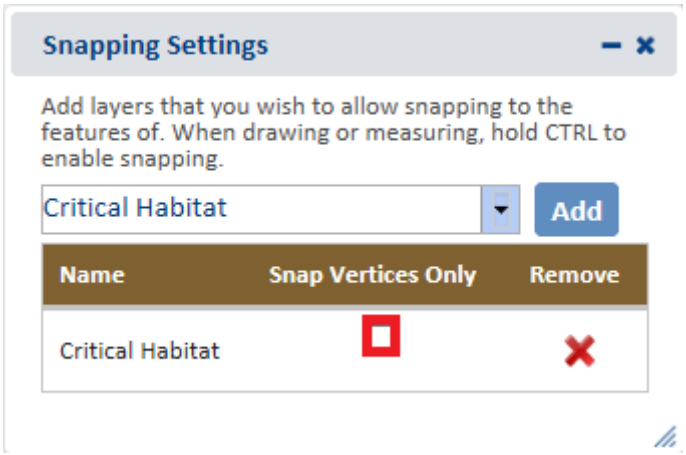
1. Within the Map, click the  icon located in the upper right corner of the map title bar, or from the *Tools* menu, select **Snapping Settings**.



2. Within the *Snapping Settings* dialog, all feature layers listed within the **Layers** tab of the Map are available for snapping. Select the layer(s) to which you want to snap from the dropdown menu and click **Add**  . Repeat this step until each of the layers to which should be snapped have been added.



3. If the snapping should be limited to vertices only, indicate the **Snap Vertices Only** checkbox.



4. Select the tool with which to snap (i.e. **Create Project**, **Make a Map**, **Measure**).

5. Hold **CTRL** to enable snapping.

6. As you move your pointer around the map, the pointer will snap to various geometric locations as you move over them, as indicated by an aqua cross .

7. Once the cursor has snapped, click to place a vertex or point or perform the edit as desired. Double-click to complete the spatial feature.

8. Within the *Snapping Settings* dialog, **Remove** the layer(s) which is no longer desired for use with snapping.

About Map Services

The following overview of map services includes some things to keep in mind when investigating map services published by you or others that you may wish to add.

- **Projection**
- **Cached Map Services**
- **Dynamic Map Services**
- **Comparison: Cached vs. Dynamic Map Services**

Projection

The Map displays data using the WGS_1984_Web_Mercator_Auxiliary_Sphere (EPSG code/spatial reference ID 3857) projection, which is the map projection used by most online basemap services, including ArcGIS, Bing, and Google. Any map services that will be displayed as reference layers must be capable of being displayed in this projection. Dynamic ArcGIS map services can be reprojected on-the-fly; however, this does negatively impact performance. Performance will be best if you use map

services published in the Web Mercator projection. Cached map services are typically only available in the projection in which they were cached.

Cached Map Services

The best way to create fast map services is to cache them. With a cached map service, the server draws the map at a set of predefined scale levels and saves the images. When the server receives a request for a map, it's much quicker to return one of these cached images than to draw the map again. Caching is appropriate for basemaps and maps that don't change often.

- Benefit:
  - improved performance
- Limitation:
  - does not allow filtering
  - does not allow layer visibility to be altered (ie. can't be turned on or off)
  - Cached map services published from ArcGIS Online will not be available with the Filter, Identify, or Feature Search tools.
- Projection: Must use same projection as basemaps – ArcGIS Server cannot reproject cached services.
  - WGS 84 Web Mercator (Auxiliary Sphere) projection enables the map services to be used in conjunction with any of the major online base maps (Esri, Bing, Google).
  - Cached services in the WGS 84 Web Mercator (Auxiliary Sphere) projection will provide the best performance
  - Cached maps must use the standard scale levels supported by Google, Bing, and ESRI's arcgis.com.
  - If cached services are in a different projection, they can be created as dynamic services, which will allow them to be reprojected; however, we don't know enough about the underlying data sets to know what performance will be like. It's possible that this won't be sufficient, and you'll still need to provide cached services in the target projection.
- It is not necessary to reproject all of the individual layers but just alter the projection of the map documents. Then republish the map documents as a second service (second to what you're using for your purposes), and build the cache.

Dynamic map services

Layers published as dynamic map services can be rescaled and re-projected on the fly.

- Benefit:
  - Allows filtering

- oAllows layer visibility to be altered (ie. can be turned on or off)

- Limitation:
  - oDecreased performance because needs to draw map on the fly

- Projection: any projection for which there is a built-in Esri transformation from the source projection to the target projection. This can be verified through ArcMap - if ArcMap can handle it, it should be fine. Performance will be better, though, if the source projection already matches the target projection.

- Operations Allowed: when publishing the map service, indicate **Map**, **Query**, and **Data** as *Operations Allowed* or not all the tools indicated below will be available for use with the map service.

Comparison: Cached vs. Dynamic map services

	Cached	Dynamic
Application	Base maps	Reference Layers
Performance	✔ Improved performance	✘ Decreased performance because needs to draw map on the fly
Projection	✘ Typically cannot be reprojected	✔ Can be reprojected on the fly ✘ Reprojection negatively affects performance
Limitations	✘ Alter visibility of layers ✘ Filter ✘ Copy	✔ Alter visibility of layers ✔ Filter ✔ Copy

Test Map Service

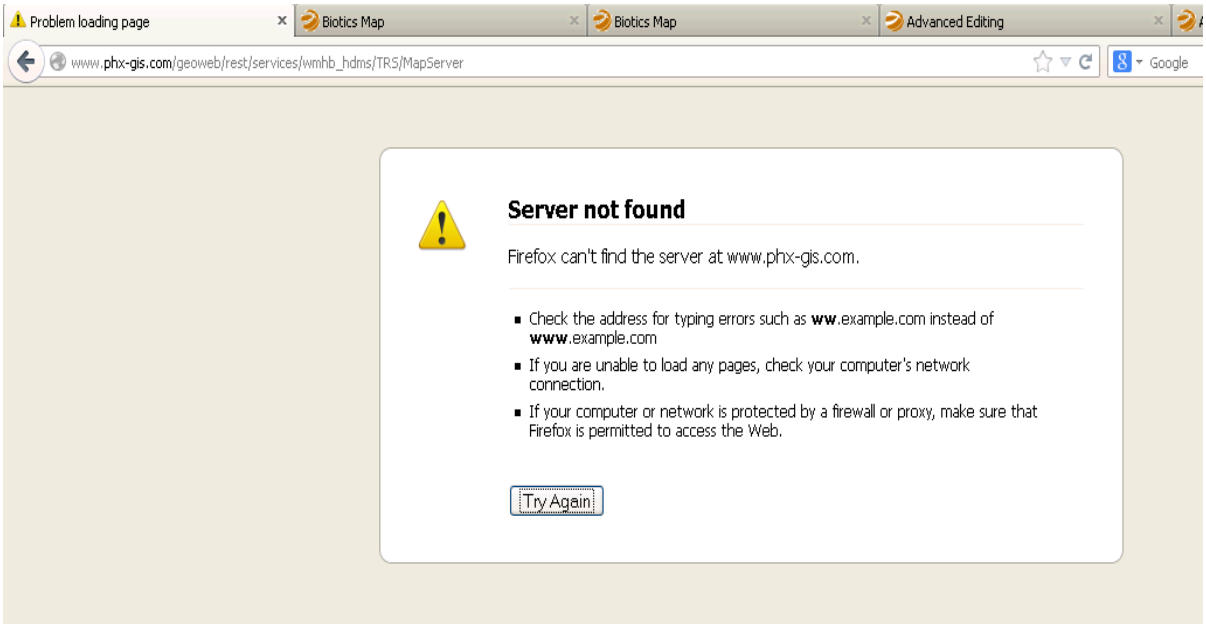
Prior to adding a map service, test the map service to verify it functions. If the map service is not functioning, it will not work in Nebraska Conservation and Environmental Review Tool.

Indications that the map service may not be functioning include:

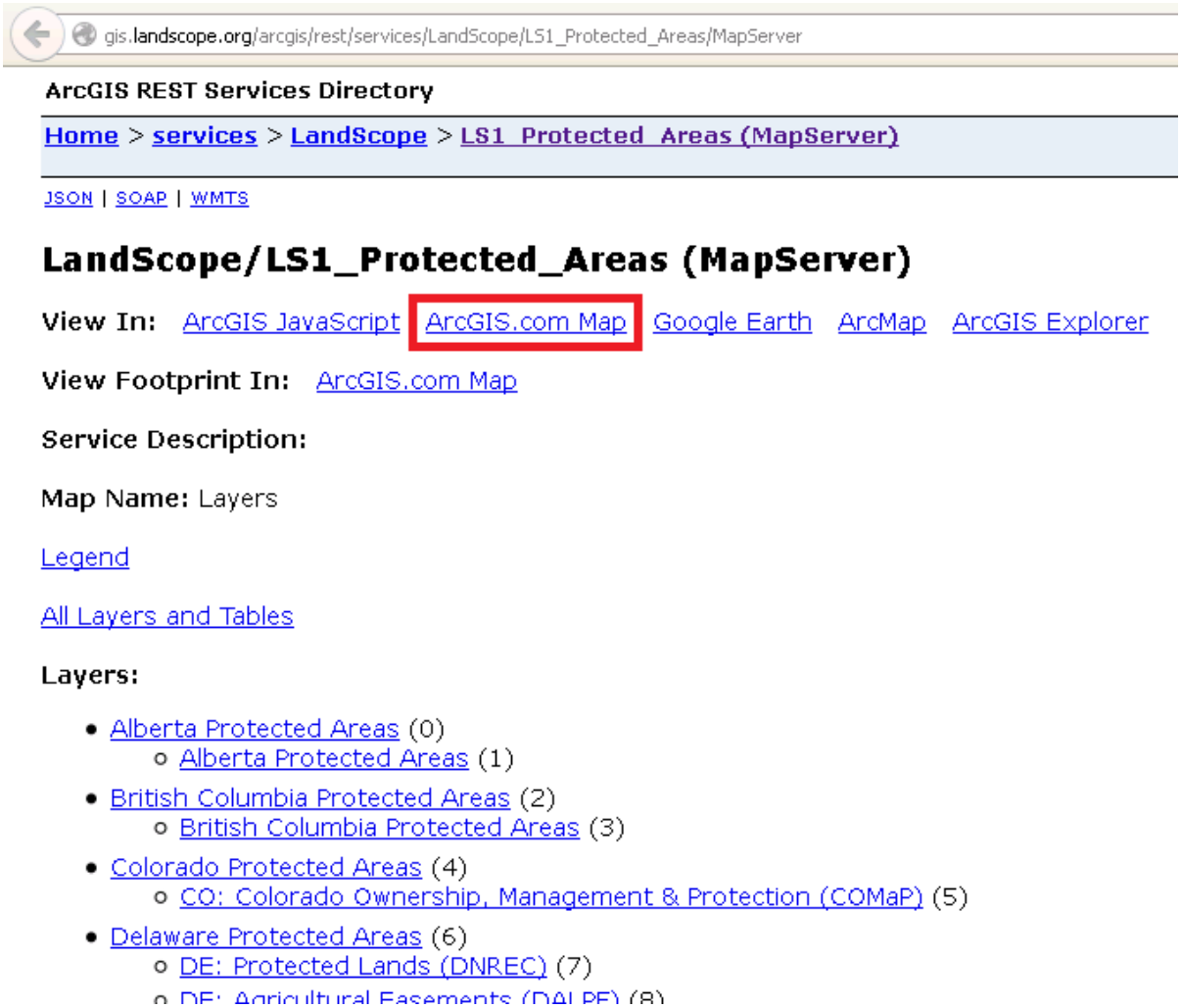
- the spinner spinning non-stop and the map service never adding to the map viewer
- the following type of error is received: **Register Layer Failed: RequestTimeoutError...** This error indicates that the map service is not available.

Steps:

1. Copy the URL of the map service into a web browser. If an error, such as that shown below, is received the map service is not functioning correctly - contact the host of the map service to resolve it. In this state, the map service will not work within Nebraska Conservation and Environmental Review Tool.

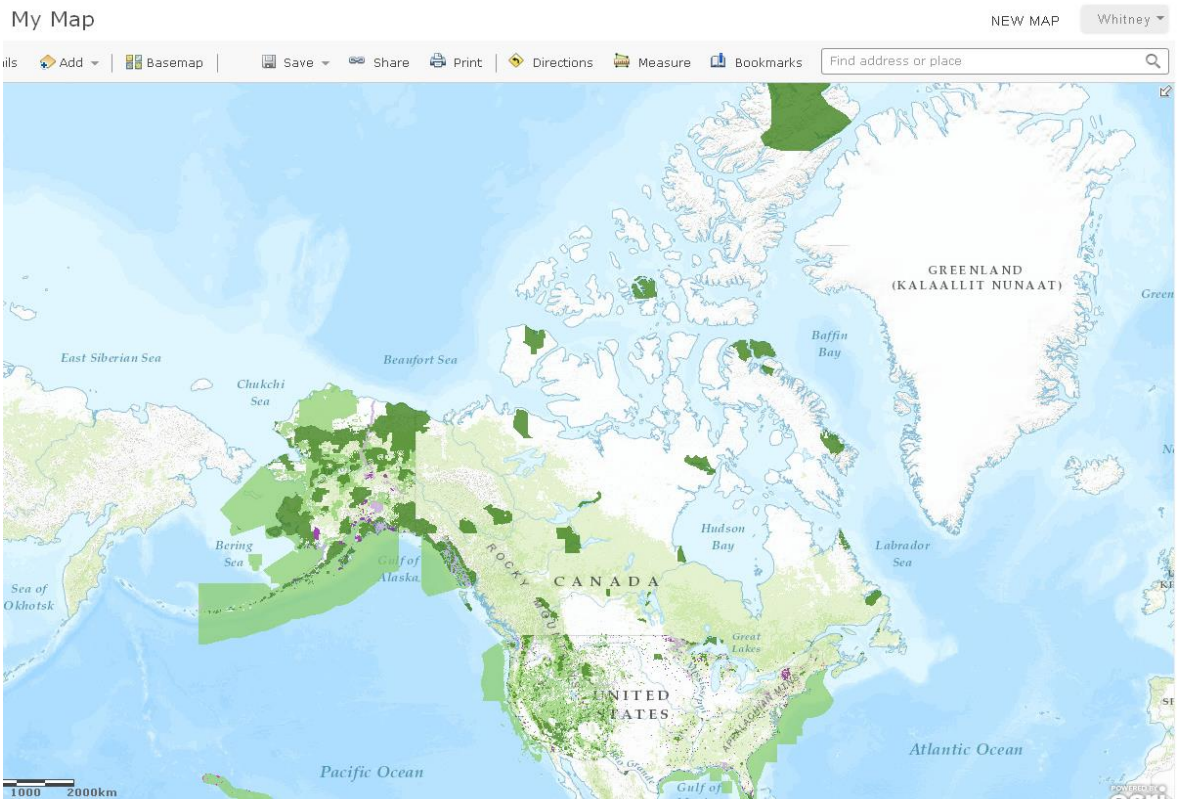


2. If you connect to the map service details successfully (as shown below), then the map service exists.



3. Within the map service details window (shown above) of the *ArcGIS Rest Services Directory*, click the **ArcGIS.com Map** link to verify that the map service is functional in the ArcGIS.com Map. If it does not work in the ArcGIS.com Map, it will not work in Nebraska Conservation and Environmental Review Tool.

NOTE: You may need to log in to ArcGIS.com to view the map service.



4. Once successfully tested in the ArcGIS.com Map, as shown above, add the map service to the CERT map viewer via the **Add Resource** tool.

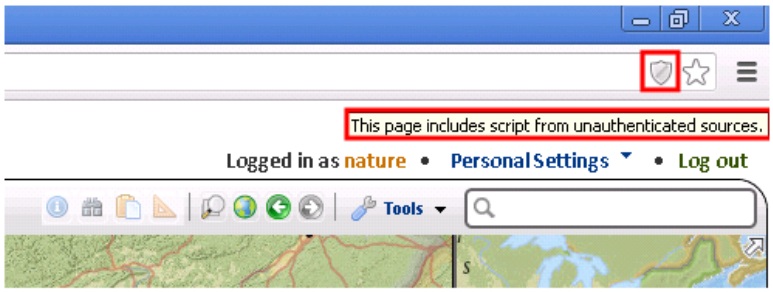
Using Insecure Map Services

The URL you have provided is to a map service not protected by SSL and you should first try adding this URL with the 'https:' prefix instead of 'http:'. If you continue to add an insecure service, it may be blocked by the browser. If not blocked, the browser will treat this page as insecure, and give a warning.

- **Google Chrome**
- **Firefox**
- **Internet Explorer**

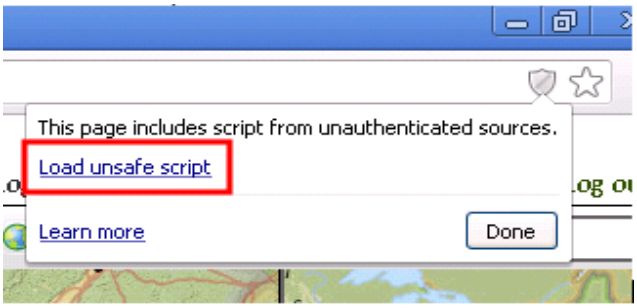
Google Chrome

Chrome opens a very subtle shield icon, shown in the screenshot below, when attempting to add a map service to the map. At first glance the user may mistake this for the map viewer not working properly when it's the actually due to the way the browser treats insecure map services.

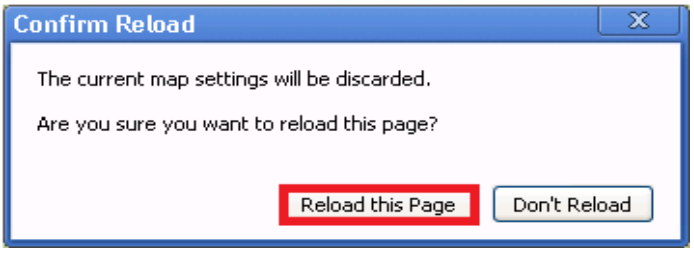


1. To load the map service, click the shield icon, which displays a second message.

2. Within the message indicating that the page includes script from unauthenticated sources, click the link to **Load unsafe script**.



3. In the subsequent *Confirm Reload* dialog, click **Reload this Page**. This will reload the map viewer page in a mode that allows mixed content to be used. This has the unfortunate side effect of clearing out what has been previously done in the map viewer, so the map service will need to be added again.



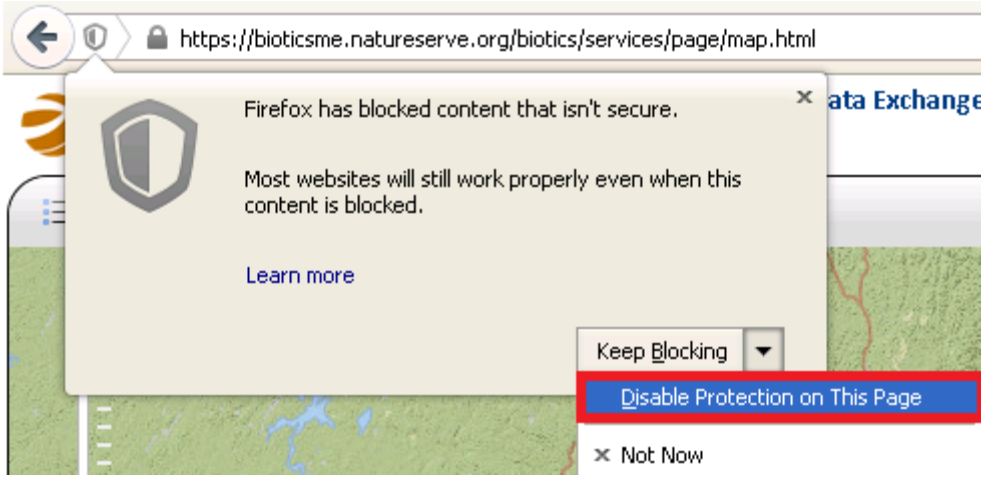
This time the map service is added, but the URL bar shows a warning that the page contains insecure content. This warning continues to be present if the user navigates away from the map viewer to other pages or open up the full record pages in new windows.

The browser only performs these behaviors for the first map service that's added insecurely, and the warning message will indicate what needs to be done. No further warnings or prompts will be given upon adding subsequent insecure map services.

Firefox

1. Click the small gray and white shield icon at the far left of the URL box near the top of the browser window.

2. Within the dialog which opens upon clicking the shield, select **Disable Protection on This Page**.



3. Then, click **Leave Page** to allow the page to load again with the map resources enabled.

   NOTE: You will have to do this every time you open the Map Viewer, even in the same Biotics session.

Internet Explorer

1. From the *Tools* menu, select **Internet Options**.

2. Within the *Internet Options* dialog, on the *Security* tab, select the **Trusted sites** zone and click the **Sites** button.

3. Add all web domains generating this error message to the **Trusted Sites** list, including ***.natureserve.org**. *WARNING*: don't do this with domains you don't trust or are not sure about.

4. Close the *Trusted sites* dialog.

5. Back in the *Internet Options* dialog, still in the *Security* tab, with the **Trusted sites** zone selected, click the **Custom Level** button.

6. Within the *Security Settings - Trusted Sites Zone* dialog, scroll down to the *Miscellaneous* options (almost half way down), and set the *Display mixed content* to **Enable**.

7. Click **OK** to save changes within the *Security Settings - Trusted Sites Zone* dialog.

8. Click **OK** to save changes within the *Internet Options* dialog.

9. Exit and re-start Internet Explorer.

NOTE: this setting allows IE to display content using both https and http protocols in a mixed environment, and should only be used with trusted web domains. Malicious content from unsecured (http) domains could potentially compromise data from secure (https) domains with which it is mixed.