How to Use the Critical Coastal Areas Online Map Viewer

Water Quality Factsheet for Staff

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Critical Coastal Areas Program

There are many locations along the California coast where marine and estuarine areas recognized by the state as having high ecological resource value are threatened or impaired by nonpoint source (NPS) pollution from adjacent watersheds. California's Critical Coastal Areas (CCA) Program promotes a collaborative watershed approach among government agencies (local, state, and federal) and other stakeholders to find potential solutions to the impacts of land use activities on water quality in these critical coastal watersheds. The CCA Program's goals are to help protect high resource-value marine and estuarine areas, both by improving already impaired water quality and by addressing forseeable NPS pollution threats from new or expanding land uses that may contribute to future impairment of coastal water quality. The CCA Program is a non-regulatory program, part of the state's NPS Program, and is coordinated by the Coastal Commission's Water Quality staff.

A statewide multi-agency committee (including 15 state agencies, NOAA, U.S. EPA, and the Ocean Conservancy) selected the criteria to identify coastal watersheds as CCAs, relying on existing state designations. California's Clean Water Act Section 303(d) list was used to identify impaired (i.e., polluted) waterbodies. To identify marine and estuarine areas with high ecological resource value, state Marine Protected Areas (MPAs), Areas of Special Biological Significance (ASBSs), and Principal Bays and Estuaries (in California Department of Fish & Wildlife's 2001 publication "California's Living Marine Resources: A Status Report)" were used. Because the state's ASBS designation is intended to protect and maintain "natural water quality conditions" to support unique and valuable marine fauna, flora, and associated communities, the 34 ASBSs were used as indicators of marine and estuarine areas of high ecological resource value that are largely unimpaired by NPS pollution.

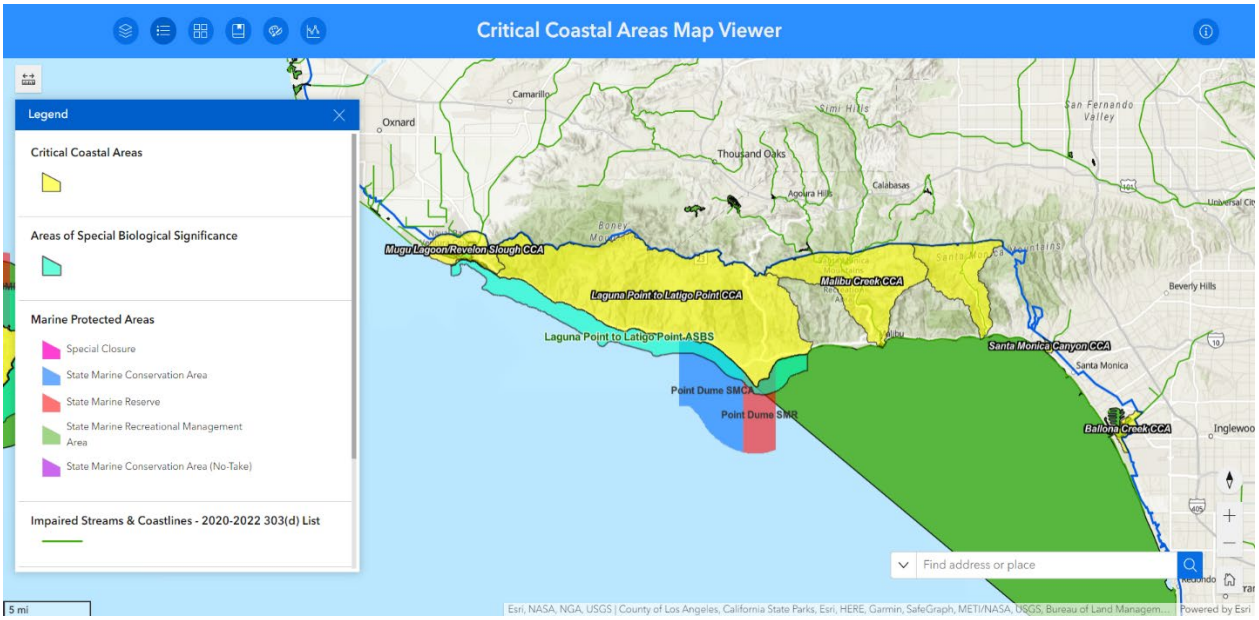
The inland boundary of each CCA is the Coastal Zone boundary (as defined in the Coastal Act). The boundaries along the coastline were determined on a case-by-case basis, so that each CCA includes the coastal-zone portion of the watershed that flows to the adjacent high resource-value marine or estuarine area. The majority of the CCAs (103 currently) are within the Coastal Commission's jurisdiction, and 21 are within the jurisdiction of the San Francisco Bay Conservation & Development Commission.

Online CCA Map Viewer

➢ Map Layers

The Coastal Commission's Water Quality Program staff, with help from the Mapping Program staff, has developed an online GIS-based map viewer application for the CCA Program. The CCA Map Viewer allows staff to see the location and boundaries of the CCAs, as well as other relevant information. The map is based on a topographic contour map of the state, with watersheds identified using a "small watershed" or "sub-watershed" level of detail (based on the USGS HUC 12 dataset). The Coastal Zone boundary is also shown.

The state designations used in the identification criteria for the CCAs (i.e., impaired waterways, MPAs, ASBSs, and Principal Bays & Estuaries) are mapped. In addition, local governments' Local Coastal Program (LCP) segments are mapped, to enable identification of any CCAs within an LCP's jurisdiction. Uncertified LCP areas, known as Areas of Deferred Certification (ADCs), are also mapped. Other mapped long-range planning jurisdictions include Long-Range Development Plans and Port Master Plans. Federal jurisdiction areas and Tribal jurisdiction areas are also mapped.



A typical view of the screen when using the CCA Map Viewer. The Legend on the left side defines the types of areas delineated on the map.

➢ What's New

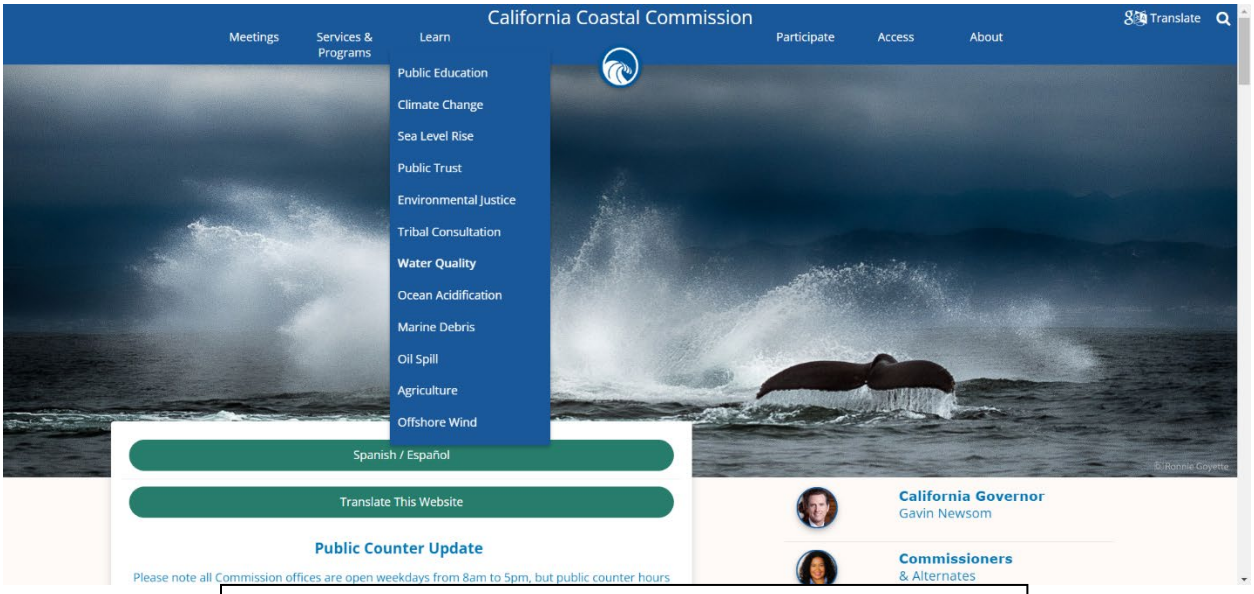
In 2023, the Water Quality Program and Mapping Unit made numerous enhancements to the CCA Map Viewer, as well as updates to existing data layers. By migrating the map from an ArcGIS webmap to an ESRI experience, the look and function of the viewer has been improved, while new tools improve analysis capabilities.

The enhanced CCA Map Viewer features include:

- 5 new CCAs: Scott Creek (Santa Cruz Co.), Big Creek (Monterey Co.), Tecolote Creek (Santa Barbara Co.), Devereux Creek (Santa Barbara Co.), and Cottonwood Creek (San Diego Co.) — all identified due to newly listed impaired waterways.
- Ability to draw on the map ("Draw & Measure" tool).
- Ability to see an elevation profile along a transect ("Elevation Profile" tool).
- New layers: watersheds draining to the coast, Principal Bays & Estuaries, impaired waters with Regional Water Boards' Total Maximum Daily Load (TMDL) action plans to restore clean water, Tribal lands, and Coastal Commission Districts.
- Updates to existing layers: Impaired Waters, Critical Coastal Areas, Local Coastal Programs, Port Master Plans, Long-Range Development Plans, and Federal jurisdiction areas.

➢ Locating the Critical Coastal Areas (CCA) Map Viewer

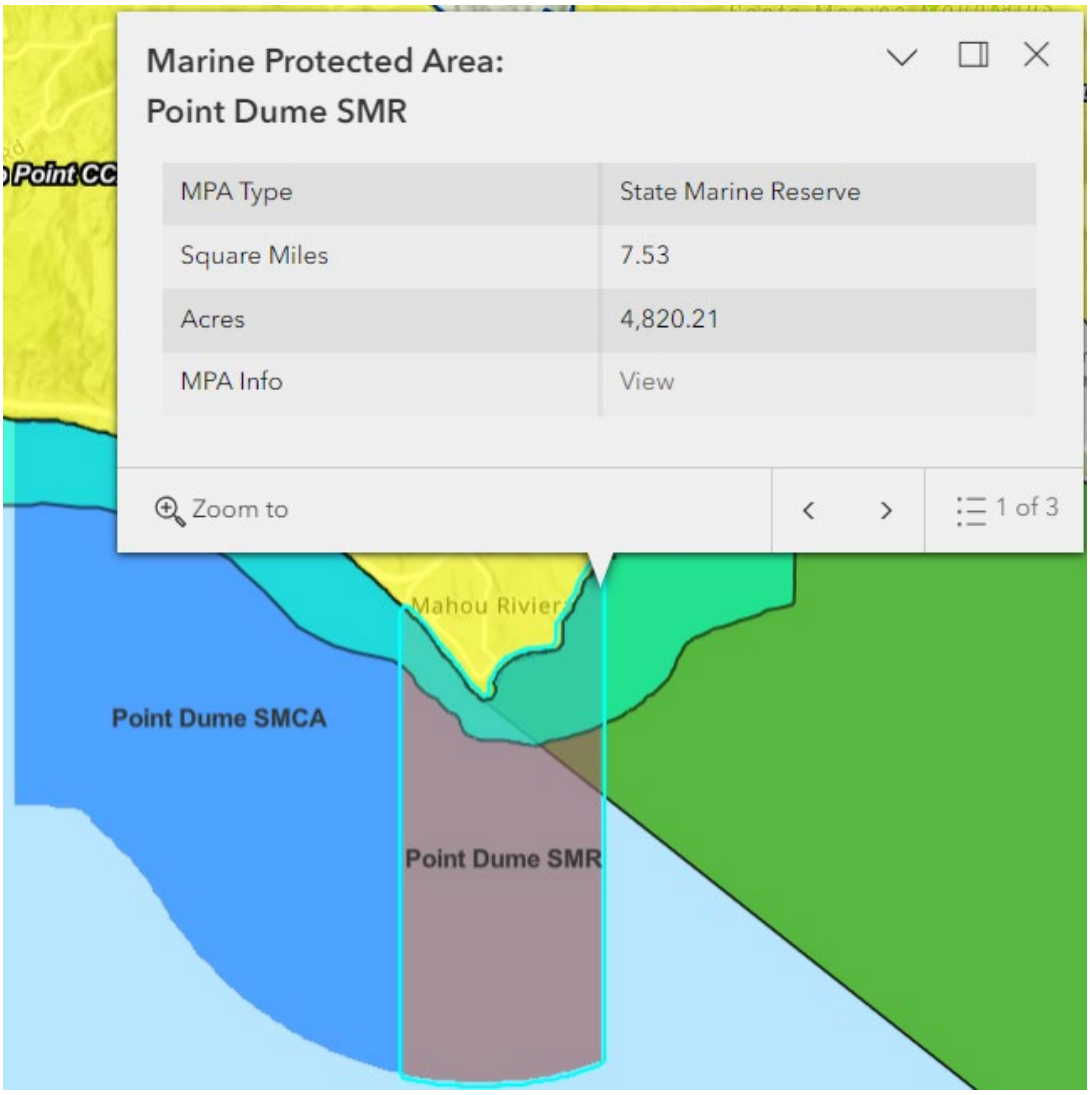
The link to the CCA Map Viewer is located on the Water Quality page of the Coastal Commission website, which can be found under the Learn tab on the Coastal Commission homepage. Scroll down the Water Quality page to learn more about the CCA program and for a direct link to the viewer.



California Coastal Commission homepage
coastal.ca.gov

Basic Functions of CCA Map Viewer

➢ Pop-Up Data Boxes

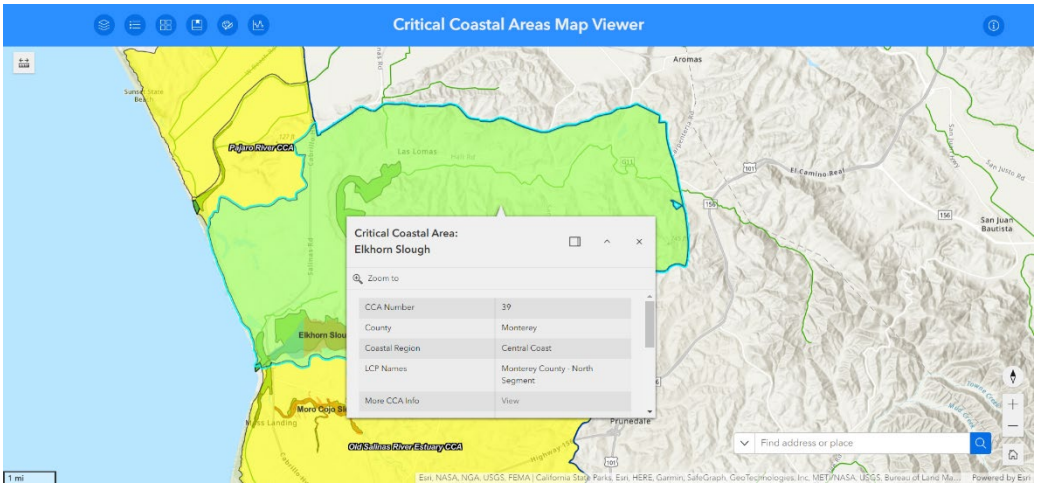


Close-up view of a pop-up box.

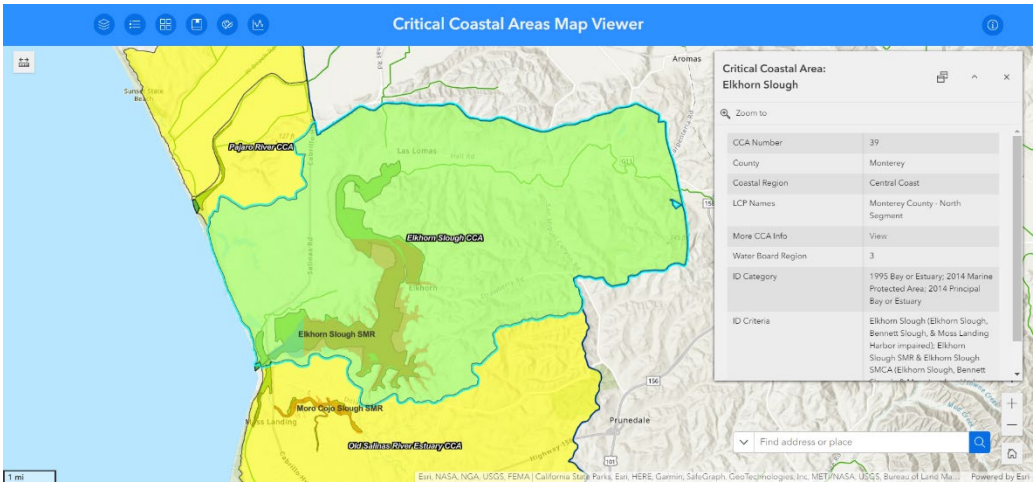
The CCA Map Viewer allows for a range of dynamic interactions with the map and its data. Users can click and drag to move around the map. Clicking on a colored shape on the map outlines that shape (called a “shapefile”) in bright blue and reveals its background data in a pop-up box. If multiple shapes are stacked on top of one another at one spot on the map, a set of arrows will appear in the top or bottom corner of the pop-up box, which enables you to scroll to see all the other pop-up boxes for the different layered shapes (such as CCA, LCP, and impaired stream). The corner of the pop-up box also lists how many shapefiles and their associated datasets are layered over that spot on the map (such as “1 of 3” layers). Clicking the “select feature” icon (3 dots and horizontal lines) next to the layer numbers will display a list of all selectable layers at that spot on the map.

Sometimes a pop-up box may obstruct the view of the layer(s) you'd like to look at. Clicking the "Dock" button in the upper row of the pop-up box will allow you to pin the location of all pop-up boxes to the upper right corner of the map screen. Docking the pop-up box may also increase its size, fitting more information into the window.

The red arrow points to the Dock button in the pop-up box.

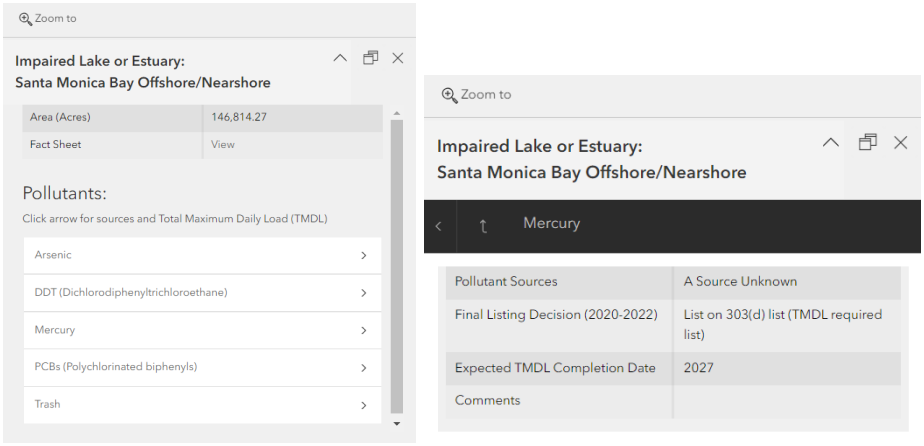


A view of the Elkhorn Slough CCA pop-up box in both normal (above) and docked (below) settings.



Impaired Waters Data Boxes

The two Impaired Waters map layers (Lakes & Estuaries, and Streams & Coastlines) show waterways listed on the state's current (2020-2022) "303(d) List" of impaired waters. Upon opening the pop-up box for an impaired waterway, the pollutants will be shown in a list at the bottom. Click the right arrow next to a pollutant name to open a "related tables" pop-up box with details about that pollutant, including pollutant sources and expected completion date of any state TMDL action plan to address this pollutant.



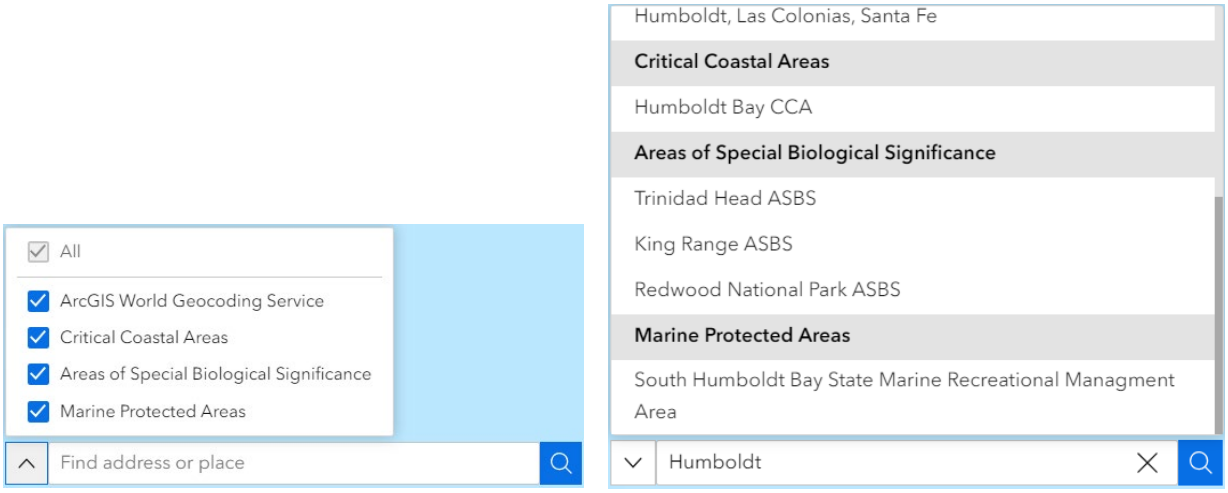
The "related tables" data in the nested pop-up boxes for the Impaired Lakes & Estuaries map layer. In this example, mercury pollution in Santa Monica Bay has been selected.

➢ Navigation Buttons

The lower right corner of the CCA Viewer has 4 buttons to help with navigation. The Home button will return the user to the default map extent showing the entire state of California. The zoom buttons let the user zoom in or out using the **+** and **–** icons. Alternatively, the scroll wheel on the mouse can be used. Finally, the compass button will show the direction of north on the map. The map can be rotated by using the right click of the mouse and dragging in any direction. Clicking on the compass icon will re-orient the map back towards the north.

➢ Search Function

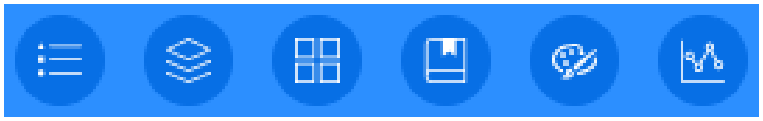
The lower right corner of the CCA Map Viewer also comes with a search function, allowing users to search for several types of locations, similar to a search on Google Earth. The search bar includes a drop-down arrow that allows the user to select an individual map layer from which to search. (However, not all layers are searchable). For example, the user could search within the Marine Protected Areas layer for the name of a specific MPA. When typing a search term (i.e., address or place name) in the search bar, the Map Viewer will display a list with a few of the closest options to the search terms entered. When the user selects an option from the list, the Viewer will then move to that area on the map. The search function will also open the pop-up box of the selected area on the map, if there is one available.



The left image shows the drop-down menu of the search bar, with each selectable map layer. Choosing “ArcGIS World Geocoding Service” will provide search results similar to an online map, allowing searches for places not within any of the map layers, such as the name of a city or a street address.
The right image shows results populated for the search term “Humboldt,” which are organized by map layers.

Widgets Menu Bar on Upper Left

ArcGIS Online's web map viewer system provides extra map functionality through the use of widgets, located in a menu bar in the upper left corner of the CCA Map Viewer. These widgets allow users to interact with and edit some aspects of the map to provide different data views. Below is a closer look at some of the widgets that are available.

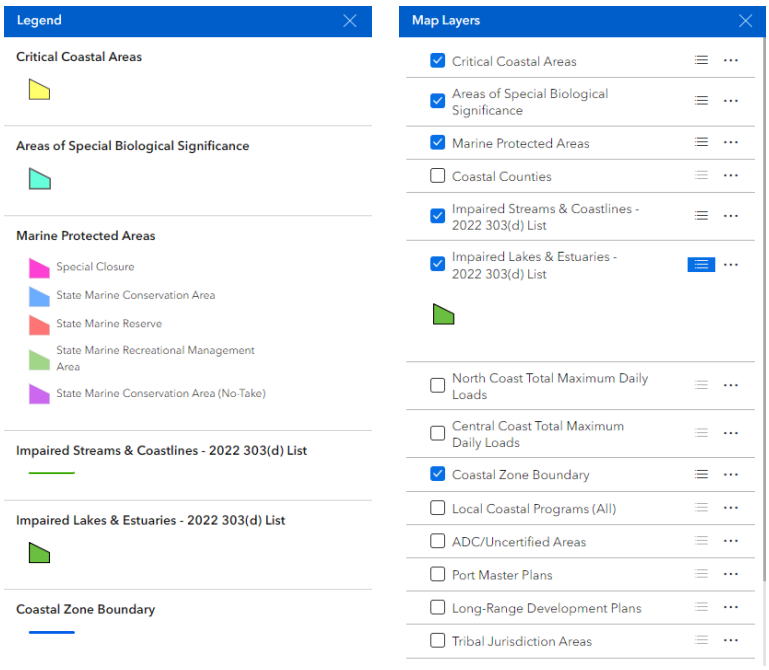


➢ Legend

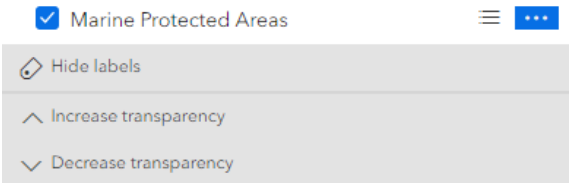
The Legend is probably the most critical map element, allowing users to understand what each individual layer represents. It displays the color of each layer's polygon or line as shown on the map. The Legend will only display the active layers on the map – the ones that have been turned on in the Map Layers list. The Legend will update when each layer is turned on or off, and it will display layers in the same order that they appear on the Map Layers list.

➢ Map Layers List

The Map Layers list looks similar to the Legend. It shows a series of check boxes that allow viewers to turn on or off layers on the map. When the map is first loaded, some layers may be turned off to improve the readability of the map.

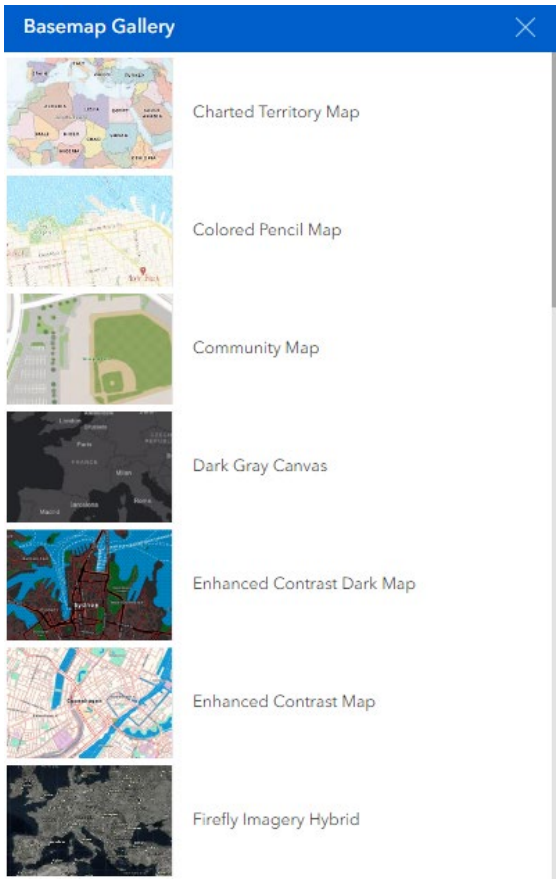


In the Map Layers list, the “three horizontal bars” icon next to each layer’s name will display the color of that layer’s polygon or line as it appears on the map (and in the Legend), but only for layers that are actively turned on. The Map Layer list also features an extra set of options for each layer, found by clicking the three dots to the far right of each layer name. These options include the ability to make each layer more or less transparent, and to turn off the labels of that layer.



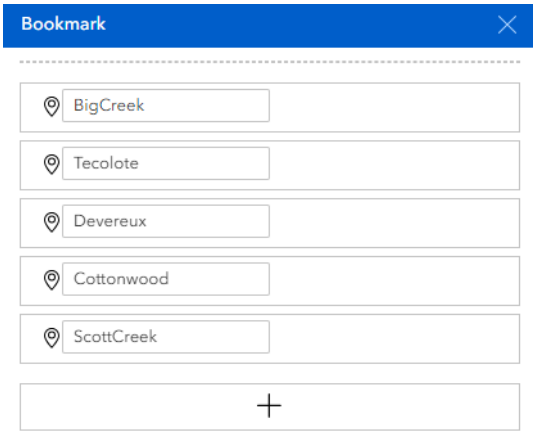
➢ Basemap Gallery

This widget allows users to change the basemap of the CCA Map Viewer, to view information such as satellite imagery, topography, and streets, or to provide a plain background to better display data.



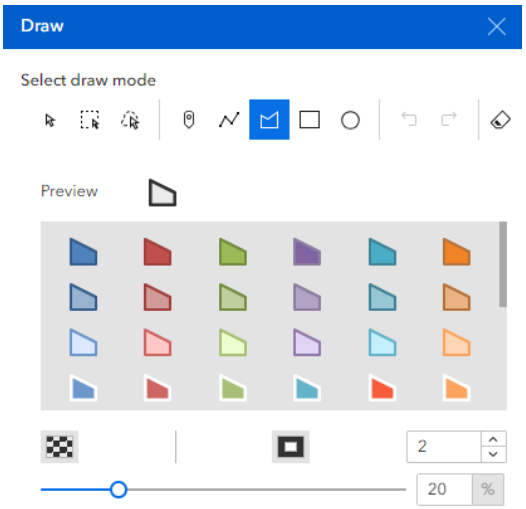
➢ Bookmark

The Bookmark widget allows users to save certain map extents during a viewing session for quick access. Clicking the “+” will add the current map view to the bookmarks tab. Clicking on the name of a bookmark allows a user to change its name. Hovering over a bookmark reveals a trash icon that can be selected to delete that bookmark. Bookmarks will not carry over to other users or accounts.



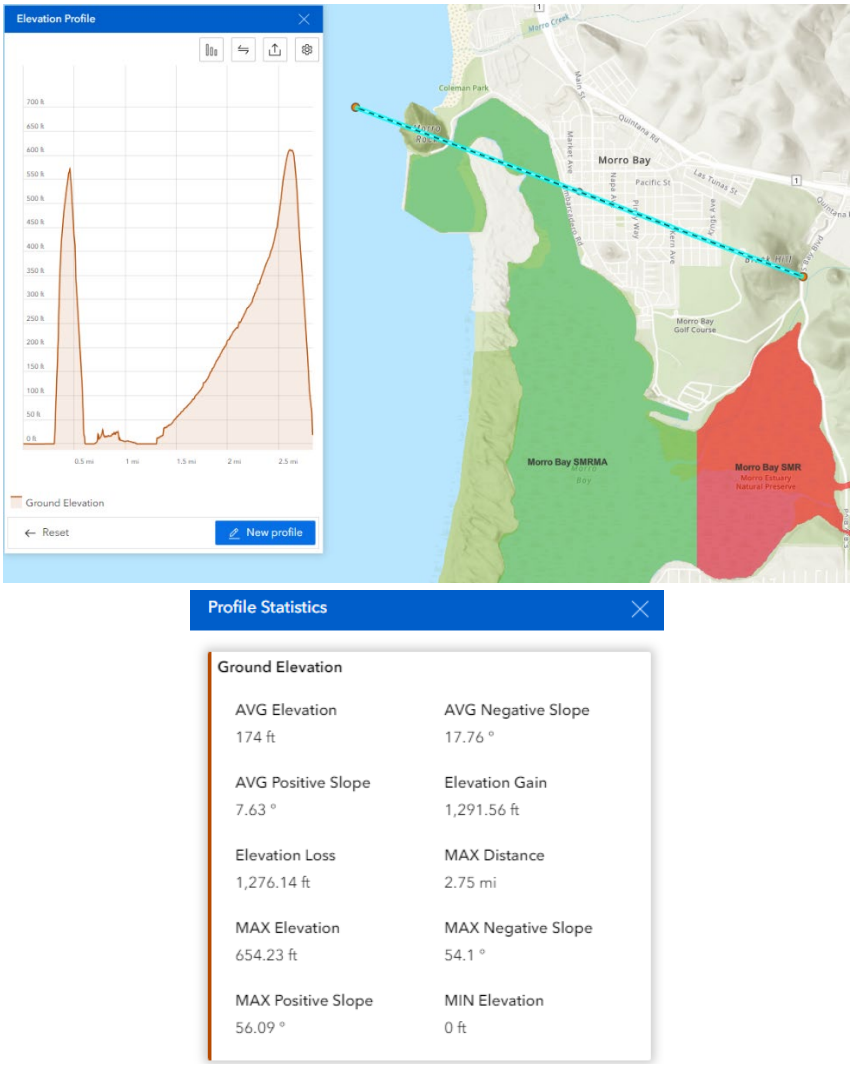
➢ Draw

The Draw widget allows users to draw points, lines, and polygons on the map. These shapes can be useful for highlighting certain data or locations. For example, the points layer can use lettered points (A, B, C, etc.) to call out specific areas of a project. The lines and polygons come with a variety of options, including color and transparency. Shapes drawn on the map by the user will not show up for other users.



➢ Elevation Profile

The elevation profile widget is useful for determining estimates of elevation, slope, and distance. To use this tool, click “Draw.” Each click will drop another vertex (i.e., point) on the profile line, and a double-click will finish the line. The tool will then calculate elevation over the selected area. Results are displayed in a graph, and statistics are available by clicking the “vertical bar graph” icon near the top of the pop-up box. Hovering over the graph displays distance and elevation, and indicates the location along the line on the map that corresponds to this point in the graph. To exit the tool, the user must click the “Reset” button found in the bottom left of the box.

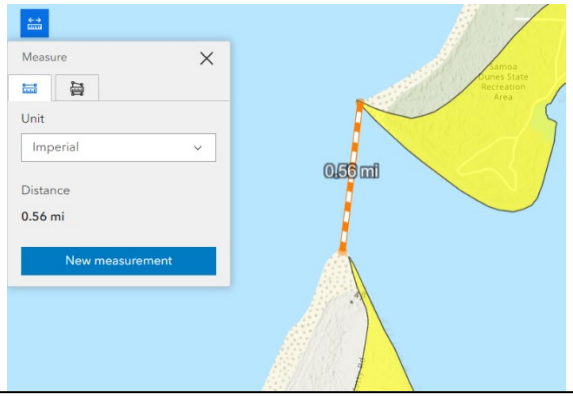


An example of the Elevation Profile widget. The elevation between Morro Rock and Black Hill in the City of Morro Bay region is shown. The Profile Statistics window is also displayed, showing data including elevation, slope, and distance.

Other Widgets

➢ Measure

Located in the upper left corner of the map itself, the Measure tool can be useful for determining estimates of distances and areas. When used to find distance or area, each click will drop another pin on the map (or another vertex of the area polygon), and a double-click will finish the line or polygon. The distance measurement will update in real-time with the mouse cursor, while a click is required for the area measurements to update. Measurements can be either imperial or metric, and in a variety of units including miles, km, nautical miles, feet, meters, ft^2, m^2, $miles^2$, km^2, acres, and hectares.



Using the Measure tool to find the width of Humboldt Bay's mouth.

➢ About

The About button is in the upper right corner of the viewer. It displays a disclaimer and limitation of liability for any users of the viewer or its data.

Funding for this project has been provided in part by the U.S. Environmental Protection Agency (U.S. EPA) pursuant to Assistance Agreement Nos. C9-79757514; C9-79757515; C9-79757517, and any amendments thereto which have been awarded to the Water Board for the implementation of California's NPS Program. The content of this document does not necessarily reflect the views and policies of the U.S. EPA or the Water Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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