

User Manual for CA Water Board's Tribal Water Data Map

CA Water Board's Office of Information Management and Analysis (OIMA)

2023-08-24

Table of contents

Welcome!	4
1 About OIMA	5
1.1 Overview	5
1.2 Tribal Water Data Initiatives	5
2 Map Guide	6
2.1 Opening the Web Map	6
2.2 Navigating the Map	7
2.3 Navigating Legend and Layers	8
2.4 Displaying/Removing View of Layers	9
2.5 Adjusting Layer Transparency	10
3 Layer Guide	12
3.1 Tribal Land Layers	12
3.1.1 Bureau of Indian Affairs (BIA)	12
3.1.2 Indigenous Territories	19
3.1.3 Other Sources of American Indian and Tribal Land	20
3.2 Integrated Report and Beneficial Use Layers	20
3.2.1 2024 Integrated Report	20
3.2.2 Waterbodies with insufficient data	23
3.2.3 Basin Plan Beneficial Uses	24
3.3 CalEnviroScreen	25
3.3.1 CalEnviroScreen 4.0	26
3.3.2 Disadvantaged Communities	27
3.4 Pollution Indicators	28
3.4.1 Agricultural Pesticides	28
3.4.2 Superfund Enterprise Management System Sites	29
3.4.3 Superfund Enterprise Management System National Priority List (NPL) Sites	30
3.4.4 NPL Superfund Site Boundaries	31
3.4.5 Oil and Gas Wells	31
3.4.6 Mines	32
3.4.7 Aquifer Water Quality Risk	33
3.4.8 Cleanup Program Sites	41

3.4.9	Regulated Wastewater Treatment & Discharge Facilities	42
3.4.10	Sanitary Sewer System Spills	43
3.5	Water Quality	44
3.5.1	SWAMP Data	44
3.6	Climate Change Indicators	47
3.7	Hydrology	47
3.7.1	Wetlands	47
3.7.2	Groundwater Basins	48
3.7.3	Hydrography, Water Boundaries	48
3.8	Geopolitical Boundaries	53
3.8.1	Regional Water Board Boundaries	53
3.8.2	Census Tracts	54
3.8.3	County Boundaries	54
3.8.4	Non-private Land Holders	55
3.8.5	State Park Boundaries	56
3.8.6	Groundwater Sustainability Agencies	57
3.8.7	Marine Protected Areas	58
4	Resources	60
4.1	Websites	60
4.2	Presentations	60
4.3	Other Data Visualization Tools	61
4.3.1	SWAMP Information	61
5	Meet the Team!	63
5.1	OIMA	63
5.2	Tribal Partners	63
5.3	Former OIMA Fellows	64
6	Contributing	65
6.1	Who can contribute	65
6.2	How we contribute at OIMA	65
6.2.1	Setup	65

Welcome!

This is an online User Manual for the [California Water Board's Tribal Water Data Map](#) (Map), written by the California State Water Resources Control Board's ([State Water Board](#)) Office of Information Management and Analysis ([OIMA](#)).

The purpose of the Map is to increase awareness of and access to the Water Board's water data resources that intersect with Tribal matters and needs. The interactive Map includes curated data layers that have been requested by tribal partners and that may be useful for California Native American Tribes (tribes) doing environmental or water related work.

The purpose of this User Manual is to provide guidance and context so it's easier for all audiences to use the Map. Content in this User Manual includes curated information that has been requested by tribal partners and/or that the development Team thinks may be helpful to reference when using the map.

To view the status of ongoing Map and User Manual development, visit the [Project Management Board](#).

This [Quarto book](#) is an open, living, and continuously iterating resource. If you have suggestions for additions or revisions you think should be incorporated into this book, please follow the guidance provided in the [Contributing](#) chapter.

1 About OIMA

1.1 Overview

The California State Water Resources Control Board's ([State Water Board](#)) Office of Information Management and Analysis ([OIMA](#)), serves as an advocate for data management, a bridge between data collectors and users, and provides transparency of the Water Board's information management infrastructure.

OIMA's goal is to collaborate monitoring efforts, accurately analyze data, make our data easily accessible, and create visualizations and reports that make data understandable across all audiences.

1.2 Tribal Water Data Initiatives

OIMA is committed to [advancing equity](#), inclusion, and belonging in our work, our office, and at the Water Boards. Meaningful engagement and partnership with California Native American Tribes (tribes) is fundamental to this work.

OIMA has begun to work with Tribal partners on a series of water data initiatives – including the [Tribal Water Data Map](#) and this [User Manual](#) – to build relationships and work together to better understand, streamline, and improve the interactions between Water Board data systems and those of our Tribal government partners.

Visit our [Tribal Water Data Initiatives](#) website for information on other initiatives.

2 Map Guide

This guide serves to provide greater detail about functions within the Tribal Water Data Map.

2.1 Opening the Web Map

The [link](#) will take you to the main Portal of the map where you will find basic information like:

1. Map viewing options:

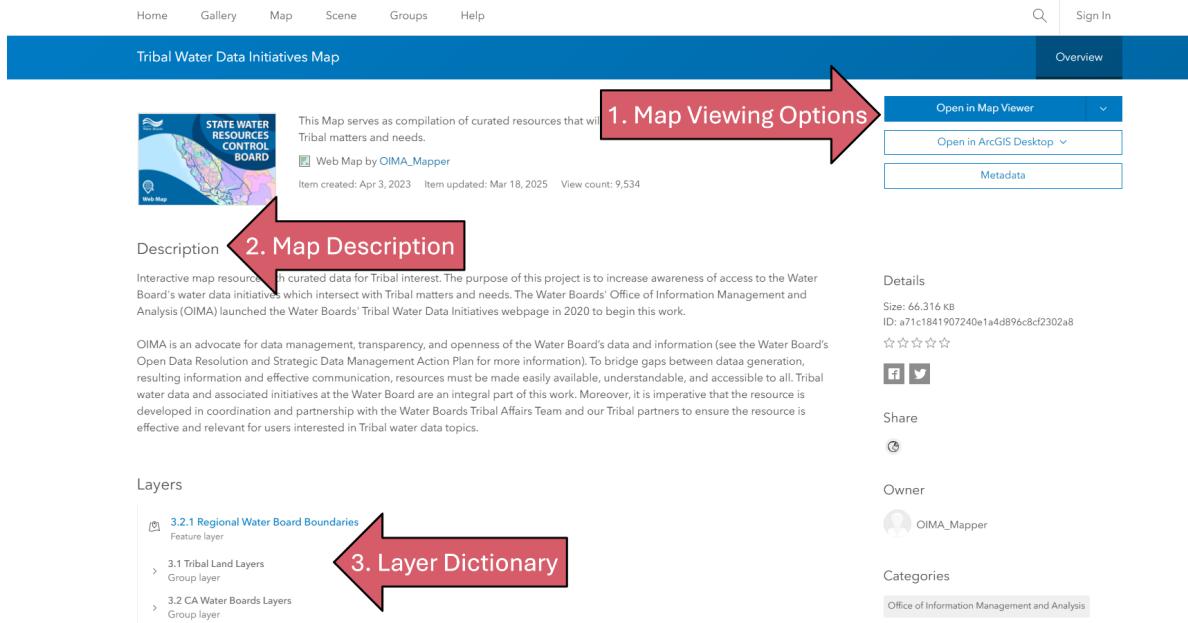
- If you have ArcGIS Desktop installed on the computer you are working on, you can opt to open the map directly on the App, otherwise just **click on “Open Map Viewer”** to open it.

2. Map description:

- A description of the map that highlights the purpose and goals.

3. Layer dictionary:

- You can click on each of the layers and find out more detailed information, including the source, a description of the source and the data, and the type of layer.
- If you only want to visualize one specific layer, you can click on the layer name in the Layer Dictionary and choose “Visualization” in the top right corner



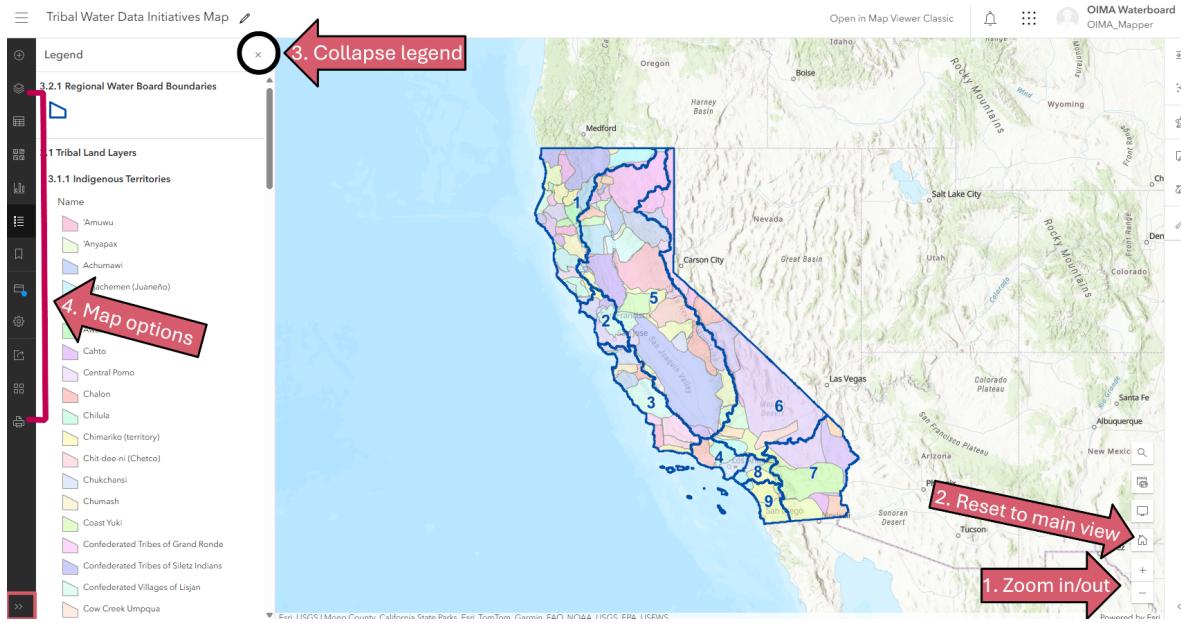
2.2 Navigating the Map

After you have clicked on ‘Open in Map Viewer’, the web map will open with two default layers being displayed: Regional Board Boundaries and Indigenous Territories.

To navigate the map:

1. To zoom you can use the **Zoom in** and **Zoom out** buttons on the bottom right of map, the mouse and wheel button, or press Shift + Plus Sign (zoom in) and Shift + Minus Sign (zoom out) on the keyboard. To zoom in, you can also press the Shift key while dragging a box on the map.
2. To go back to the main view, press the **house icon**.
3. **Collapse the legend** pane by clicking on the arrow on the upper-right corner of the menu.
4. Scroll through the **map options** in the sidebar on the left
 - Map options include Layers, Tables and Charts, viewing the BaseMap, Viewing the Map Properties, and more.
 - To expand the map options to see icons and words, click on the ‘»’ arrows in the bottom lefthand corner (see Navigating Legend and Layers section below for picture).
5. To **pan the map**, use the mouse or the arrow keys on your keyboard.

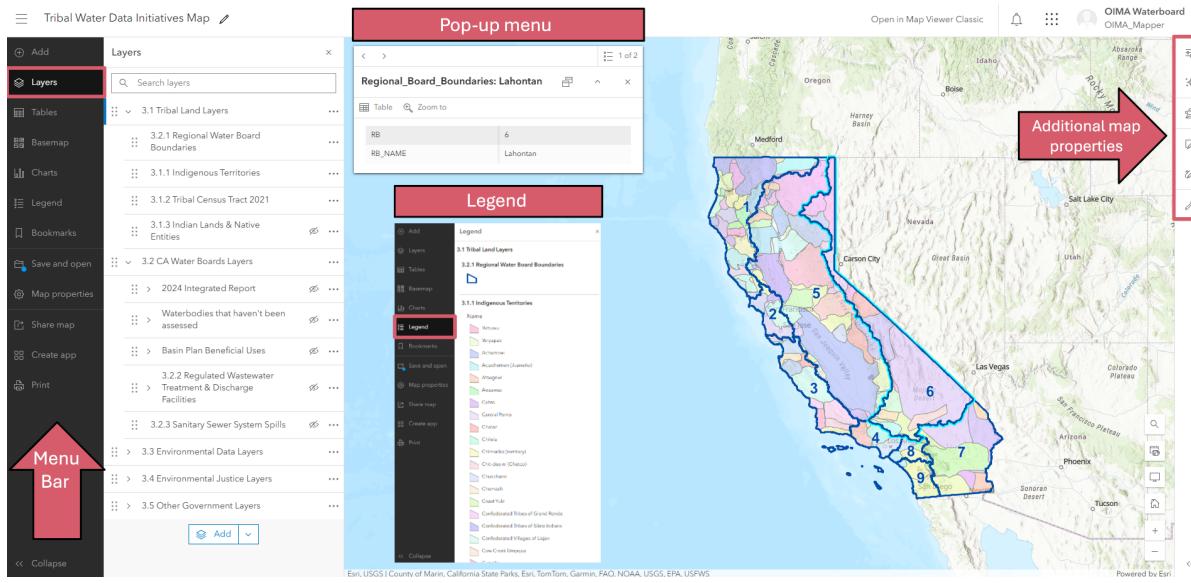
6. If you're using a Mac with OS X 10.6 or later, you can use multitouch gestures by dragging two fingers to pan and zoom the map. The default behavior is to pan. To zoom in or out, press Shift while dragging two fingers toward you to zoom in or dragging two fingers away from you to zoom out.



2.3 Navigating Legend and Layers

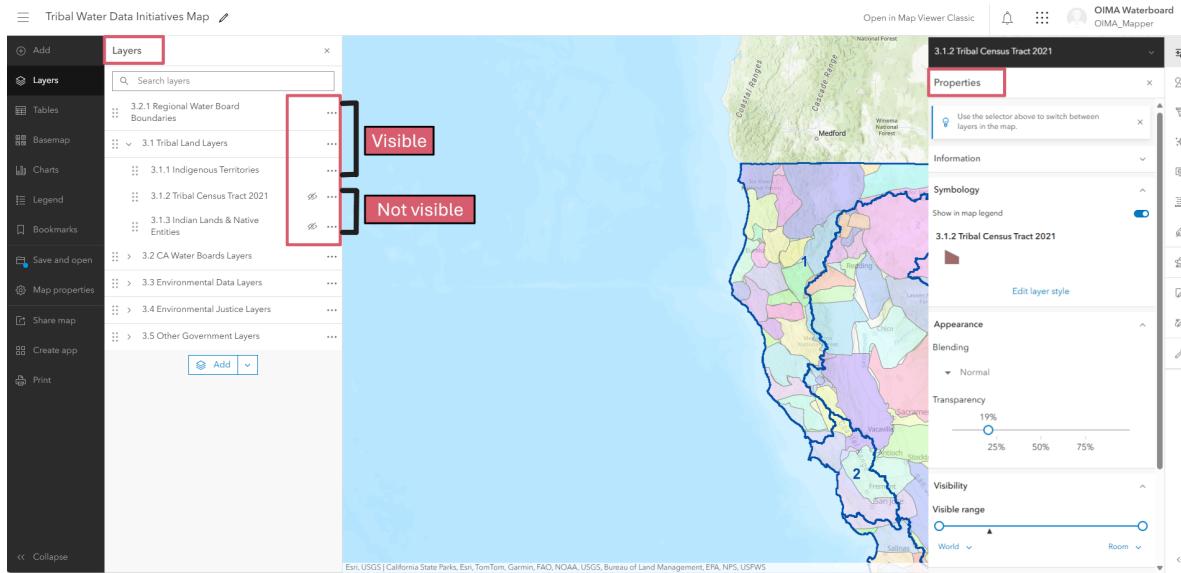
- To see information on the map, click on any of the items in the **menu bar** on the left side of the screen. For example, to view other layers you can click on the **Layers** icon, which is displayed directly to the right of the menu bar.
- Also in the menu bar, is the **legend** (shown in the inset below the pop-up menu). The legend gives more details about each layer that is currently selected. For example, the blue outlines and numbers are the Regional Board Boundaries and Designations, and the different Indigenous Territories are color coded and defined on that menu.
- You can also click on a map area of California to find out what Regional Board, or Indigenous Territory is in a specific location. The information will be shown in a **pop-up menu**.
 - In this example, the right border of California was clicked and a pop-up showed that the area belongs to Region 6 of the Regional Boards.

- Additional map properties for exploration and analysis can be found on the panel on the right side of the screen for map properties and effects, to add a sketch, or to use measurement tools.



2.4 Displaying/Removing View of Layers

- On the **Menu Bar**, click **Layers**. All the layers of the map will be listed (but not yet displayed). The layer categories (3.1, 3.2, 3.3, 3.4, 3.5, and 3.6) are coordinated with the section in the [Layer Guide](#) that outlines each layer and its important/relevant information.
- Upon opening the map, only Regional Boards Boundaries and Indigenous Territories will be displayed. You can confirm this by looking at the layer name and seeing an eye icon (you may need to hover over the layer to see the eye icon). If the eye icon has a slash through it, that means the layer is not currently visible on the map. You need to click on the eye icon specifically to display/remove the layer.
 - If you just click the layer name and not the eye icon, you will pull up the **properties** information about that layer on the right side of the map (shown on the right hand side for Tribal Census Tract 2021 layer).



2.5 Adjusting Layer Transparency

To change the transparency of the layers:

- Select the layer of which you'd like to change the transparency:
 - You can either click on the three dots next to the layer name and select “Show properties” or
 - You can click on the layer name and the properties panel will pop up on the right side of the screen.
- Scroll down to **Appearance**
- Select **Transparency**, and slide the button to the desired transparency
 - The more transparency, the less visible the layer will be.



3 Layer Guide

This guide serves to provide greater detail about each layer included in the Tribal Water Data Map.

Note on default map settings

When opening the map in Map Viewer, the **default** layers that will be displayed include all 6 (six) of the Bureau of Indian Affairs layers and the California Regional Boards Boundaries. To see more details about these layers, read below or click on the layer in the [Layer Dictionary](#) (see instructions on [Map Guide](#) page)

3.1 Tribal Land Layers

3.1.1 Bureau of Indian Affairs (BIA)

Layer displaying different classifications of land allotments from BIA. The Bureau of Land Management Lots layer is included when downloading the zip file of data layers, however, it does not appear on the GIS map and has thus been removed from our map. Please see the contact information below for directing any additional questions.

Source: [Bureau of Indian Affairs](#), from the [Pacific Regional Office](#) (PRO)

Source update frequency: As needed

manually updated here June 2025

Contact: [BIA](#)

BIA's mission is to "enhance the quality of life, promote economic opportunities, and to carry out the federal responsibilities entrusted to us to protect and improve the trust assets of American Indians and Alaska Natives. We accomplish this by directly empowering Tribal governments through self-governance agreements."

3.1.1.1 Indian_Lands

“The term “Indian land” means: (A) Any land located within the boundaries of an Indian reservation, pueblo, or rancheria; (B) Any land not located within the boundaries of an Indian reservation, pueblo, or rancheria, the title to which is held: (i) In trust by the United States for the benefit of an Indian tribe or an individual Indian; (ii) By an Indian tribe or an individual Indian, subject to restriction against alienation under laws of the United States Definition: Indian land from 25 USC § 3501(2) \| LII / Legal Information Institute”, [BIA Tract Viewer - Catalog](#)

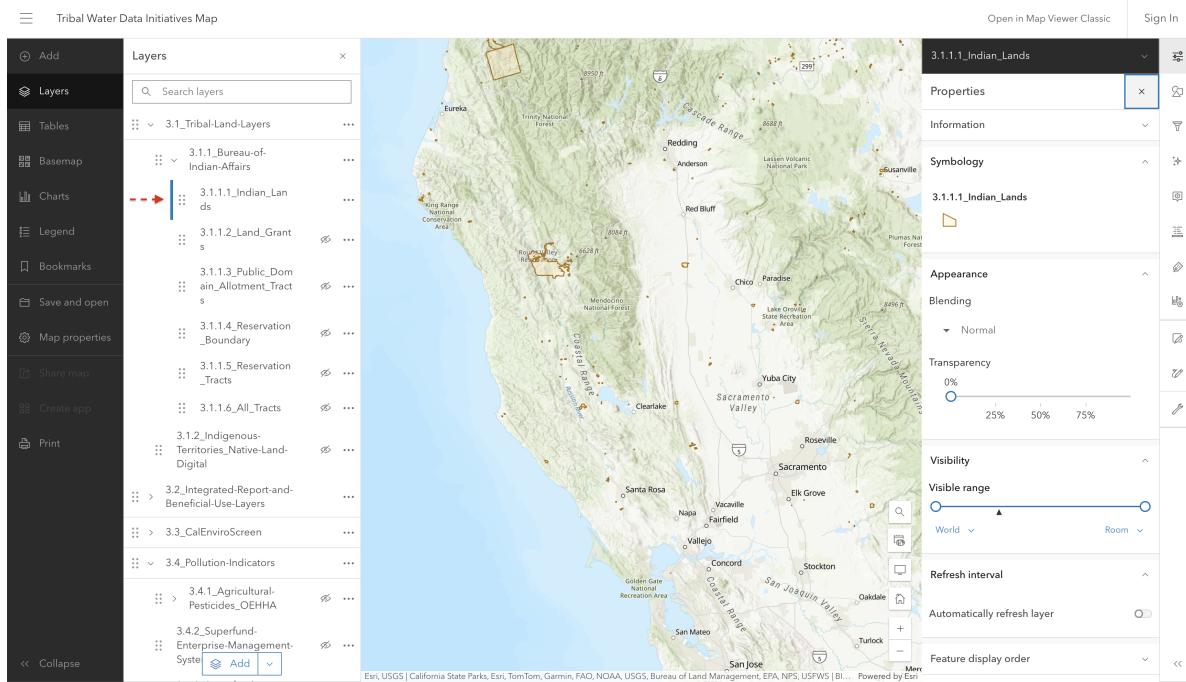


Figure 3.1: Screenshot of interactive map showing Indian Land classifications across California

3.1.1.2 Land_Grants

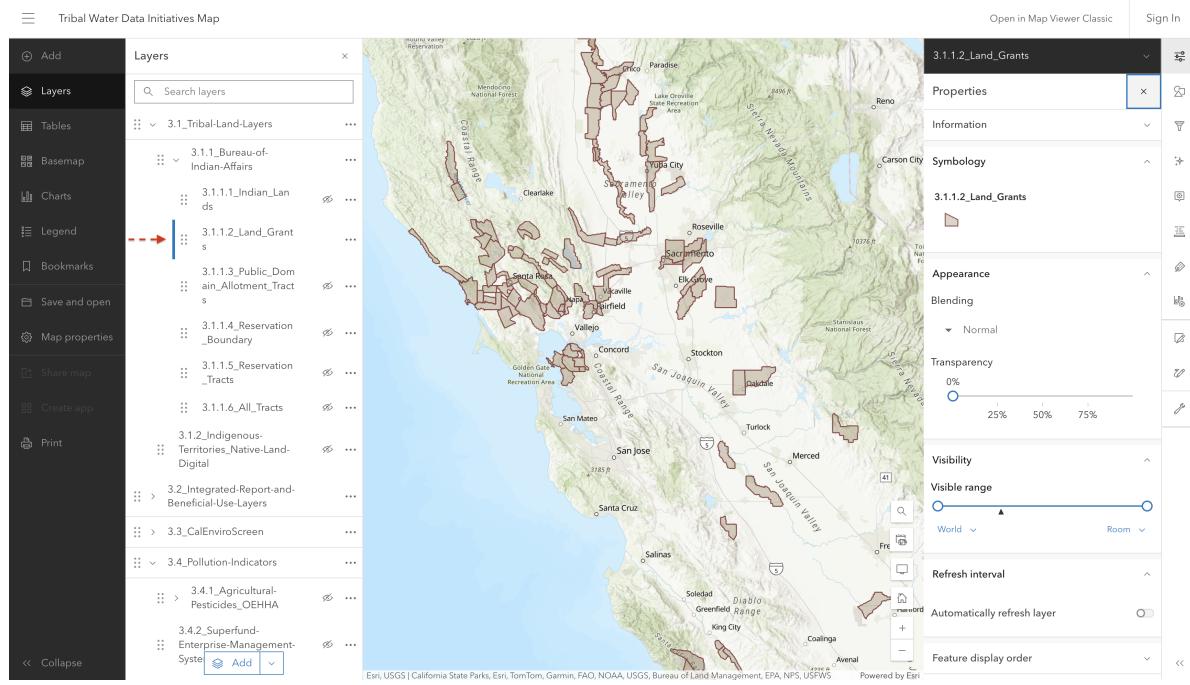


Figure 3.2: Screenshot of interactive map showing historical land grant boundaries

3.1.1.3 Public_Domain_Allotment_Tracts

These are parcels of Tribal lands, typically up to 160 acres, that were divided up and “allotted” to individual Tribal members, see: [Allotment Act of 1887](#).

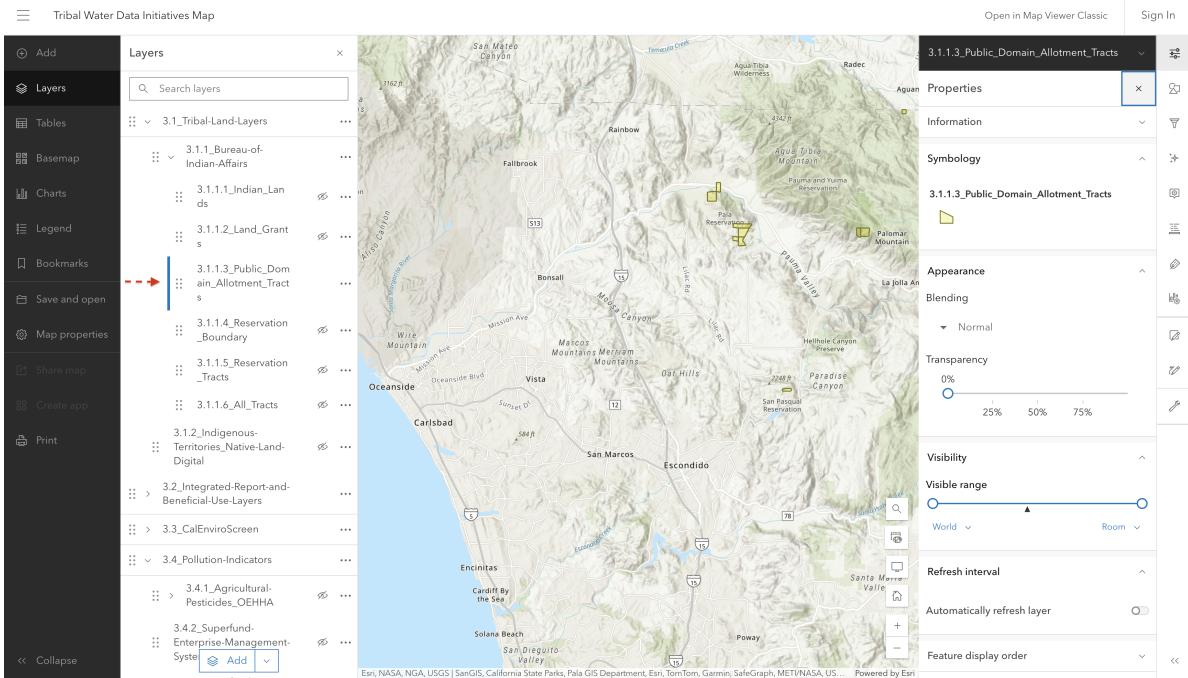


Figure 3.3: Screenshot of interactive map showing public domain allotment tracts

3.1.1.4 Reservation_Boundary

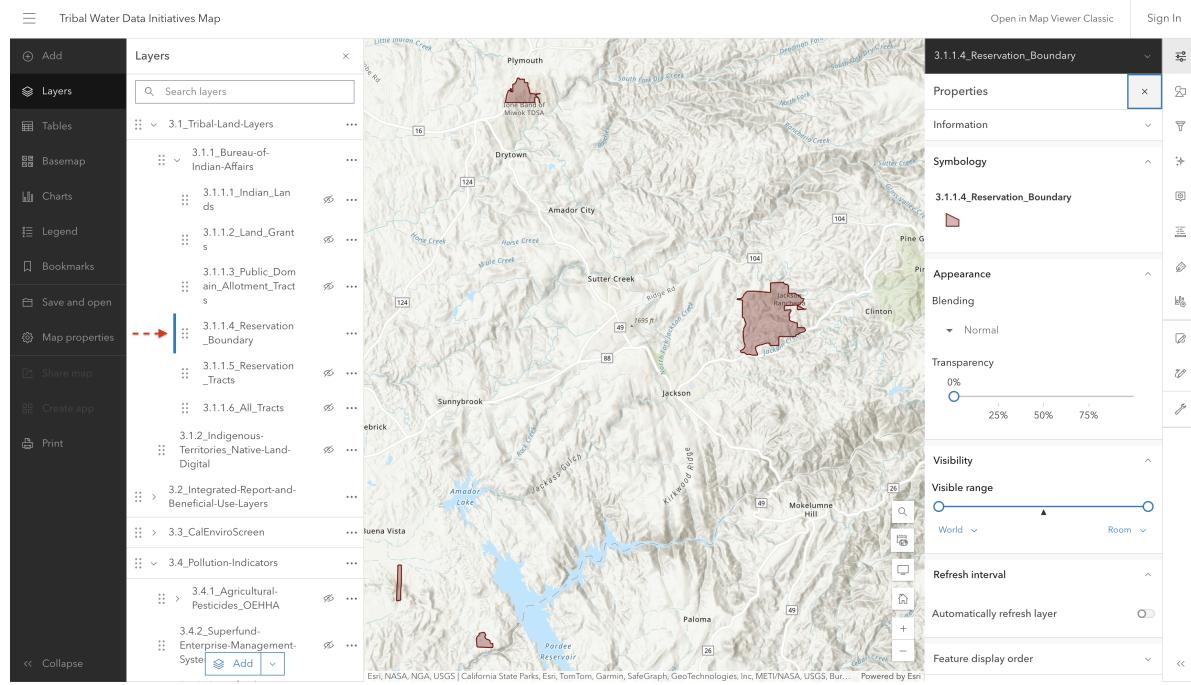


Figure 3.4: Screenshot of interactive map showing reservation boundaries

This sublayer refers to the outer limits or perimeter of federal American Indian reservations. These boundaries are established by treaties, agreements, executive orders, or other federal actions and define the land reserved for a Tribe or Tribes.

3.1.1.5 Reservation_Tracts

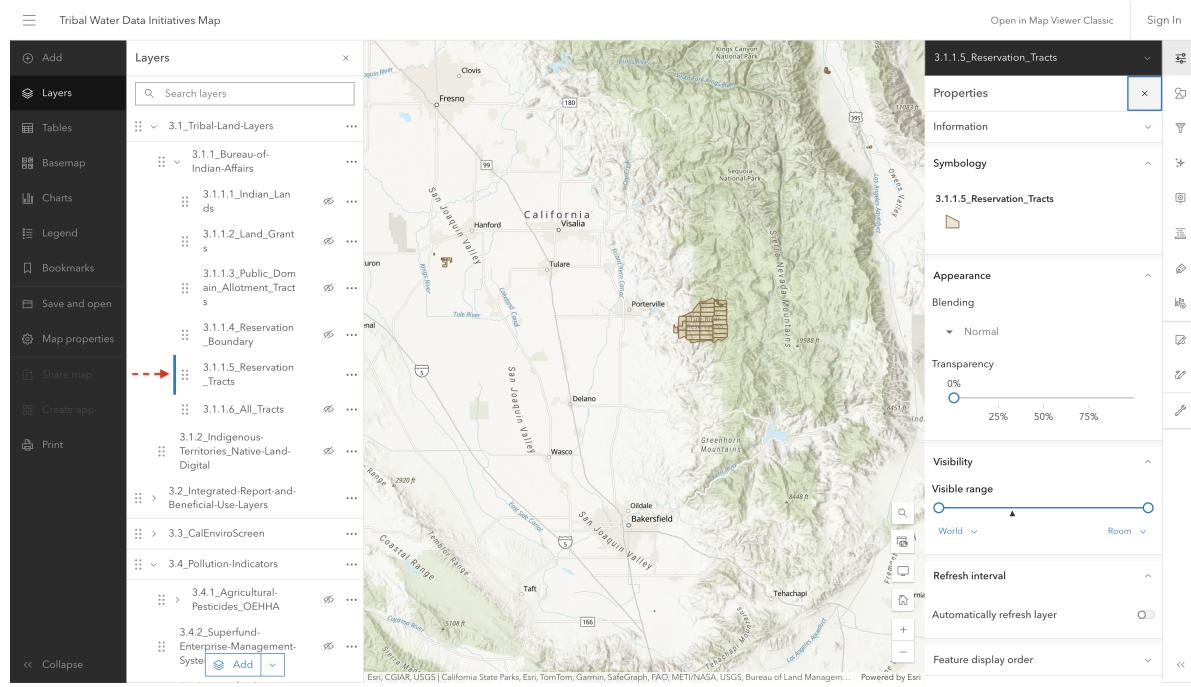


Figure 3.5: Screenshot of interactive map showing individual reservation tracts

3.1.1.6 All_Tracts

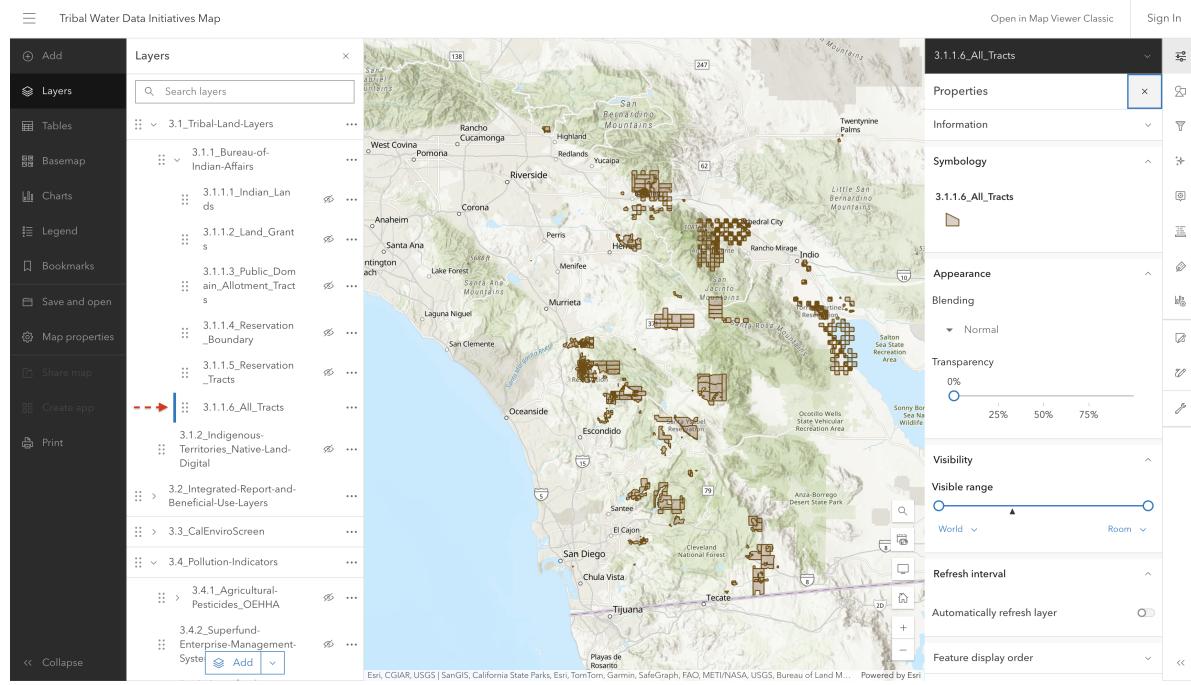


Figure 3.6: Screenshot of interactive map showing all BIA land tracts

3.1.2 Indigenous Territories

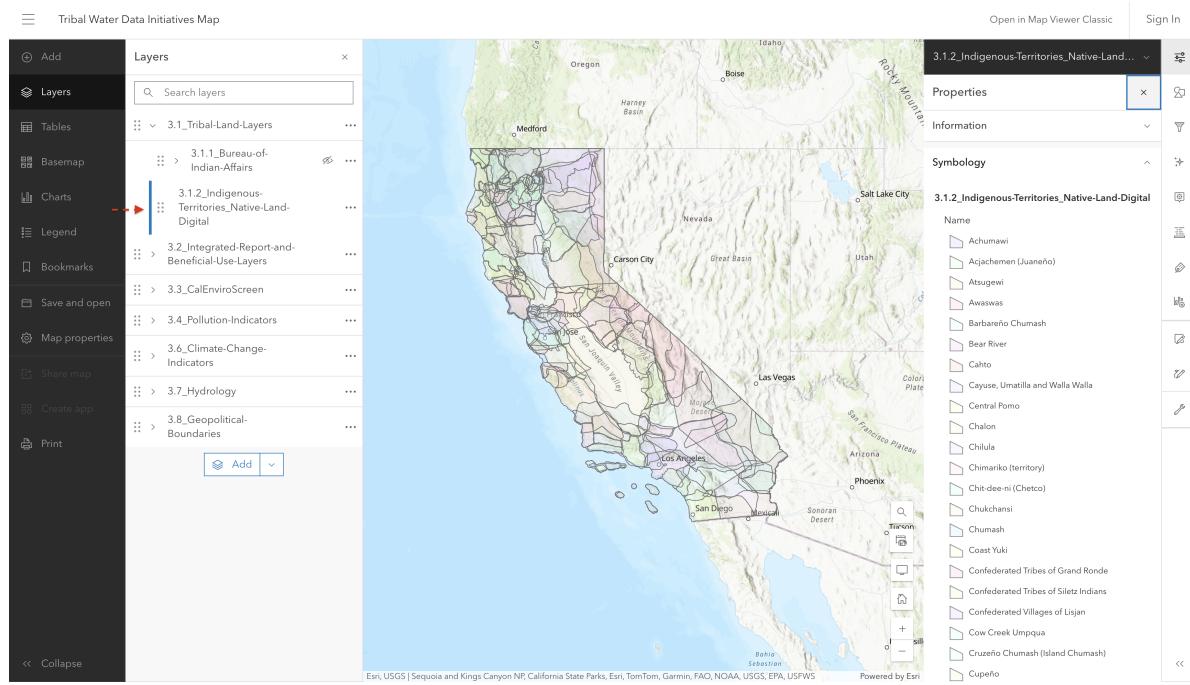


Figure 3.7: Screenshot of interactive map showing historic Indigenous Territories

Layer displaying historic Indigenous Territories within California.

Source: [Native Land Digital](#)

Source update frequency: As needed

manually updated here June 2025

Contact: [Native Land Digital](#)

[Native Land Digital](#) “strives to create and foster conversations about the history of colonialism, Indigenous ways of knowing, and settler-Indigenous relations, through educational resources such as our map and Territory Acknowledgement Guide. We strive to go beyond old ways of talking about Indigenous people and to develop a platform where Indigenous communities can represent themselves and their histories on their own terms. In doing so, Native Land Digital creates spaces where non-Indigenous people can be invited and challenged to learn more about the lands they inhabit, the history of those lands, and how to actively be part of a better future going forward together.”

3.1.3 Other Sources of American Indian and Tribal Land

3.1.3.1 Tribal Census Tract 2021

Layer showing Tribal areas identified by the U.S. Census Bureau. You can zoom in further to see specific areas more closely.

Source: [U.S. Census Bureau, TIGER/Line Shapefiles](#)

Source update frequency: Every 10 years

automatically synced here

Contact: [U.S Census Bureau](#)

3.2 Integrated Report and Beneficial Use Layers

3.2.1 2024 Integrated Report

i Note

What is the Integrated Report?

Waterbodies assessed in the Integrated Report (IR) include surface waterbodies, such as rivers, lakes, and beaches.

Assessed waterbodies are placed into one of five Integrated Report Condition Categories based on the waterbody's ability to support beneficial use(s).

The 303(d) list consists of the waterbodies in Categories 4a, 4b, and 5. These waterbodies can be referred to as "listed" or "impaired".

- The 303(d) list is based off of Section 303(d) of the Clean Water Act, which requires each state to identify waters that do not meet water quality standards and to prioritize those waters for development of total maximum daily load (TMDL)
- The Clean Water Act also requires each state to report on the overall condition of its surface waterbodies, which is Section 305(b).

California combines its 303(d) lists and 305(b) reports into a single "California Integrated Report".

For more information see:

[CEDEN - California Environmental Data Exchange Network](#)

[2024 Integrated Report | California State Water Resources Control Board](#)

3.2.1.1 State Water Bodies (rivers, streams, and beaches)

i Add new IR layer info

Update information to match map updates

This layer shows linear waterbodies in California, such as rivers, streams, and beaches, which were assessed for 305(b) in the 2022-2024 California Integrated Report. Blue waterbodies are listed in Category 1, 2, or 3. Orange waterbodies represent those placed on the 303(d) list of impaired waters.

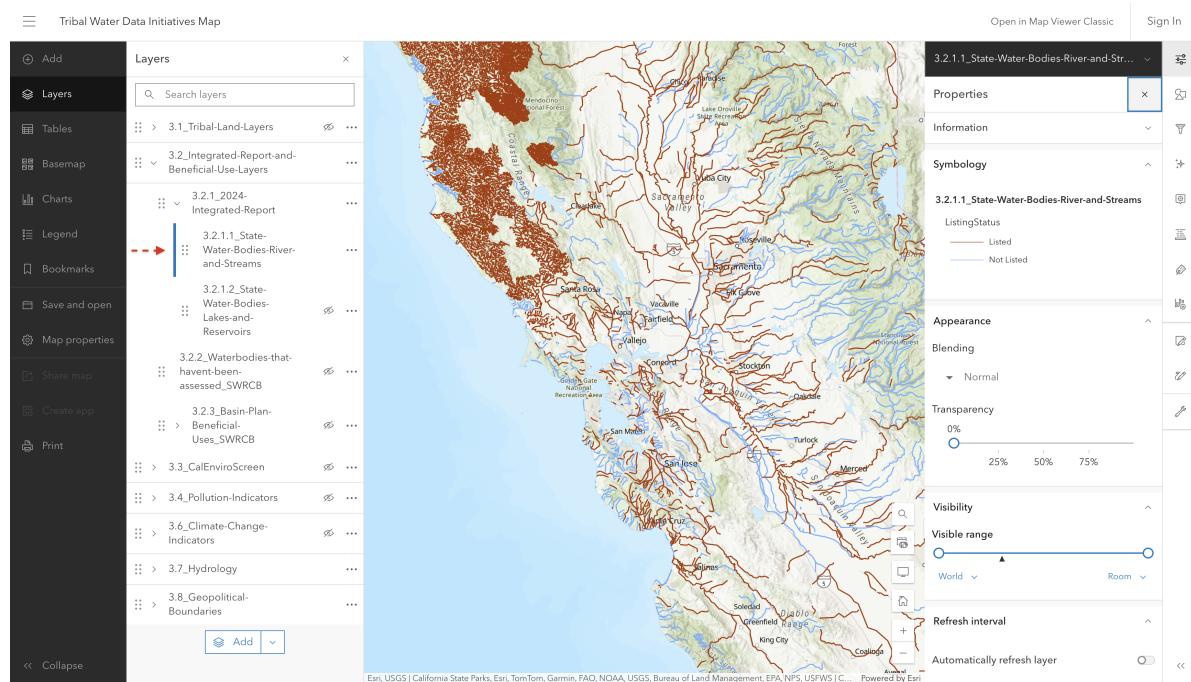


Figure 3.8: Screenshot of interactive map showing the rivers and streams in the Integrated Report

Note, these are not the final assessments.

Source: [2024 California Integrated Report](#)

Source update frequency: Every 2 years

automatically synced here

Contact: [SWRCB Water Quality Assessment Program](#)

3.2.1.2 State Water Bodies (bays, lakes and reservoirs)

This layer shows non-linear (polygon) waterbodies in California, such as bays, lakes, and reservoirs, which were assessed for 305(b) in the 2020-2022 California Integrated Report. Blue waterbodies are listed in Category 1, 2, or 3. Orange waterbodies represent those placed on the 303(d) list of impaired waters.

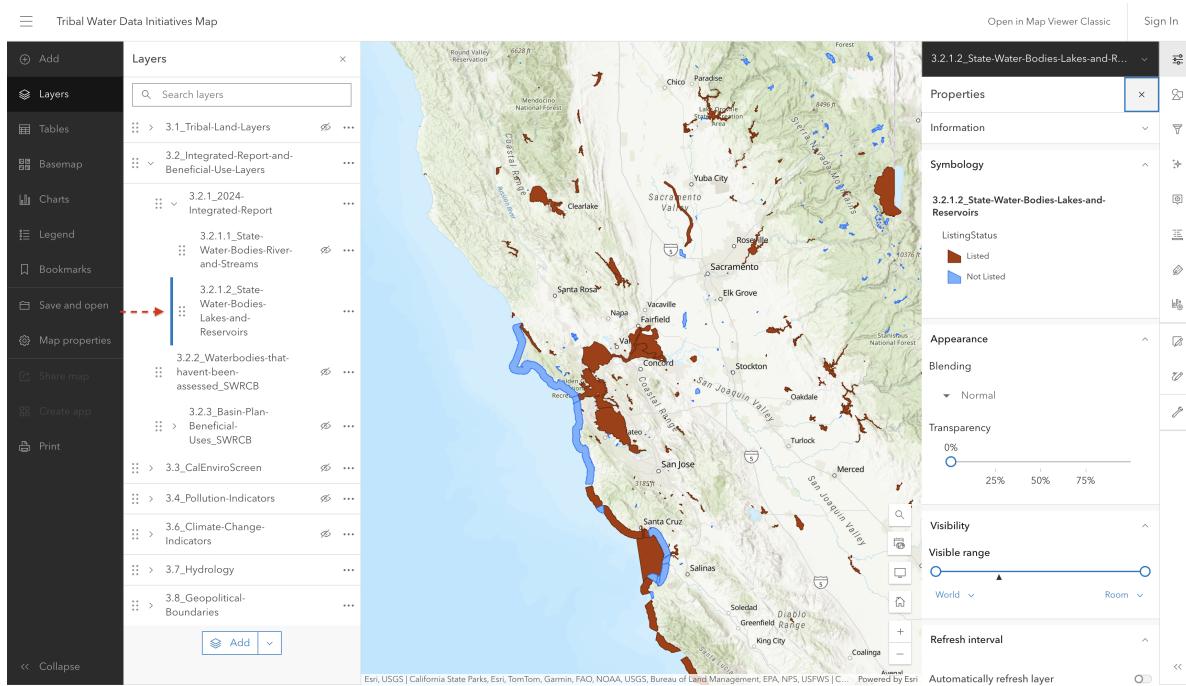


Figure 3.9: Screenshot of interactive map showing the bays, lakes, and reservoirs in the Integrated Report

Note, these are not the final assessments.

Source: [2024 California Integrated Report](#)

Source update frequency: Every 2 years

automatically synced here

Contact: [SWRCB Water Quality Assessment Program](#)

3.2.2 Waterbodies with insufficient data

3.2.2.1 State Water Bodies (rivers, streams, and beaches)

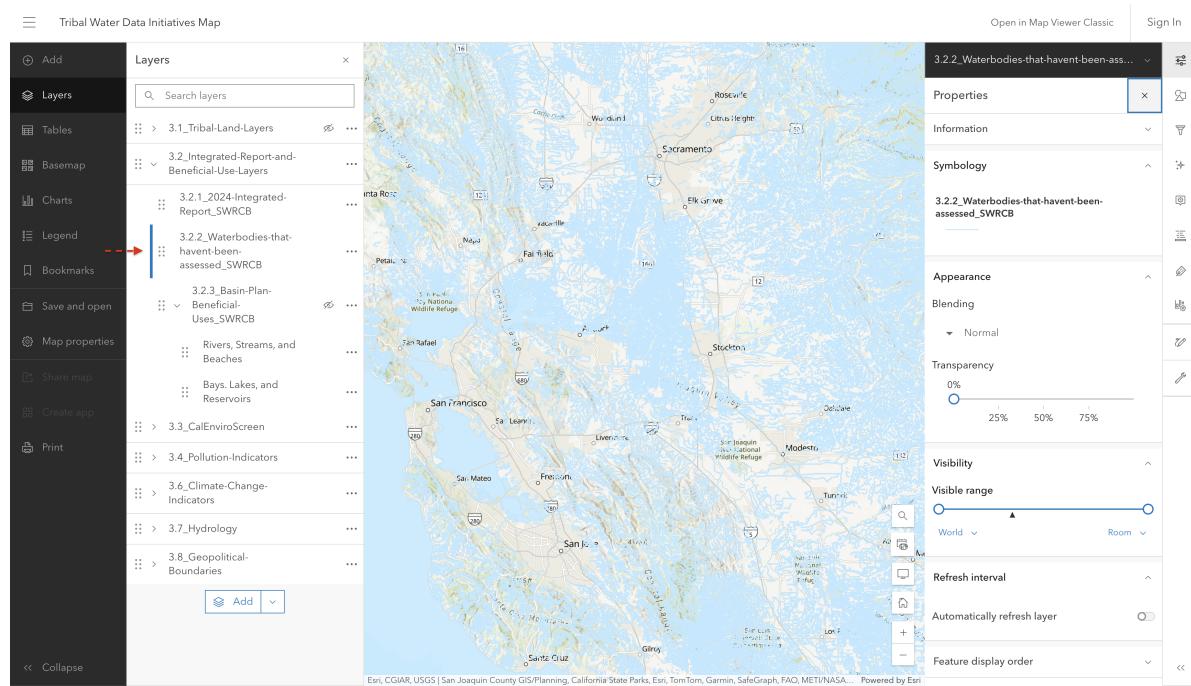


Figure 3.10: Screenshot of interactive map showing unassessed rivers, streams, and beaches

Source: [National Hydrography Dataset](#)

Source update frequency: Every 2 years

Note

Note

This layer has not been updated since 2024 and therefore does not accurately reflect all waterbodies that have not been assessed. There are some waterbodies in the NHD layer that are not assessed in the IR layers. If you have further questions, please refer to the contact information below.

automatically synced here

Contact: [California State Water Resources Control Board](#)

3.2.2.2 State Water Bodies (bays, lakes and reservoirs)

this layer appears to now be in a combined rivers/streets/beaches + bays/lakes etc. layer

3.2.3 Basin Plan Beneficial Uses



What are Beneficial Uses?

Waters that are used for specific purposes (see codes below or in layer properties on the map). These beneficial use waters are designated in regional water board water quality control plans.

Some examples of beneficial uses include: protection and propagation of fish, recreation, agriculture, etc. Waters are often designated with more than one beneficial use.

To ensure the protection of these waters and their beneficial uses, state and regional water quality control plans establish maximum levels of pollutants. When these maximum levels are exceeded and waters cannot support their designated beneficial uses, that is when they are listed as 303(d) or impaired waters.

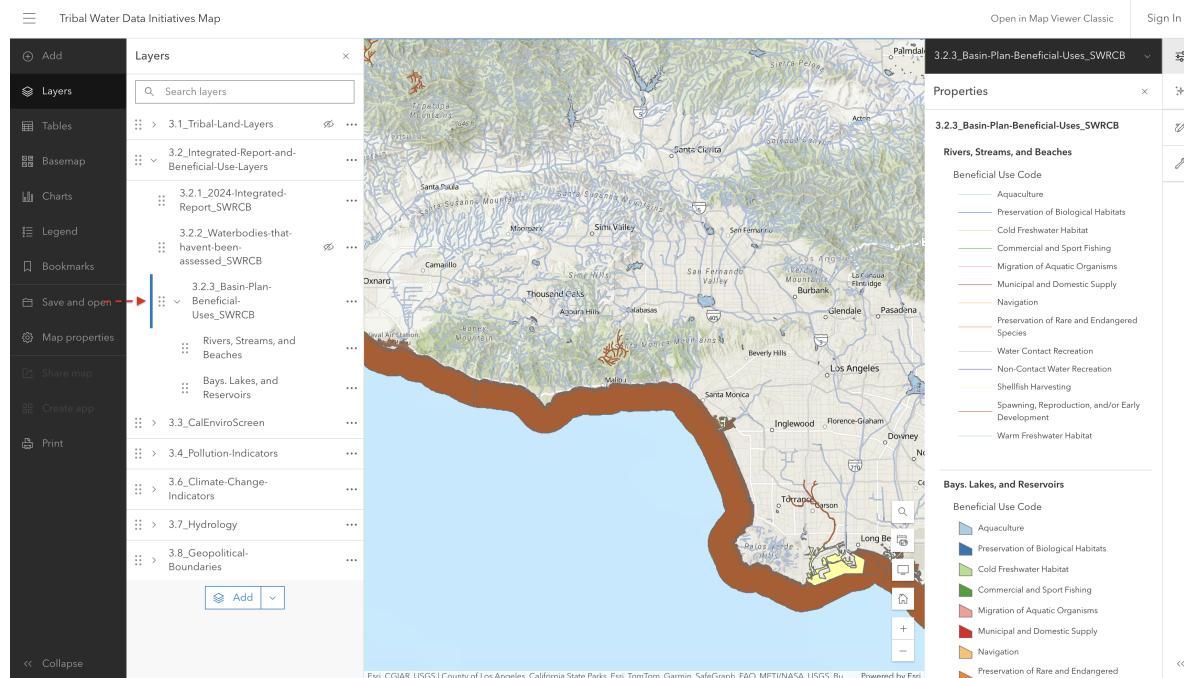


Figure 3.11: Screenshot of interactive map showing Basin Plan Beneficial Uses

Source: [CA State Water Resources Control Board - Basin Plan Portal](#)

Source update frequency: ?

automatically synced here

Contact: [CA State Water Resources Control Board - Basin Plan Portal](#)

3.3 CalEnviroScreen

i What is CalEnviroScreen?

CalEnviroScreen is a science-based screening tool that is used to evaluate communities on pollution burdens and the vulnerability of people living in the communities in order to help identify areas that are disproportionately burdened by cumulative impacts of multiple pollutants and the related health effects.

Results of CalEnviroScreen can be used to help direct resources to those disproportionately affected communities. Darker colors represent higher CalEnviroScreen Scores.

If you are curious to learn more about CalEnviroScreen beyond the questions below, you can access the Office of Environmental Health Hazard Assessment training videos [here](#).

i How is the CalEnviroScreen Score calculated?

The CalEnviroScreen score uses Census Tract information and compares levels of exposure, environmental effects, sensitive populations, and socioeconomic factors across tracts.

OEHHA converts raw data values for each indicator into a percentile to be able to compare results across the state.

After each indicator is assigned a percentile, OEHHA calculates the average of the exposure indicator percentiles and the average of the environmental effect percentiles. These two averages are then combined and divided by 10 to calculate the Pollution Burden score, which ranges from 0-10.

This same process is completed for the Population Characteristics, which combines the averages of the indicators for sensitive populations and socioeconomic factors.

The **overall CalEnviroScreen score** is calculated by multiplying the pollution burden by the population characteristics, and ranges from 0-100. This method allows scores from across all census tracts in the state to be compared. A higher score means that a tract has greater overall population vulnerability and pollution burdens. A CalEnviroScreen score is calculated for 8,000 Census Tracts.

See Training [Module 6](#) for more information and detailed examples

3.3.1 CalEnviroScreen 4.0

This layer shows the CalEnviroScreen (CES) 4.0 based on the CES Score percentile.

CalEnviroScreen is a screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution. CI score ranges from 10 to 100. For more information on CalEnviroScreen scoring, see above.

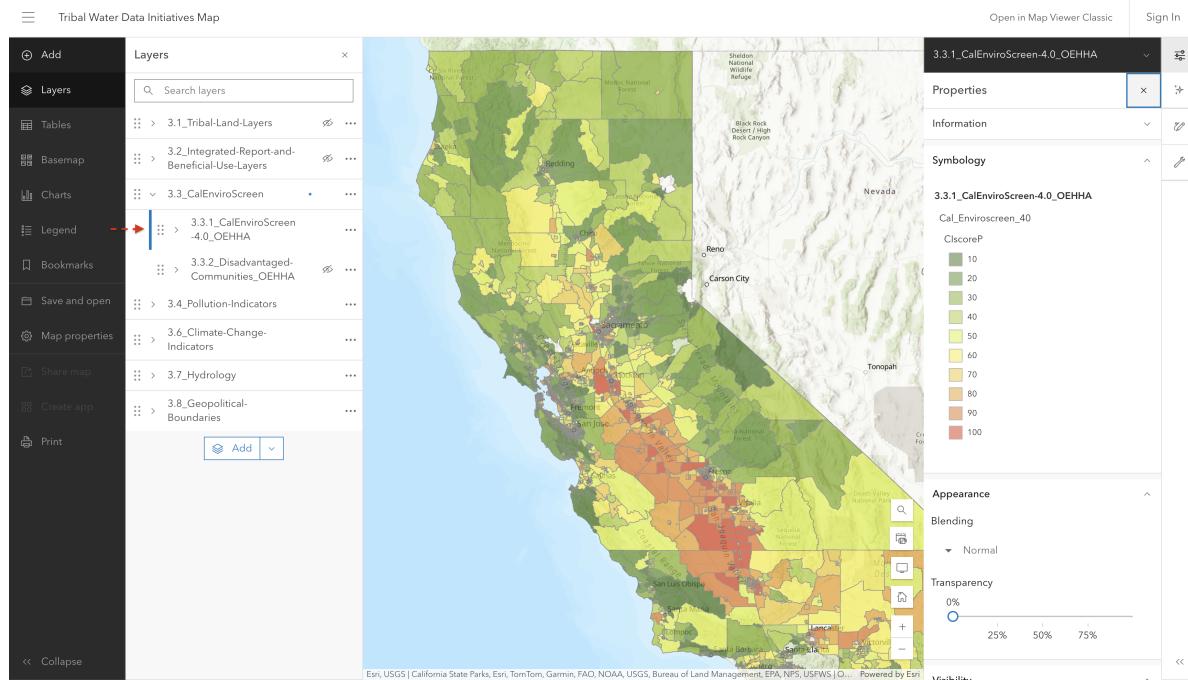


Figure 3.12: Screenshot of interactive map showing CalEnviroScreen scores by census tract

Source: [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CalEnviroScreen](#)

3.3.1.1 Pollution Burden

screenshot coming soon

Source: [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CalEnviroScreen](#)

3.3.1.2 Population Characteristics

screenshot coming soon

Source: [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CalEnviroScreen](#)

3.3.2 Disadvantaged Communities

This map shows the disadvantaged communities designated by CalEPA for the purpose of SB 535. These areas represent the 25% highest scoring census tracts in CalEnviroScreen 4.0, census tracts previously identified in the top 25% in CalEnviroScreen 3.0, census tracts with high amounts of pollution and low populations, and federally recognized tribal areasas identified by the Census in the 2021 American Indian Areas Related National Geodatabase.

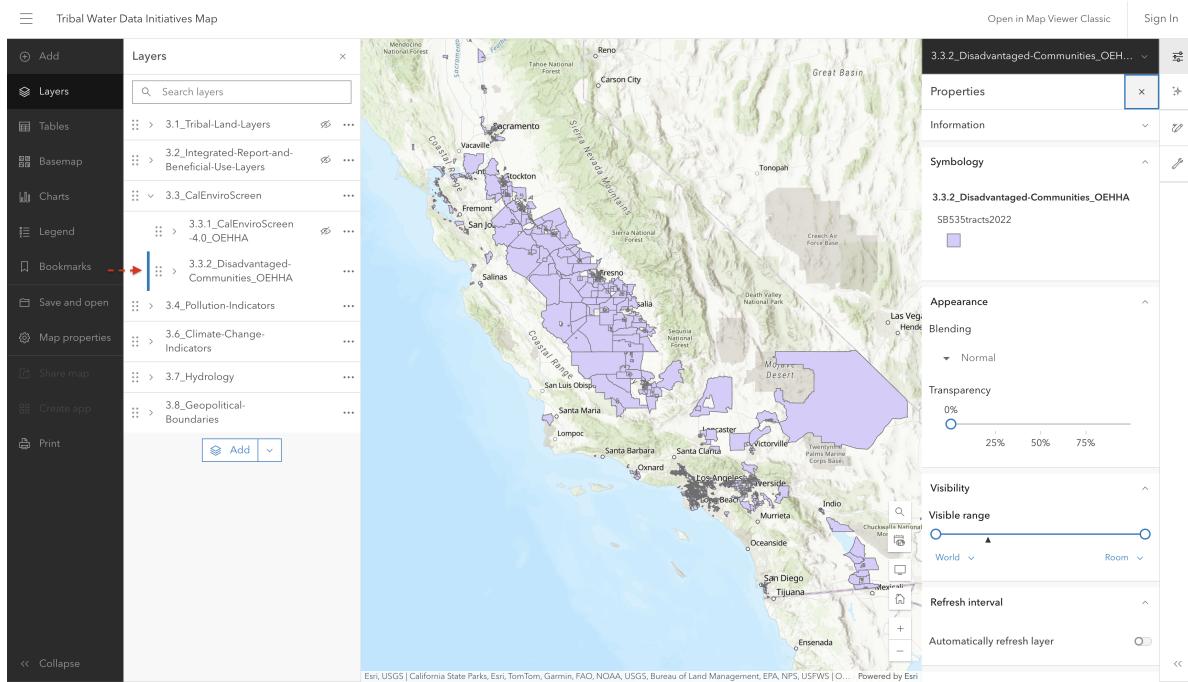


Figure 3.13: Screenshot of interactive map showing disadvantaged communities in CalEnviroScreen 4.0

Source: [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CalEnviroScreen](#)

3.4 Pollution Indicators

3.4.1 Agricultural Pesticides

This indicator represents the reported use of 132 hazardous and volatile pesticides in 2017-2019. Only pesticides used on agricultural commodities are included in the indicator. The data is averaged over the census tract area, and some application may be adjacent to (instead of within) the census tract.

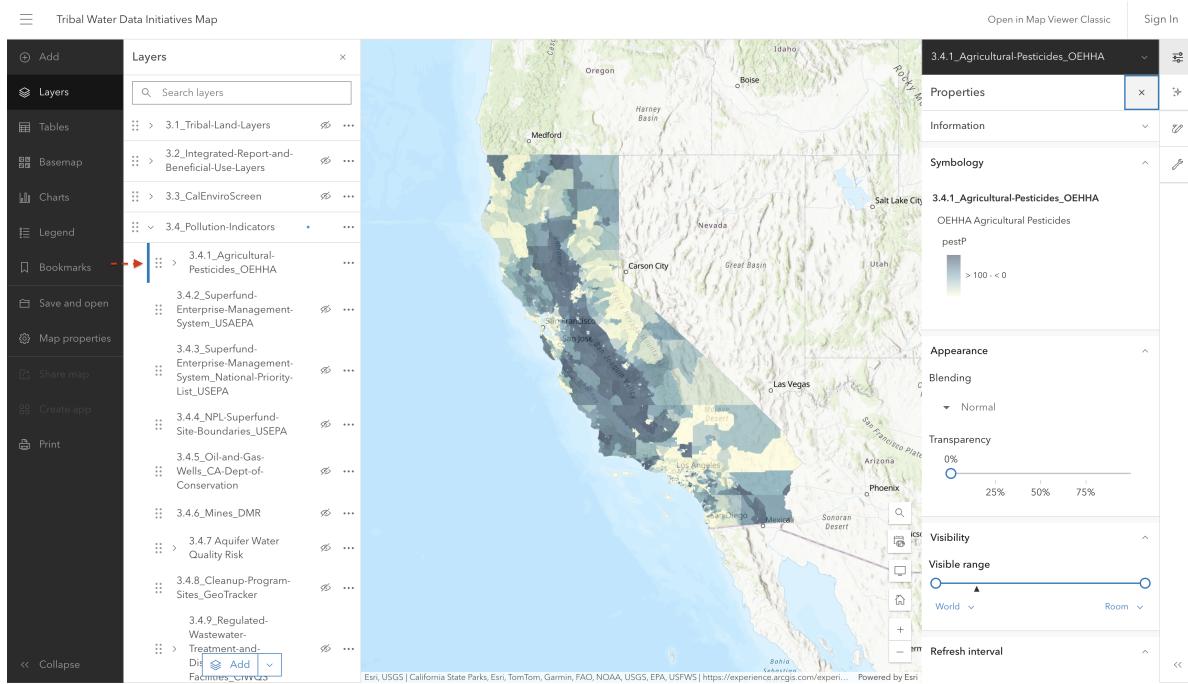


Figure 3.14: Screenshot of interactive map showing pesticide use intensity by census tract

Source: [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CalEnviroScreen](#)

3.4.2 Superfund Enterprise Management System Sites

This layer shows location and attribute information on facilities regulated under the Superfund Enterprise Management System (SEMS). Data includes the inventory of active and archived hazardous waste sites evaluated by the EPA's Superfund program.

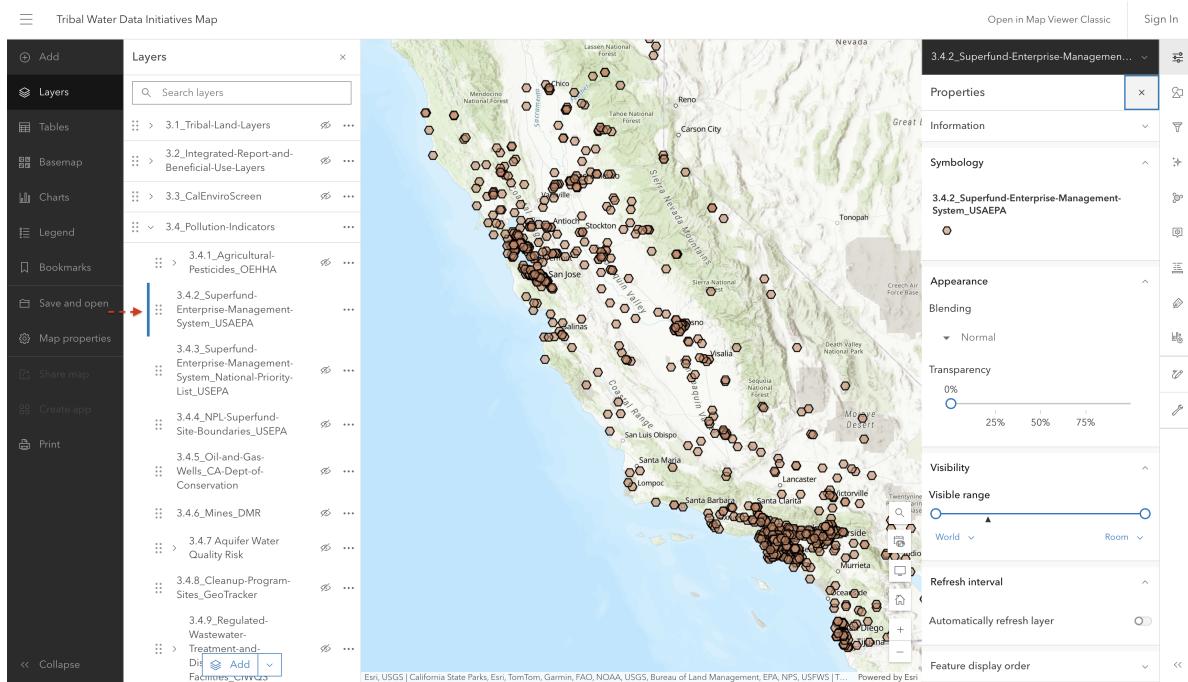


Figure 3.15: Screenshot of interactive map showing EPA Superfund sites

Source: [U.S. Environmental Protection Agency \(EPA\)](#)

Source update frequency: As needed

manually updated here June 2025

Contact: [U.S Environmental Protection Agency \(EPA\)](#)

3.4.3 Superfund Enterprise Management System National Priority List (NPL) Sites

This layer shows sites that are listed on the Superfund NPL. The NPL lists national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States.

screenshot coming soon

Source: [U.S. Environmental Protection Agency \(EPA\)](#)

Source update frequency: As needed

manually updated here June 2025

Contact: [U.S Environmental Protection Agency \(EPA\)](#)

3.4.4 NPL Superfund Site Boundaries

This layer shows entire Superfund site boundaries.

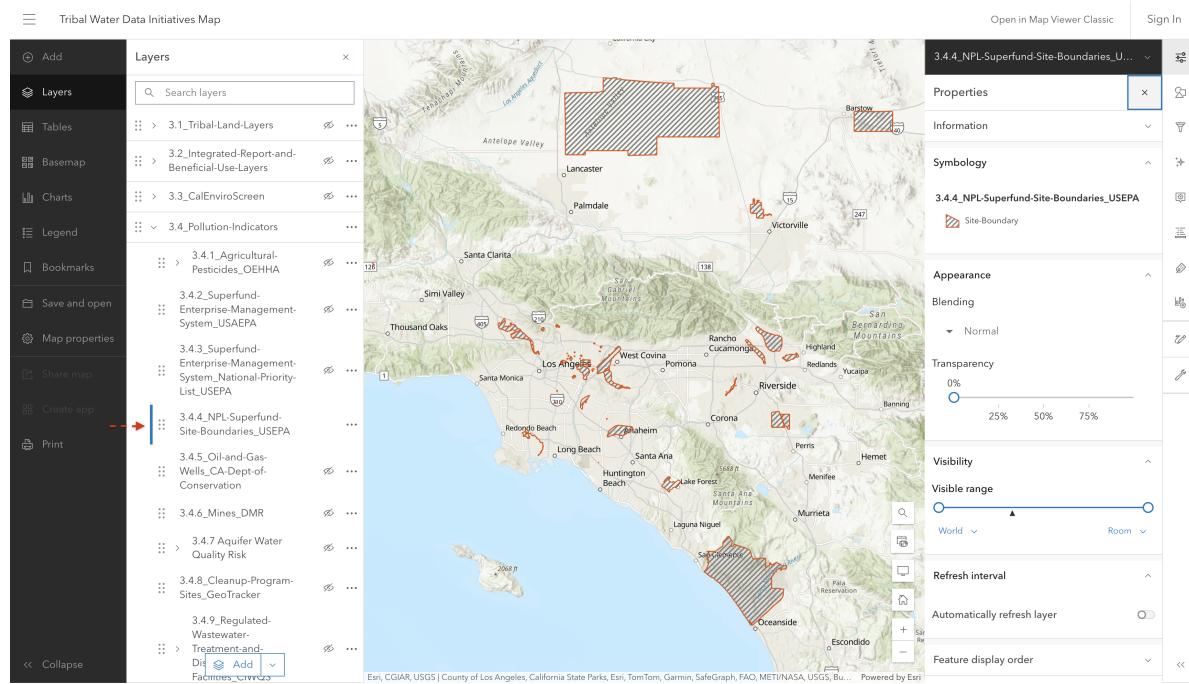


Figure 3.16: Screenshot of interactive map showing NPL Superfund Site boundaries

U.S. EPA Superfund Site boundaries are polygons representing the footprint of a whole site, defined for purposes of this effort as the sum of all of the Operable Units and the current understanding of the full extent of contamination.

Source: [U.S. Environmental Protection Agency \(EPA\)](#)

Source update frequency: Monthly

manually updated here June 2025

Contact: [U.S Environmental Protection Agency \(EPA\)](#)

3.4.5 Oil and Gas Wells

This layer shows oil and gas well locations (and their associated records) across California.

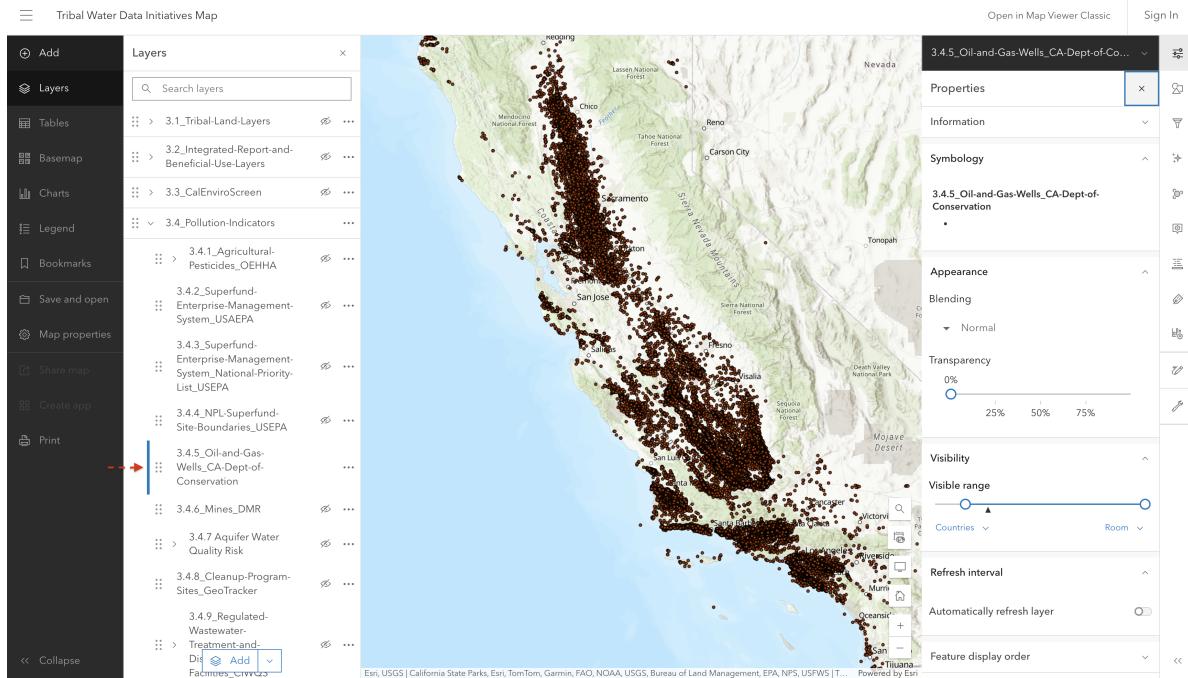


Figure 3.17: Screenshot of interactive map showing oil and gas well locations

Source: [WellFinder](#), published by the California Department of Conservation and Geologic Energy Management Division

Source update frequency: As needed

automatically synced here

Contact: [WellFinder](#)

3.4.6 Mines

This layer shows all mines in California labeled by mine status (color) and type (shape).

This data includes location, status, and other information regarding mine operations regulated under the Surface Mining and Reclamation Act of 1975 (SMARA) in California. The data presented is reported by mine operators in annual reports provided to CA Division of Mine Reclamation under Public Resources Code section 2207.

Additional information about commodities and resources/minerals from mines in California can be found [here](#).

3.4.6.1 Mine Status

screenshot coming soon

Source: California Department of Conservation Division of Mine Reclamation, Mines Online

Source update frequency: As needed

automatically synced here

Contact: [California Department of Conservation - Division of Mine Reclamation](#)

3.4.6.2 Mine Type

screenshot coming soon

Source: California Department of Conservation Division of Mine Reclamation, Mines Online

Source update frequency: As needed

automatically synced here

Contact: [California Department of Conservation - Division of Mine Reclamation](#)

3.4.6.3 Primary Mine Products

screenshot coming soon

Source: California Department of Conservation Division of Mine Reclamation, Mines Online

Source update frequency: As needed

automatically synced here

Contact: [California Department of Conservation - Division of Mine Reclamation](#)

3.4.7 Aquifer Water Quality Risk

Source: [California State Water Resources Control Board](#)

Source update frequency: Every year

automatically synced here

Contact: [California State Water Resources Control Board](#)

3.4.7.1 State Small Water Systems

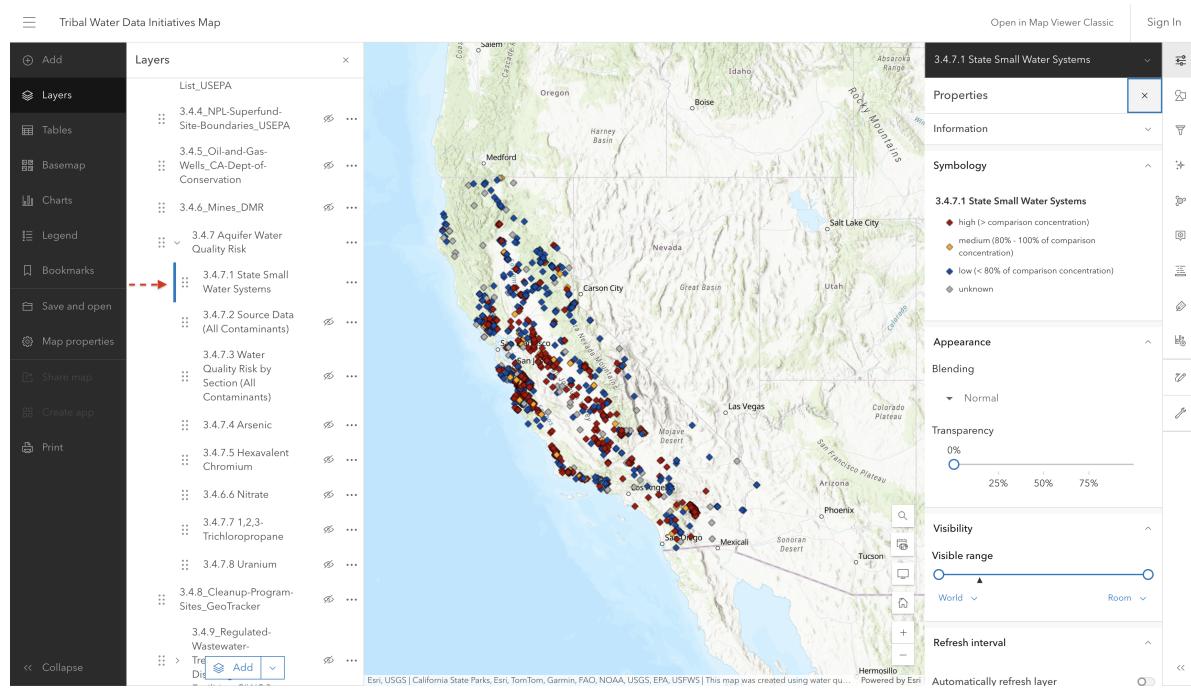


Figure 3.18: Screenshot of interactive map showing state small water systems

3.4.7.2 Source Data (All Contaminants)

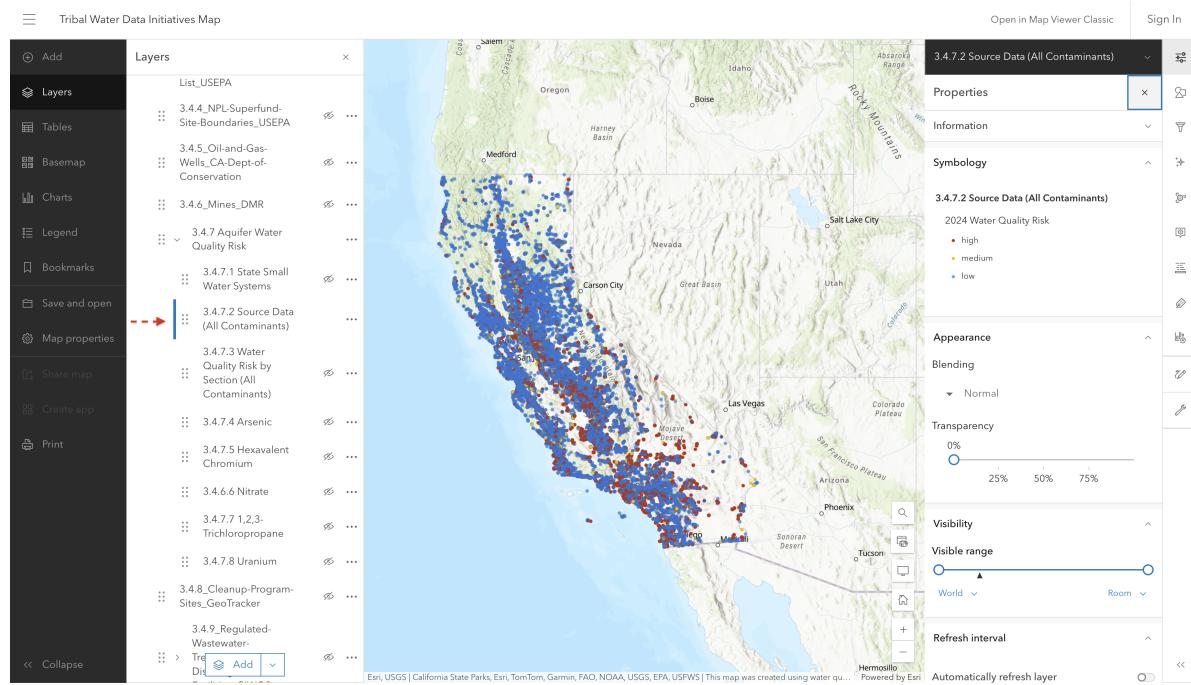


Figure 3.19: Screenshot of interactive map showing source contaminant data

3.4.7.3 Water Quality Risk by Section (All Contaminants)

This layer shows estimated water quality risk for domestic wells and state small water systems for a variety of contaminants.

This layer was developed for use by the State Water Boards SAFER Program to help prioritize areas where domestic wells and state small water systems may be accessing groundwater that does not meet primary drinking water standards.

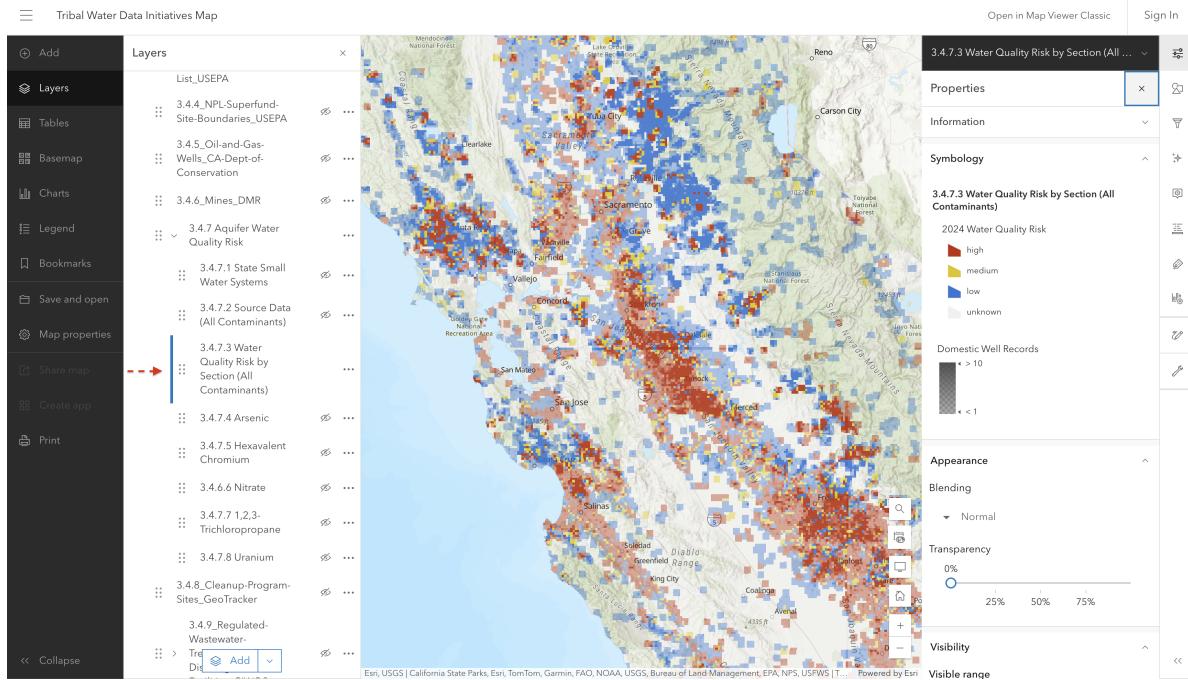


Figure 3.20: Screenshot of interactive map showing estimated water quality risk

Source: [Groundwater Ambient Monitoring and Assessment \(GAMA\) Program](#)

Source update frequency: As needed

automatically synced here

Contact: [SAFER Program](#)

3.4.7.4 Arsenic

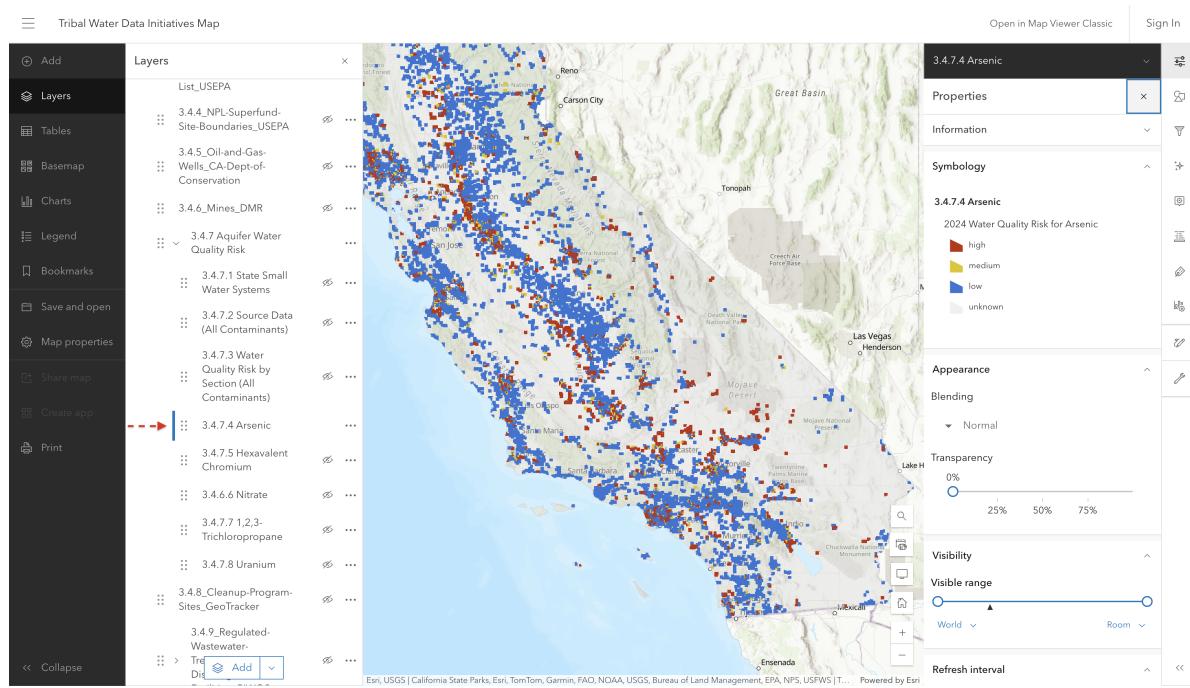


Figure 3.21: Screenshot of interactive map showing arsenic risk

3.4.7.5 Hexavalent Chromium

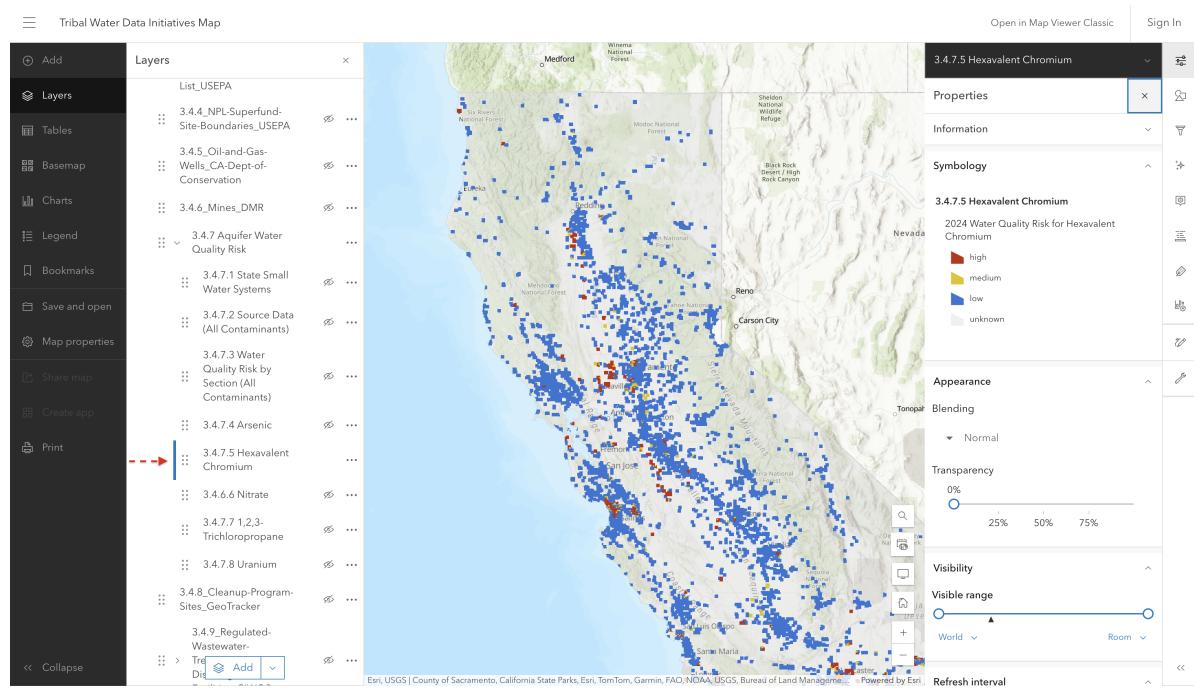


Figure 3.22: Screenshot of interactive map showing hexavalent chromium risk

3.4.7.6 Nitrate

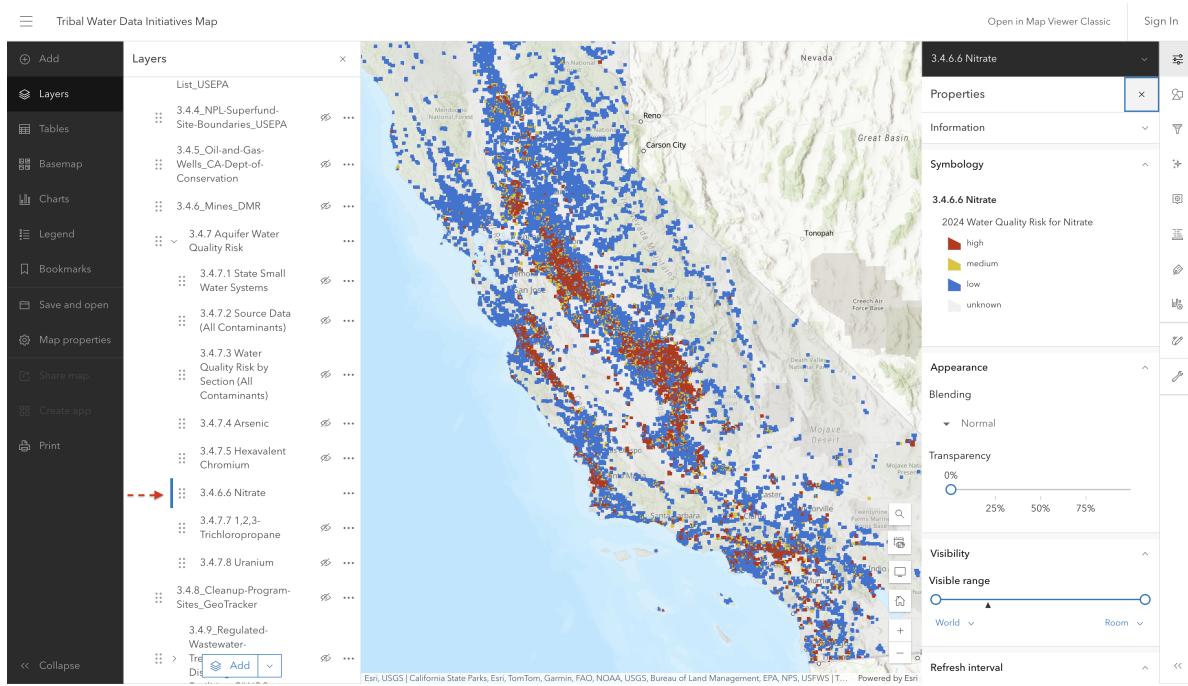


Figure 3.23: Screenshot of interactive map showing nitrate risk

3.4.7.7 Trichloropropene

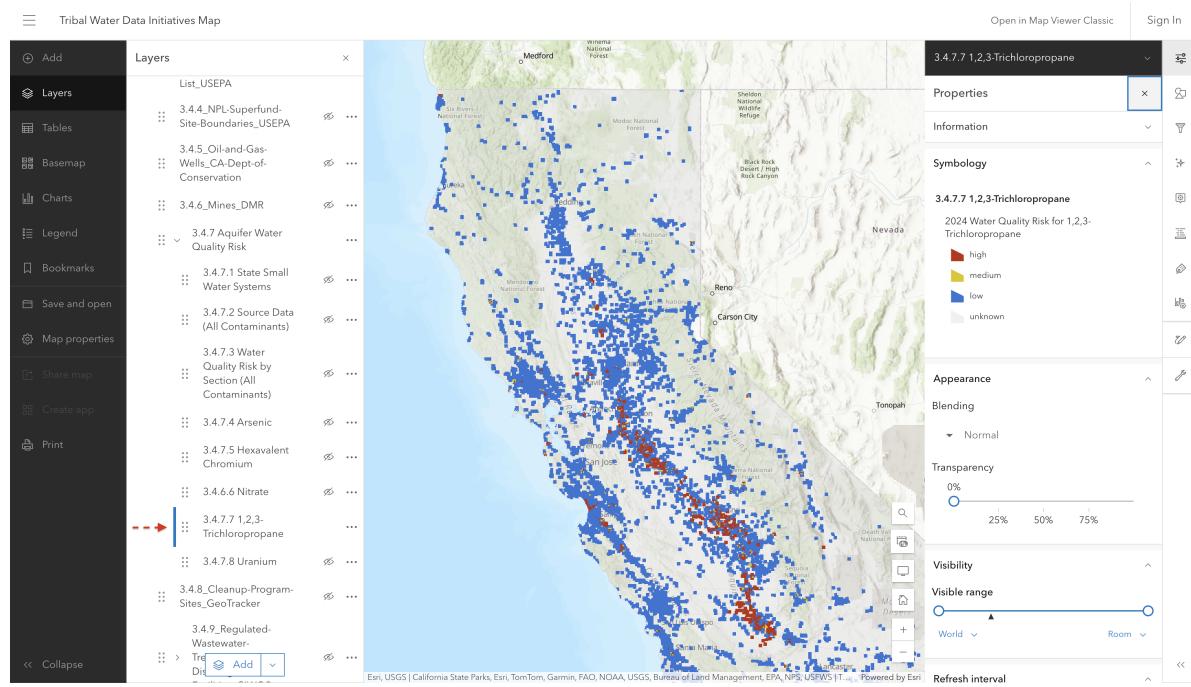


Figure 3.24: Screenshot of interactive map showing trichloropropene risk

3.4.7.8 Uranium

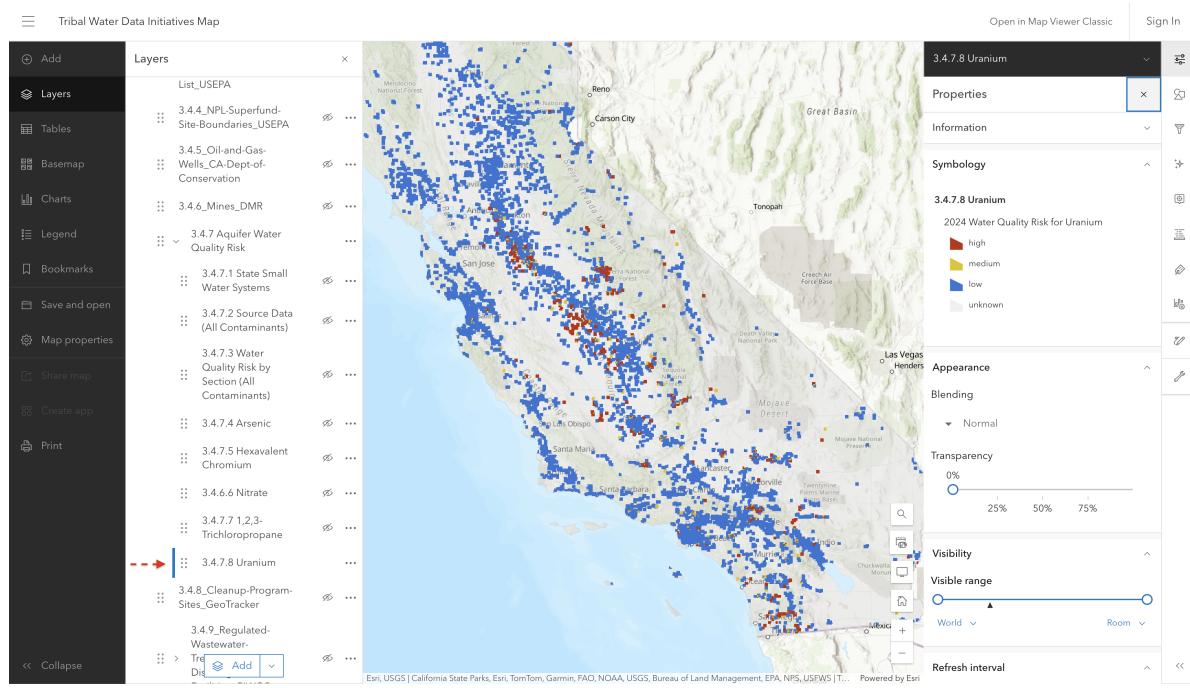


Figure 3.25: Screenshot of interactive map showing uranium risk

3.4.8 Cleanup Program Sites

i Note

The Cleanup Program Sites have 36 different classifications. For ease of viewing on this map, we have combined similar classifications into groups. You can find the specific classification if you click on the individual point of interest, or you can refer here for the full list.

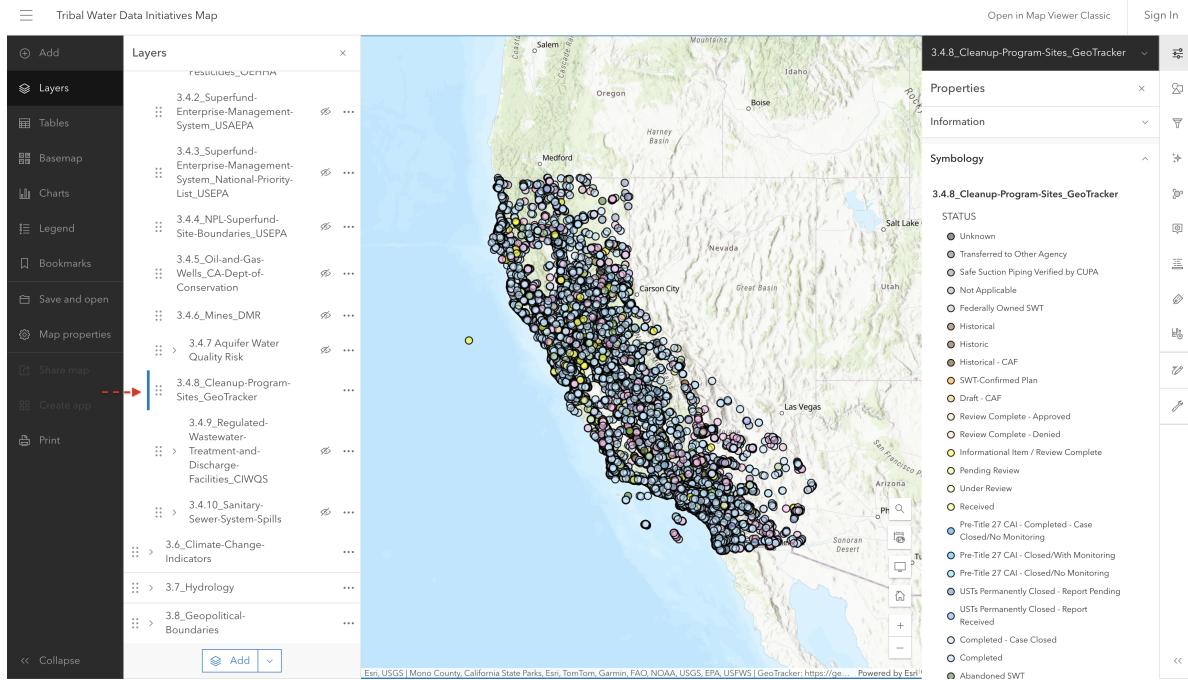


Figure 3.26: Screenshot of interactive map showing cleanup program sites

Source: [GeoTracker](#)

Source update frequency: Daily

manually updated here June 2025

Contact: [GeoTracker](#)

3.4.9 Regulated Wastewater Treatment & Discharge Facilities

Layer showing National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirements (WDR) facilities regulated by State Water Board programs, as reflected in the California Integrated Water Quality System (CIWQS) project.

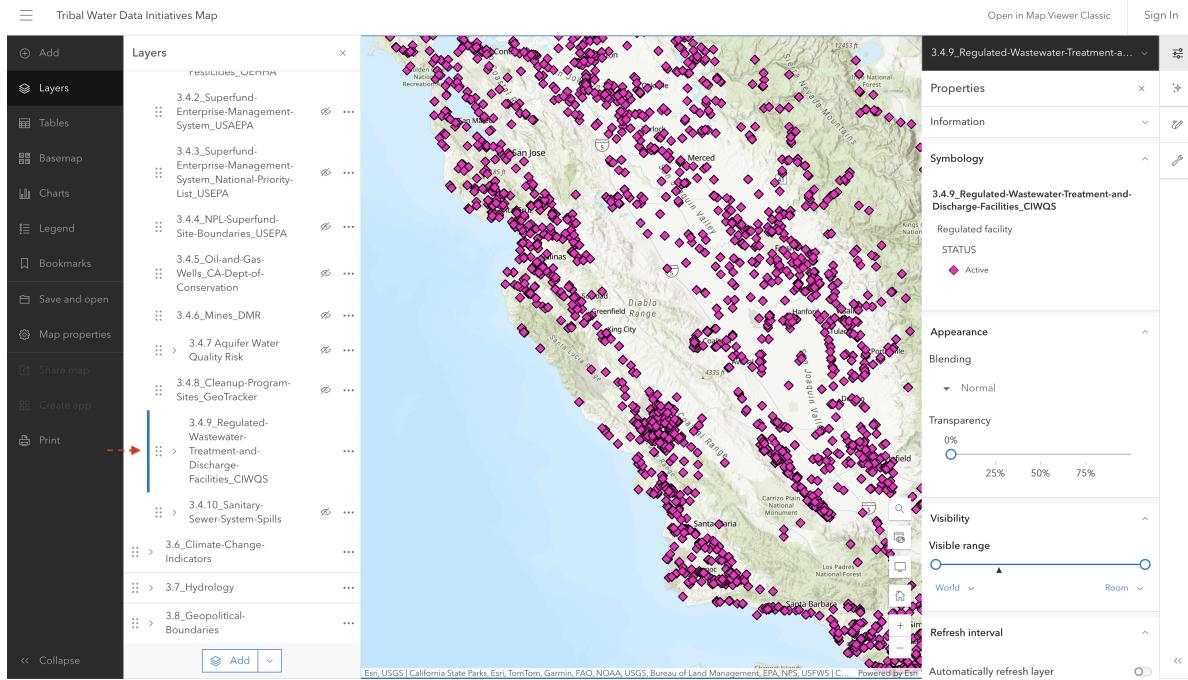


Figure 3.27: Screenshot of interactive map showing wastewater discharge facilities

These facilities are mandated to hold active permits to discharge into or alter the surface or ground water. More information about these permits can be found in the CIWQS database.

Source: [California Integrated Water Quality System \(CIWQS\)](#)

Source update frequency: Daily

automatically synced here

Contact: [California Integrated Water Quality System \(CIWQS\)](#)

3.4.10 Sanitary Sewer System Spills

Layer showing locations with sanitary sewer system spills.

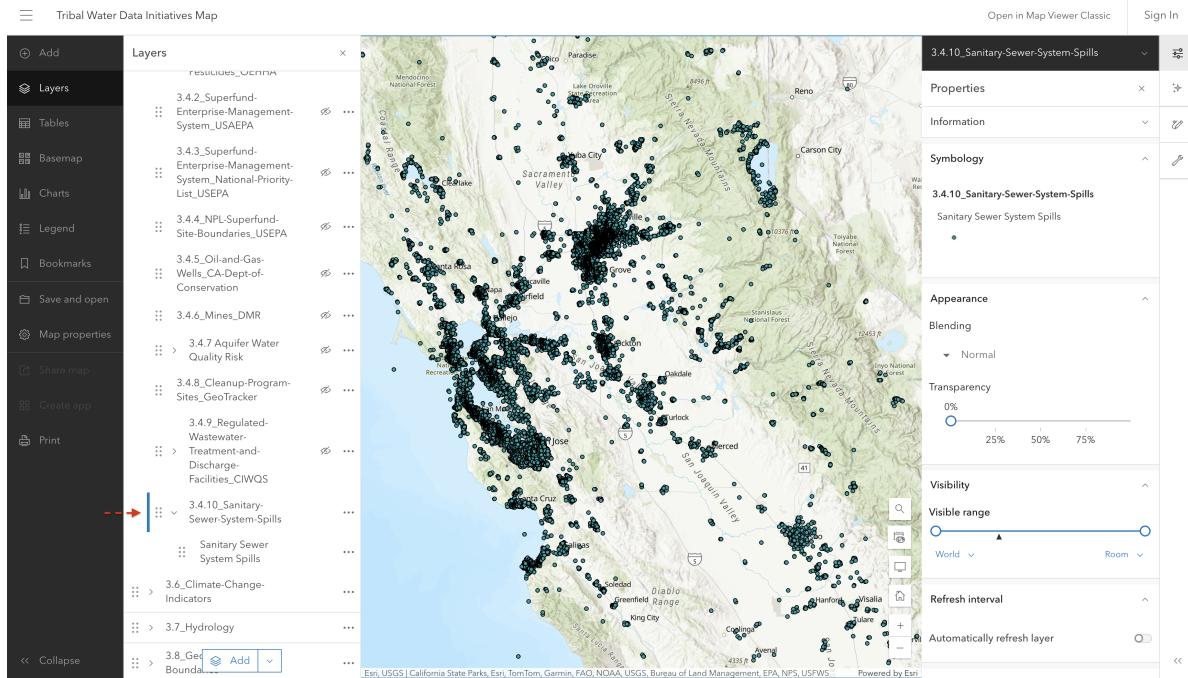


Figure 3.28: Screenshot of interactive map showing sanitary sewer system spills

Source: [California Integrated Water Quality System \(CIWQS\)](#)

Source update frequency: Daily

automatically synced here

Contact: [California Integrated Water Quality System \(CIWQS\)](#)

3.5 Water Quality

3.5.1 SWAMP Data

Note

SWAMP data are downloaded from [California's Open Data Portal](#) and edited to refine, format, and synthesize the data before uploading it into the Tribal Water Data Map. If you are interested in seeing the raw data, please refer to the SWAMP Data Dashboard page on the California Open Data Portal linked above. There is also additional information regarding data sourced from California Environmental Data Exchange Network (CEDEN), data dictionaries, metadata, and related resources.

3.5.1.1 Tissue Summary:

The tissue summary data set includes annual summary statistics of contaminant concentrations in aquatic organism tissue samples. The data are derived from raw individual and composite tissue sample results. For the purpose of this map, we have decided to filter out all contaminants other than mercury, and display the most recent data collected from each site.

Symbology is aligned with the thresholds used by the Office of Environmental Health Hazard Assessment (OEHHA). Each site contains multiple records with different species, and therefore, different mercury concentrations. The color represented on the map is from the first species recorded at the site.

Note

Make sure to look at each individual species report to check the mercury concentrations, as the color representing the general category of OEHHA thresholds may not accurately represent each species at every site.

An additional note: The Location Code column has been removed from the data set in order to streamline the information presented. However, the location code is appended to the end of the Results column data and the full length description of the location code can be found [here](#) in the data dictionary.

screenshot coming soon

Source: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Metadata: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Source update frequency: As needed, as of October 2025 updates to all SWAMP data layers is static and conducted manually. Future goals are to automate this process so updates can occur with greater frequency.

manually updated here October 2025

Contact: swamp@waterboards.ca.gov

3.5.1.2 Water Quality:

The SWAMP water quality data includes field and lab analysis results for chemical and physical parameters measured in water samples.

Some of the columns have been removed from the data set for a more streamlined presentation on the map. If you are interested in seeing the full data set, please refer to the source link below. Additionally, if you are seeking information regarding what each column means/what data it is communicating, please refer to the [data dictionary](#).

screenshot coming soon

Source: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Metadata: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Source update frequency: As needed, as of October 2025 updates to all SWAMP data layers is static and conducted manually. Future goals are to automate this process so updates can occur with greater frequency.

manually updated here October 2025

Contact: swamp@waterboards.ca.gov

3.5.1.3 Toxicity Summary:

The SWAMP toxicity summary data includes summarized results from aquatic toxicity tests. Summary records are entries in the database that summarize the results from multiple replicate toxicity tests of the same sample water.

screenshot coming soon

Source: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Metadata: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Source update frequency: As needed, as of October 2025 updates to all SWAMP data layers is static and conducted manually. Future goals are to automate this process so updates can occur with greater frequency.

manually updated here October 2025

Contact: swamp@waterboards.ca.gov

3.5.1.4 Habitat:

The SWAMP habitat results includes data on physical habitat conditions typically collected alongside biological monitoring to provide context for interpreting water quality conditions. This data set includes scores for the California Stream Condition Index (CSCI) and Algal Stream Condition Index (ASCI).

screenshot coming soon

Source: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Metadata: [SWAMP Data Dashboard - Dataset - California Open Data](#)

Source update frequency: As needed, as of October 2025 updates to all SWAMP data layers is static and conducted manually. Future goals are to automate this process so updates can occur with greater frequency.

manually updated here October 2025

Contact: swamp@waterboards.ca.gov

3.6 Climate Change Indicators

New layers coming soon

3.7 Hydrology

3.7.1 Wetlands

The National Wetlands Inventory (NWI) was established by the US Fish and Wildlife Service (FWS) to conduct a nationwide inventory of U.S. wetlands to provide biologists and others with information on the distribution and type of wetlands to aid in conservation efforts. This layer has been clipped to just show the extent, approximate location and type of wetlands and surface water habitats in California.

Navigate [here](#) for more historic information regarding vegetation, regional and temporal conditions, and geographic features.

screenshot coming soon

Source: [Wetlands Mapper | U.S. Fish & Wildlife Service](#)

Metadata: [Wetlands Metadata | U.S. Fish & Wildlife Service](#)

Source update frequency: As needed

manually updated here September 2025

Contact: Wetlands_Team@fws.gov

3.7.2 Groundwater Basins

This layer shows the boundaries of 515 groundwater basins and subbasins as defined by the California Department of Water Resources.

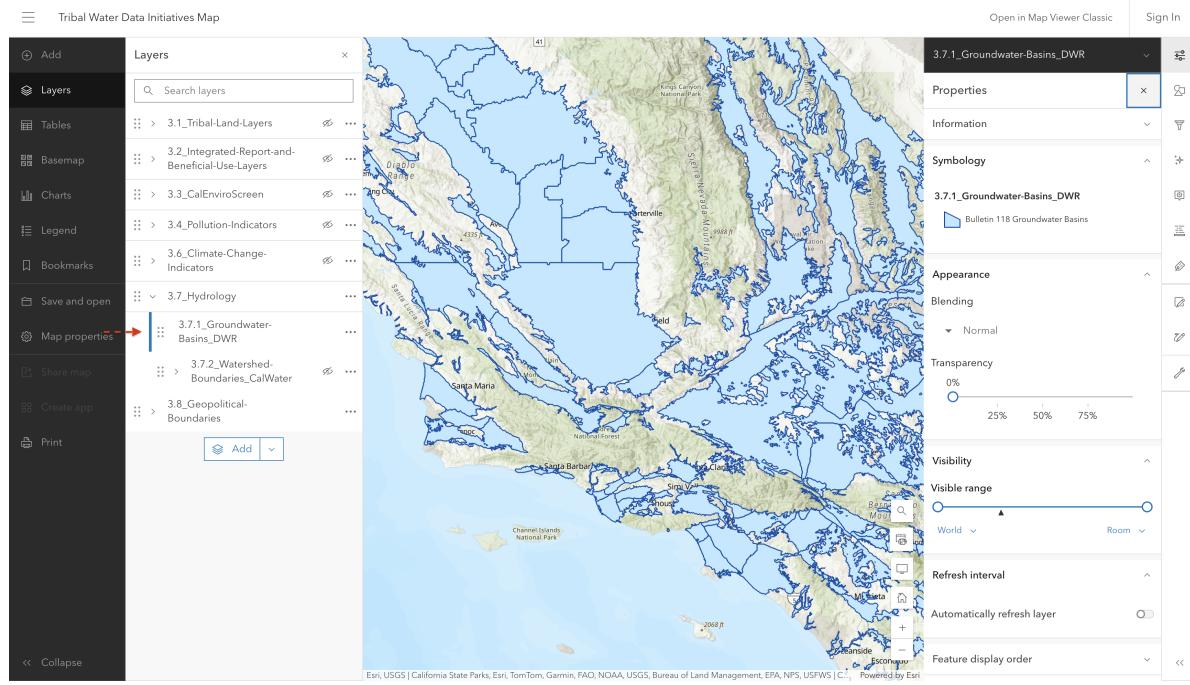


Figure 3.29: Screenshot of interactive map showing groundwater basins and boundaries

Source: [California Department of Water Resources](#)

Source update frequency: As needed

automatically synced here

Contact: [California Department of Water Resources](#)

3.7.3 Hydrography, Water Boundaries

The California Interagency Watershed Map is the State of California's working definition of watershed boundaries. Previous Calwater versions described California watersheds, beginning with the division of the State's 101 million acres into ten **Hydrologic Regions** (HR). Each HR is progressively subdivided into six smaller, nested levels: the **Hydrologic Unit** (HU, major rivers), **Hydrologic Area** (HA, major tributaries), **Hydrologic Sub-Area** (HSA), Super

Planning Watershed (**SPW**), and Planning Watershed (**PW**), with the Planning Watershed as the most detailed level. See [metadata](#) for more information.

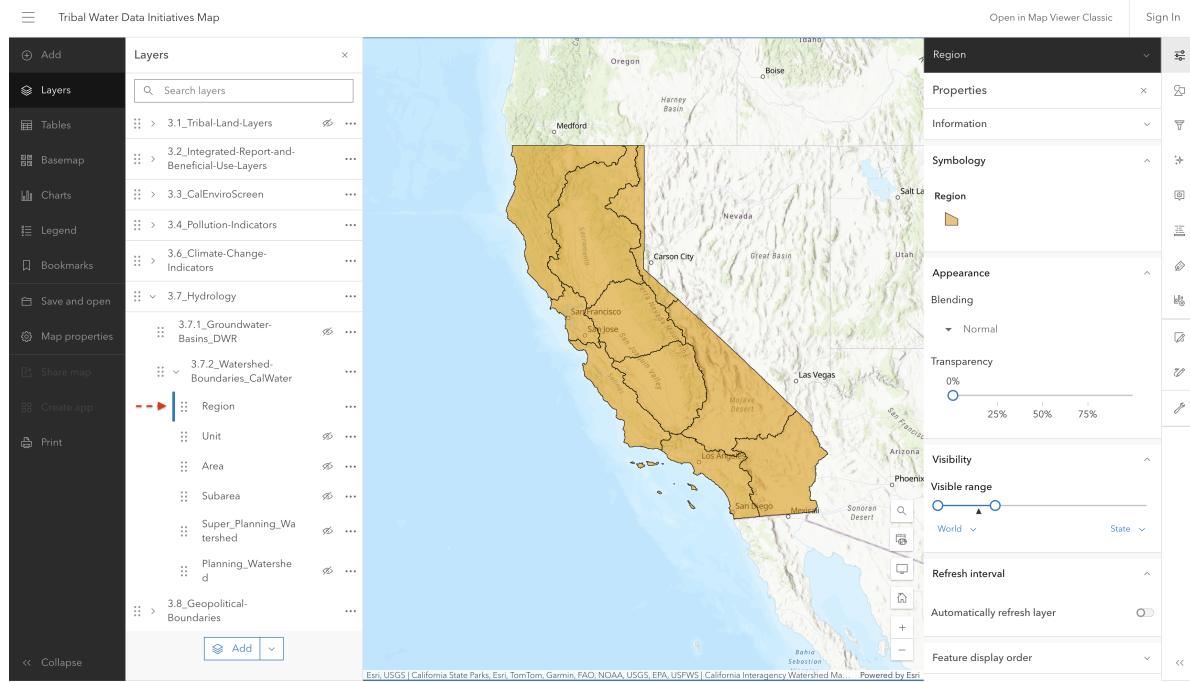


Figure 3.30: Screenshot of interactive map showing watershed boundaries at the region level

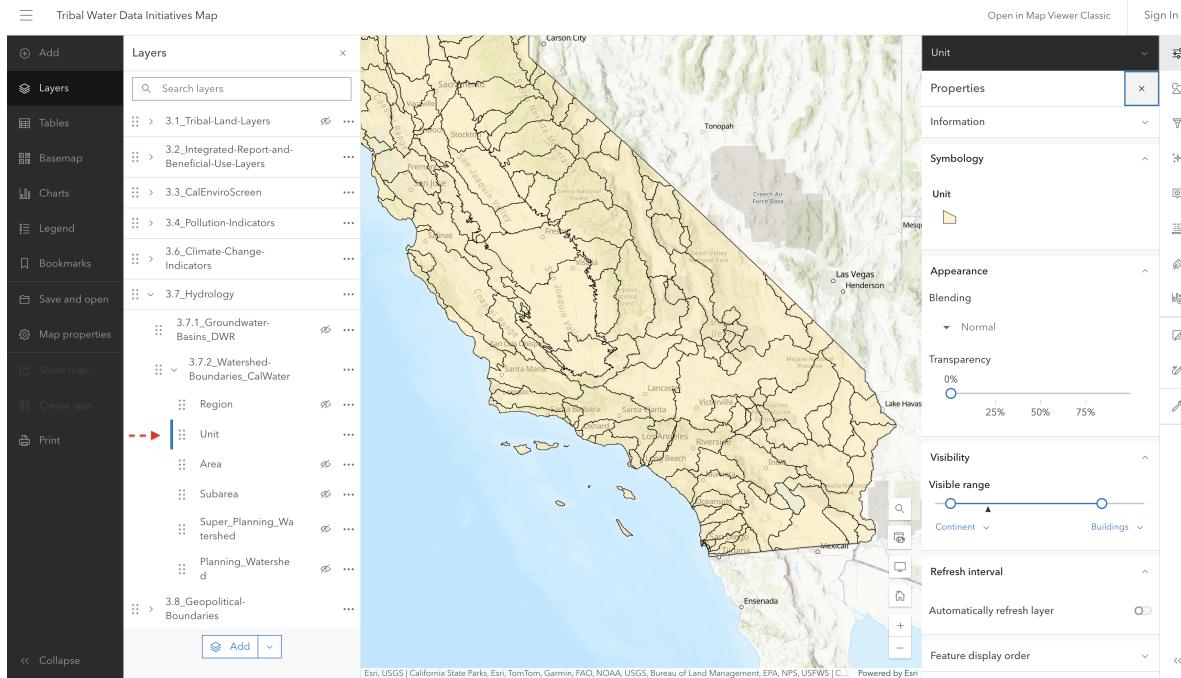


Figure 3.31: Screenshot of interactive map showing watershed boundaries at the unit level

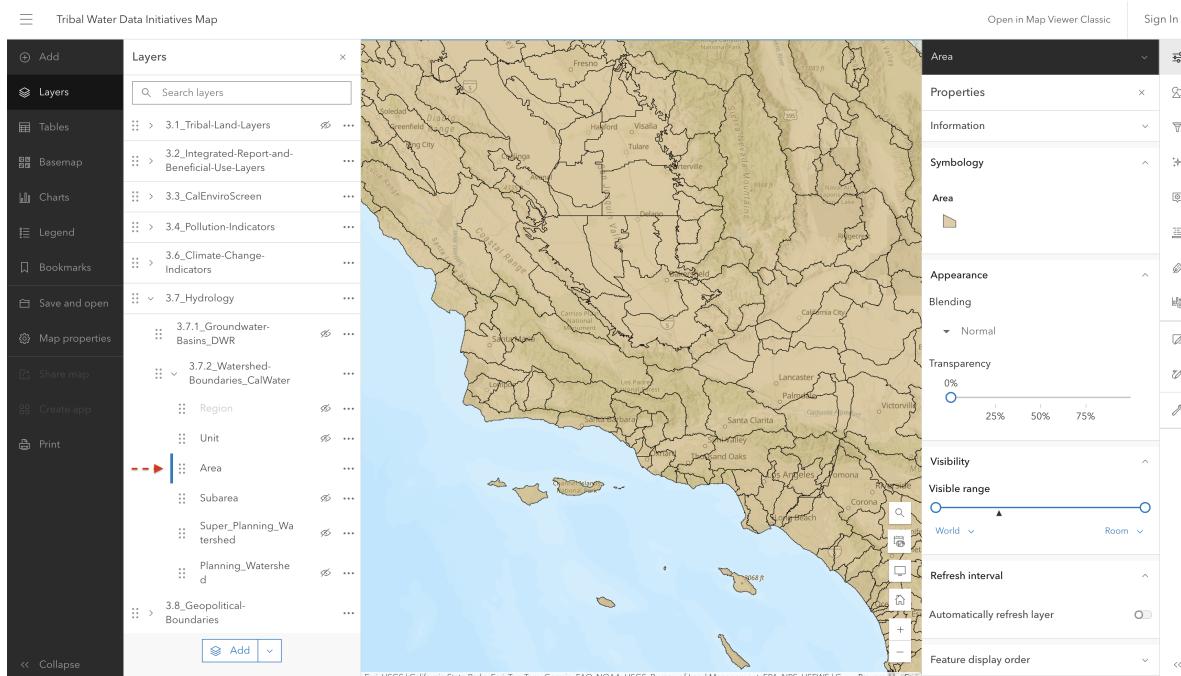


Figure 3.32: Screenshot of interactive map showing watershed boundaries at the area level.

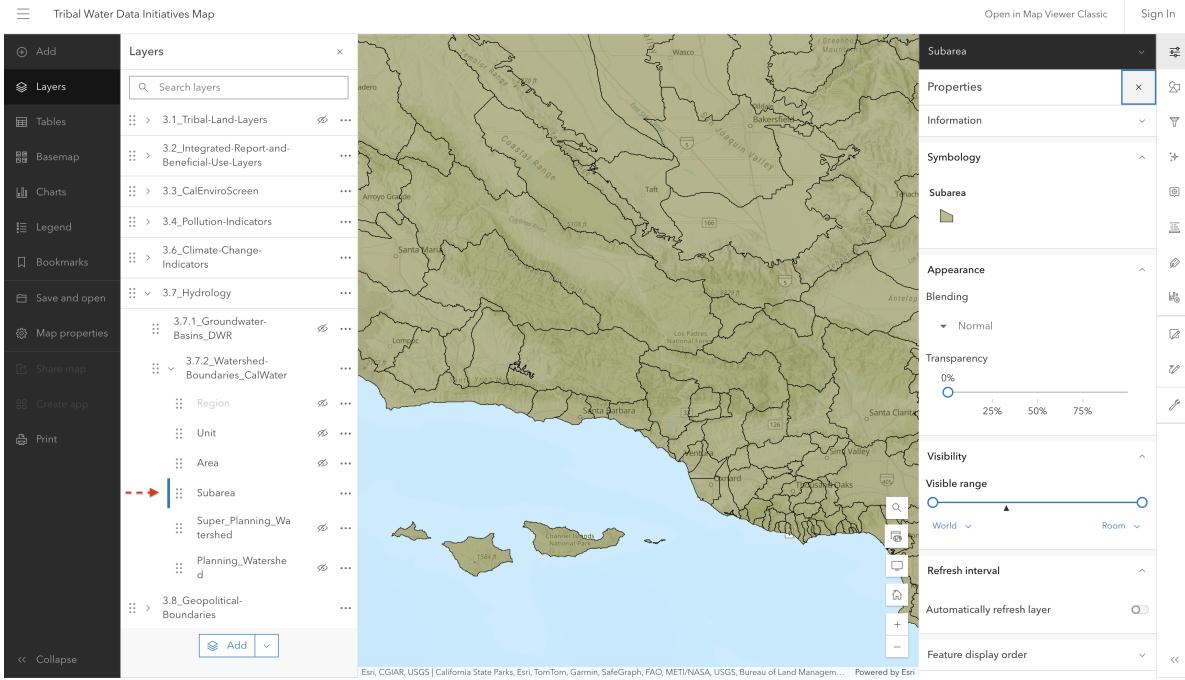


Figure 3.33: Screenshot of interactive map showing watershed boundaries at the subarea level

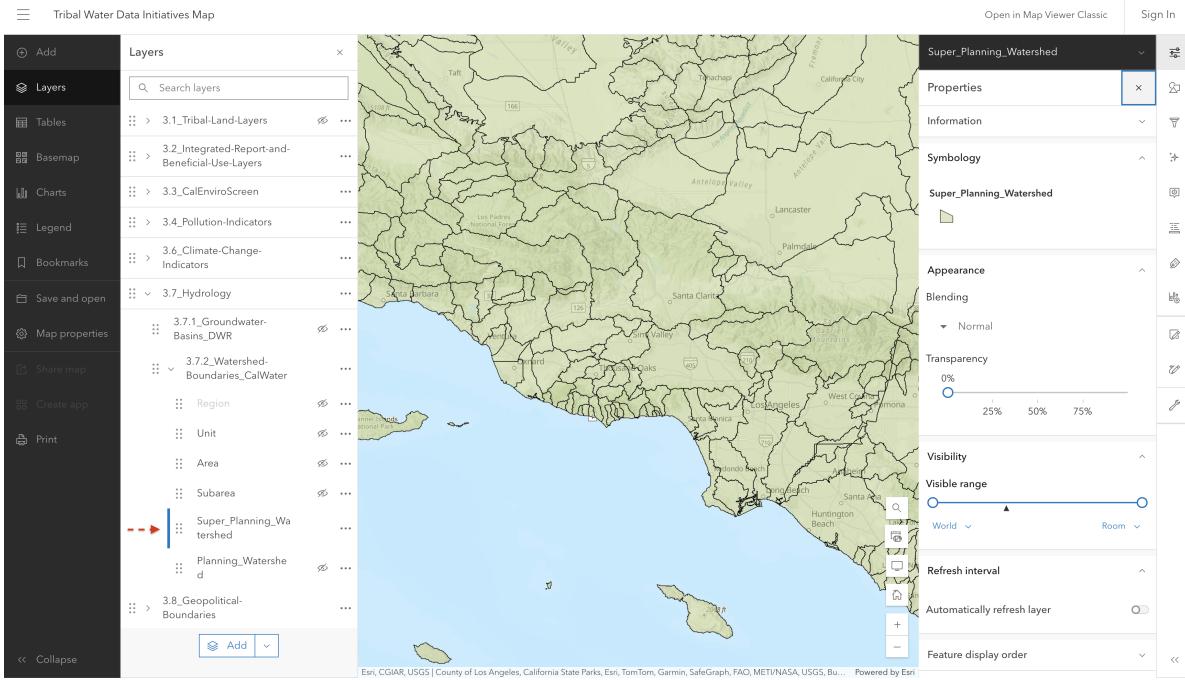


Figure 3.34: Screenshot of interactive map showing watershed boundaries at the super planning level

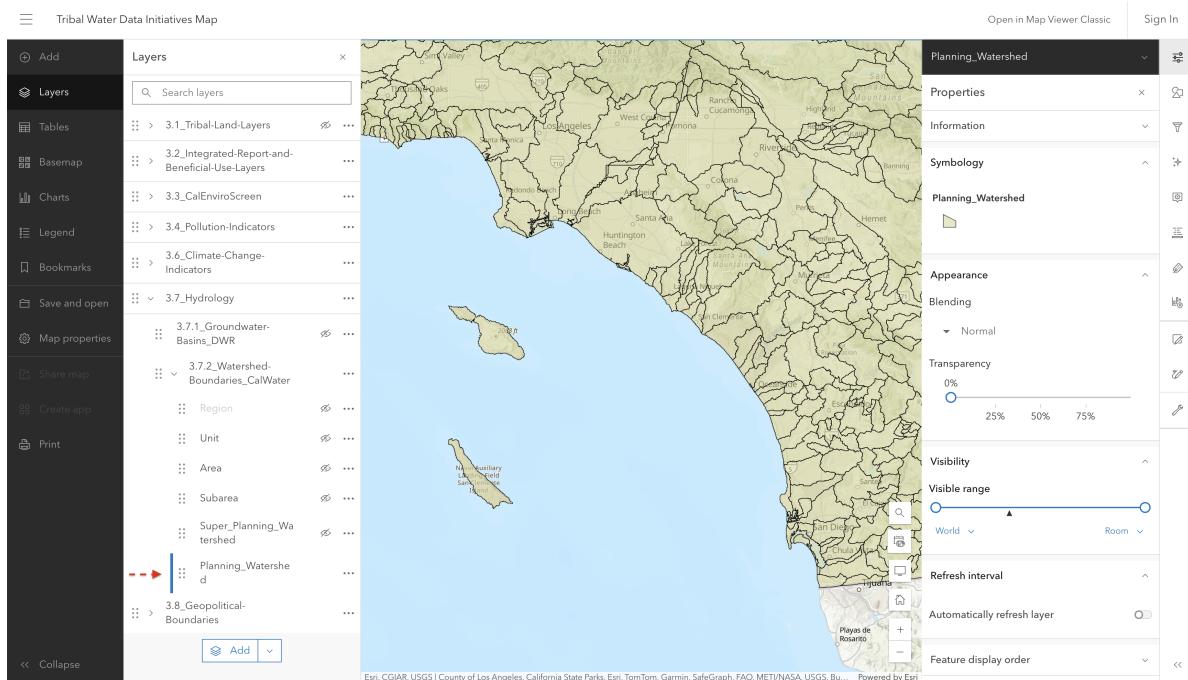


Figure 3.35: Screenshot of interactive map showing watershed boundaries at the planning level

Source: [CalWater Watersheds - Overview](#)

Source update frequency: As needed

automatically synced here

Contact: California Interagency Watershed Mapping Group is a committee comprised of several state agencies. For questions, please contact the [State Water Resources Control Board](#)

3.8 Geopolitical Boundaries

3.8.1 Regional Water Board Boundaries

Layer showing the boundaries of the nine Regional Water Quality Control Boards in California.

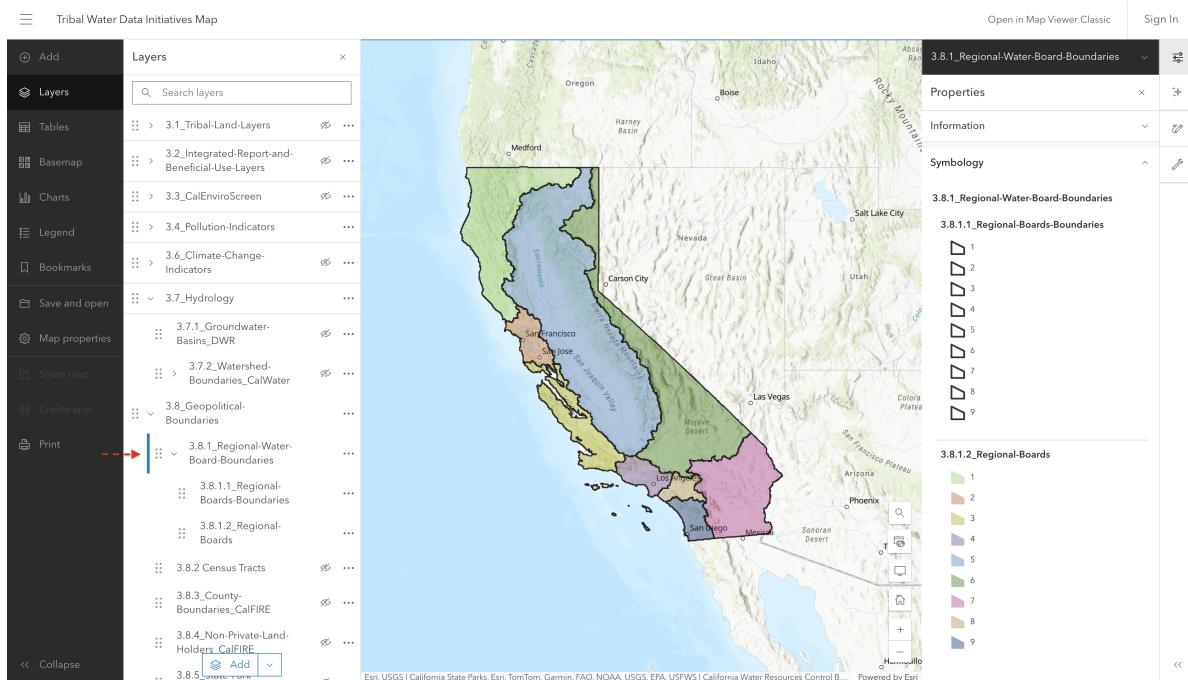


Figure 3.36: Screenshot of interactive map showing Regional Water Board Boundaries

Source: [California State Water Resources Control Board \(SWRCB\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CA State Water Resources Control Board](#)

3.8.2 Census Tracts

3.8.3 County Boundaries

This layer shows County boundaries within California.

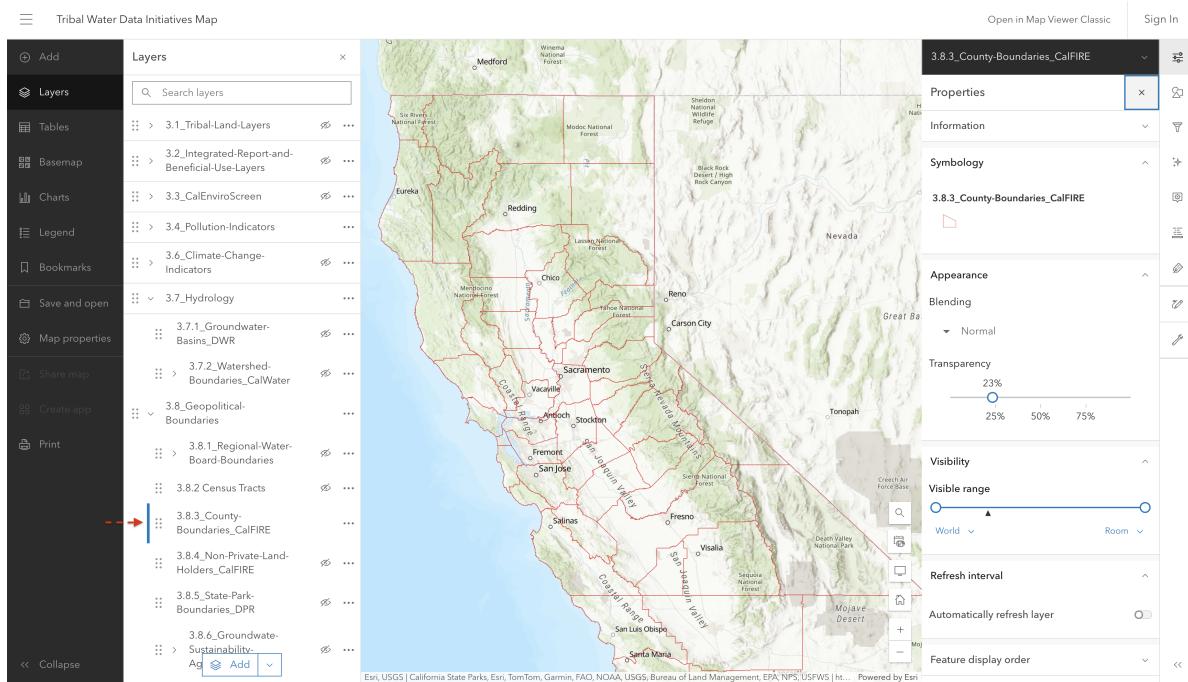


Figure 3.37: Screenshot of interactive map showing California county boundaries

In this dataset, all bays (plus bay islands and constructed features) are merged into the mainland, and coastal features (such as islands and constructed features) are not included, with the exception of the Channel Islands which ARE included.

Source: [California Dept. of Forestry and Fire Protection \(CalFIRE\)](#)

Source update frequency: As needed

automatically synced here

Contact: [CAL FIRE eGIS](#)

3.8.4 Non-private Land Holders

This layer shows boundaries for non-private land holders in California.

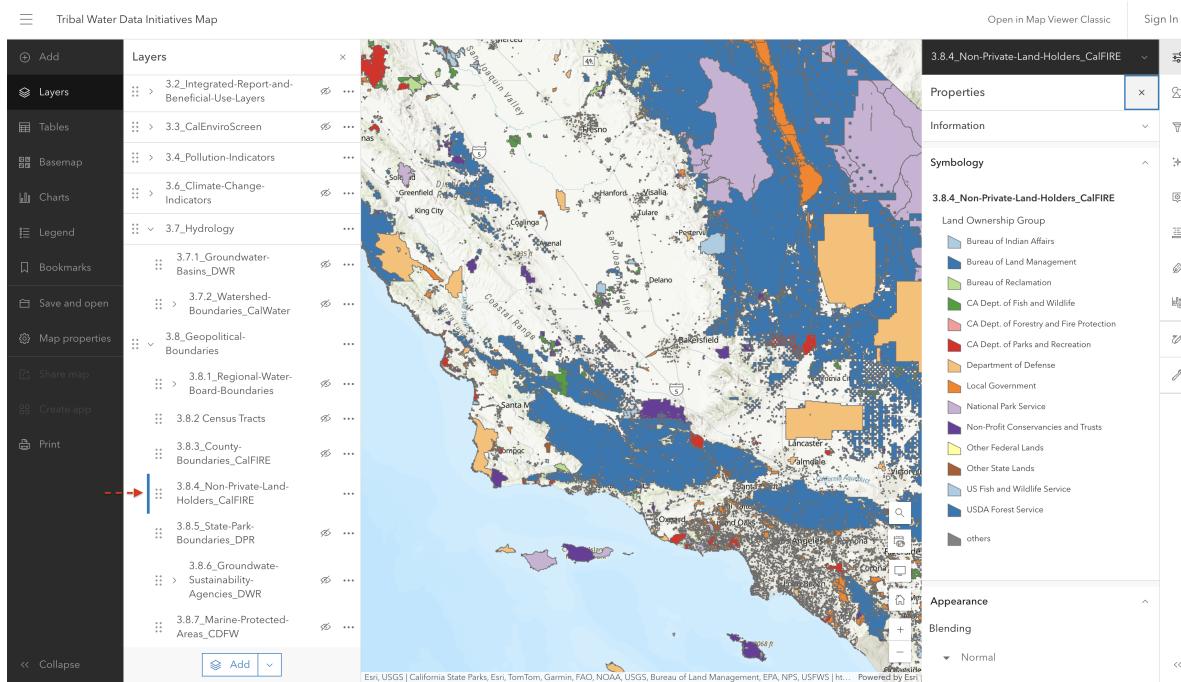


Figure 3.38: Screenshot of interactive map showing non-private land holders

Source: [California Land Ownership | California State Geoportal](#)

Source update frequency: As needed

automatically synced here

Contact: [CAL FIRE eGIS](#)

3.8.5 State Park Boundaries

This layer shows the State Parks in California.

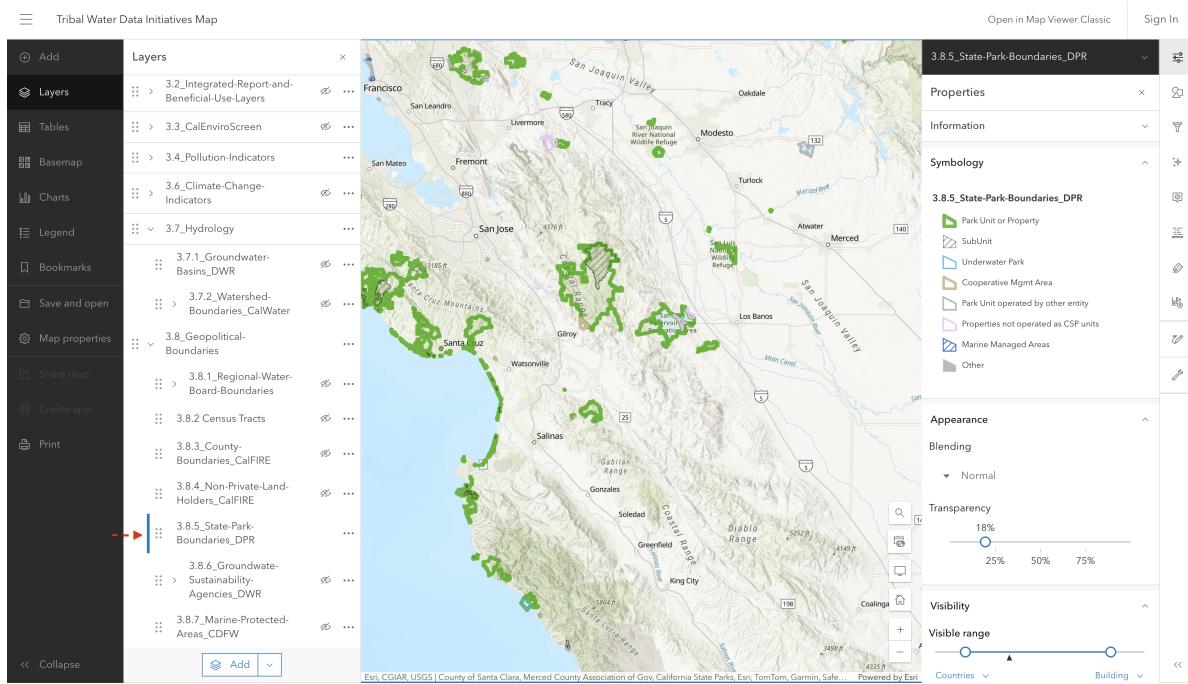


Figure 3.39: Screenshot of interactive map showing State Park boundaries in California

Source: [California State Parks](#)

Source update frequency: As needed

automatically synced here

Contact: [Department of Parks and Recreation](#)

3.8.6 Groundwater Sustainability Agencies

This layer shows the boundaries of California's Groundwater Sustainability Agencies as defined on the DWR SGMA Data Viewer.

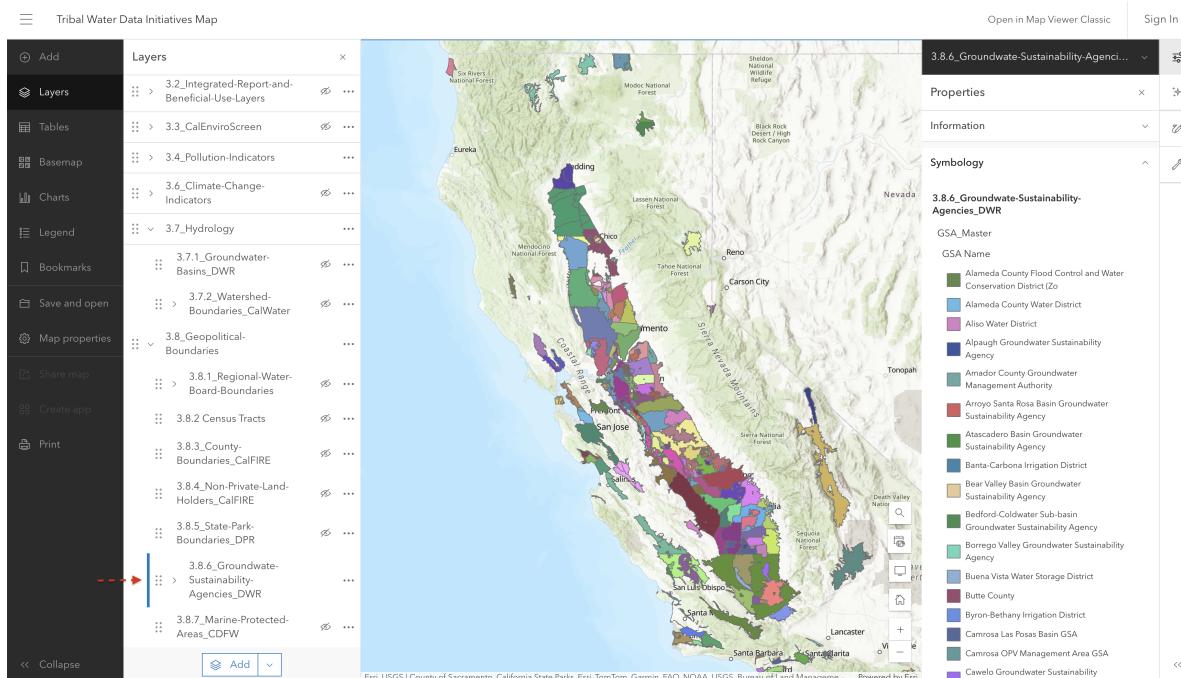


Figure 3.40: Screenshot of interactive map showing Groundwater Sustainability Agencies

Source: [California Department of Water Resources](#), for use by [Groundwater Ambient Monitoring and Assessment \(GAMA\) Program](#)

Source update frequency: As needed

automatically synced here

Contact: [Department of Water Resources GIS](#)

3.8.7 Marine Protected Areas

California's MPA Network includes different types of MPAs as well as other designations. Each designation is unique in its purpose and allowed uses - [CDFW](#)

State Marine Reserve (SMP): An MPA where no take, damage, injury, or possession of any living, geologic, or cultural marine resource is allowed.

No-Take State Marine Conservation Area (NoTake SMCA): An MPA where no take of any living, geologic, or cultural resource is allowed, EXCEPT for take incidental to specified activities permitted by other agencies (e.g. infrastructure maintenance, sand renourishment).

State Marine Park (SMP): An MPA that allows some recreational take but does not allow commerical take.

State Marine Conservation Area (SMCA): An MPA where some recreational and/or commercial take of marine resources may be allowed (restrictions vary)

State Marine Recreational Management Area (SMRMA): A marine managed area where some take of marine resources may be allowed and legal waterfowl hunting is allowed (restrictions vary)

Special Closure: Prohibits or restricts access in waters adjacent to seabird rookeries or marine mammal haul-out sites.

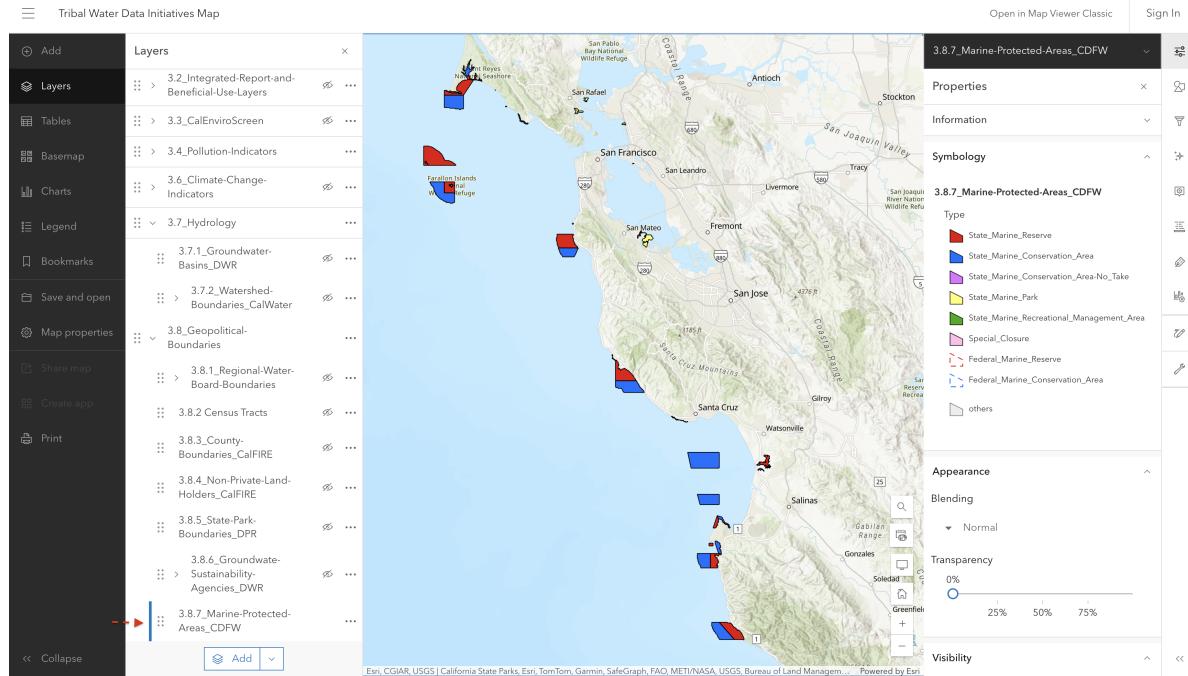


Figure 3.41: Screenshot of interactive map showing Marine Protected Areas along the coast

Source: [California Marine Protected Areas \[ds582\] GIS Dataset](#)

Source update frequency: As needed

manually updated here June 2025

Contact: [California Department of Fish and Wildlife - Marine Protected Areas](#)

4 Resources

Here you will find a curated list of presentations, webpages and other resources related to the development, implementation and scaling of the Water Board's Tribal Water Data Map.

All Water Boards authors are **bolded** below.

4.1 Websites

[Water Boards' Tribal Water Data Initiatives](#)

4.2 Presentations

[Using California Water Board's Tribal Water Data Map to Understand Pollution in your Area.](#) Jul 2025. **Anna Holder**, Sarah Ryan, **Hannah Merges**. [CA Native American Tribal GIS Summit](#).

[Using California Water Board's Tribal Water Data Map to Understand Pollution & Climate in your Area.](#) Jan 2025. **Anna Holder**. [National Tribal Data Resilience Workgroup](#). [Recording](#)

[Using California Water Board's Tribal Water Data Map to Understand Pollution in your Area.](#) Oct 2023 ([Fall Tribal Conference](#)). **Anna Holder**, Sarah Ryan. [Tribal EPA & US EPA Region 9 Annual Conference](#). [Recording](#)

[CA Water Boards' Tribal Water Data Resources Update](#). Aug 2023 ([Summer Meeting](#)). **Badhia Yunes Katz, Anna Holder**. [California Issues Workgroup - US EPA Region 9 Regional Tribal Operations Committee \(RTOC\)](#).

[Introduction to CA Water Boards' Tribal Water Data Resources](#). Feb 2023 ([Winter Meeting](#)). **Badhia Yunes Katz, Anna Holder**. [California Issues Workgroup - US EPA Region 9 Regional Tribal Operations Committee \(RTOC\)](#).

4.3 Other Data Visualization Tools

[Vulnerable Communities Platform \(VCP\)](#) - A new tool developed by the Governor's Office of Land Use and Climate Innovation (LCI) to help identify California communities most impacted by climate change. This tool offers a map for communities to assess their level of vulnerability to wildfires, extreme heat, flooding, and drought. This platform also has a “tool comparison” feature to overlay and compare related tools such as CalEnviroScreen or Healthy Places Index. Lastly, VCP offers a curated list of climate vulnerability resources including grants, major policy requirements, state and local planning guidelines, and ways to connect with other community-based organizations working on climate resilience.

[CalEnviroScreen](#) - CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution’s effects. It uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

[Tribal Drinking Water](#) - This tool is intended to compile and display information that can inform and help prioritize outreach related to drinking water issues in tribal areas within California. It is a work in progress, and is not intended to be a comprehensive source of tribal-related water data.

[Healthy Places Index \(HPI\)](#) - The HPI maps data on social conditions that drive health — like education, job opportunities, clean air and water, and other indicators that are positively associated with life expectancy at birth. The HPI is a project of the Public Health Alliance of Southern California, with the aim of supporting efforts to prioritize equitable community investments and policy.

[Social Vulnerability Index \(SVI\)](#) - The SVI is designed to identify and quantify communities experiencing social vulnerability and help public health officials and local planners better prepare for and respond to emergency events. It is developed by the US Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry.

[Mining in California](#) - The Mining in California ArcGIS storymap was created by California Department of Conservation, Division of Mine Reclamation to provide more information on the history of mining, abandoned mines, the life cycle of a mine, and the importance of mining.

4.3.1 SWAMP Information

The Surface Water Ambient Monitoring Program (SWAMP) unit falls within the OIMA at the State Water Resources Control Board. Below are resources directly from the SWAMP website that may be useful in addition to this map:

- SWAMP Data Dashboard
- Safe to Swim Map
- Freshwater Harmful Algal Bloom (FHAB) Incident Reports Map

5 Meet the Team!

The development of the [Map](#) and this User Manual has been a team effort from the start. Below is a list of team members within OIMA and tribal partners who have been integral to the development of these resources.

If you would like to join the Team, please email Anna Holder at: anna.holder@waterboards.ca.gov.

5.1 OIMA

Name	Title
Anna Holder	Open Data Science, Equity & Tribal Coordinator
Hannah Merges	2025 California Sea Grant Fellow

5.2 Tribal Partners

Table 5.2: Tribal partners listed in ascending order by Affiliation. We are appreciative and grateful for Meyo Marrufo and Shasta Gaughen who invested time to provide us early feedback on the content of the [Tribal Water Data Initiatives Webpage](#), the [Tribal Water Data Map](#), and this [Manual](#).

Name	Title	Affiliation
Sarah Ryan	Environmental Director	Big Valley Band of Pomo Indians, Environmental Protection Department (Big Valley EPA)
Meyo Marrufo	Former Environmental Director	Guidiville Rancheria
Shasta Gaughen	Director	Pala Band of Mission Indians, Environmental Department (PED)

We also regularly receive critical feedback from the California Issues Workgroup of the US EPA Region 9 Regional Tribal Operations Committee ([RTOC](#)). See the [Resource Chapter](#) of this User Manual for past presentations.

5.3 Former OIMA Fellows

Name	Title	Fellowship Period
Chloe Yu-Ning Cheng	Stanford Fellow	Summer 2025
Kevin Song	Stanford Fellow	Summer 2024
Daly Wettermark	Stanford Fellow	Summer 2024
Leah Benton	CivicSpark Fellow	2023-2024
Josh Davenport	Stanford Fellow	Summer 2023
Badhia Yunes Katz	CivicSpark Fellow	2022-2023

6 Contributing

6.1 Who can contribute

Currently, only members of the OIMA Team are able to make *edits* to this User Manual and the Map, however we are always looking for feedback!

! We want your feedback!

If you have recommendations for improvement related to the Map or this User Manual you can send it to us by:

- Completing the [Tribal Water Data Map Survey](#), OR
- Emailing Anna Holder at: anna.holder@waterboards.ca.gov, OR
- Submitting a [GitHub Issue](#)
 - Note this requires the individual to have a GitHub Account.
 - If you would like to create a GitHub Account, complete Step 3 in the [Setup Section](#) below; no other steps need to be completed to submit an Issue.

6.2 How we contribute at OIMA

We develop the content for this User Manual using RStudio, build the book using [Quarto](#) (via RStudio), and collaborate and publish using GitHub (also via RStudio).

6.2.1 Setup

To contribute, OIMA Team members must do the following, and it should only take about 20 minutes to complete:

1. **Install R and RStudio**

Both R and RStudio should be available in the Software Center (for Windows 10) or Company Portal (for Windows 11) – if you don’t see them in your Software Center/Company Portal or you have issues/questions during the installation process, please send a request to the DIT HelpDesk and they can help you install them.

Also see these [step by step instructions](#) on how to install these programs – you will only need to go through steps 1 and 2

If you are new to R, it would also be helpful if you could review the [Getting Started Module](#) so you can begin to familiarize yourself with the fundamentals of the program.

2. Install Quarto

[Quarto download and install instructions](#)

3. Create a GitHub Account

[Create your free personal account GitHub account](#)

[Tips on choosing your username](#)

4. Download and Install Git

Follow your operating system’s normal [Git installation process](#). Note: you will not see an application called Git listed but if the installation process completed it was likely successful, and we will confirm together.