

GIS 1: a very basic introduction

By Vanessa Arias Casillas (Graduate Fellow)

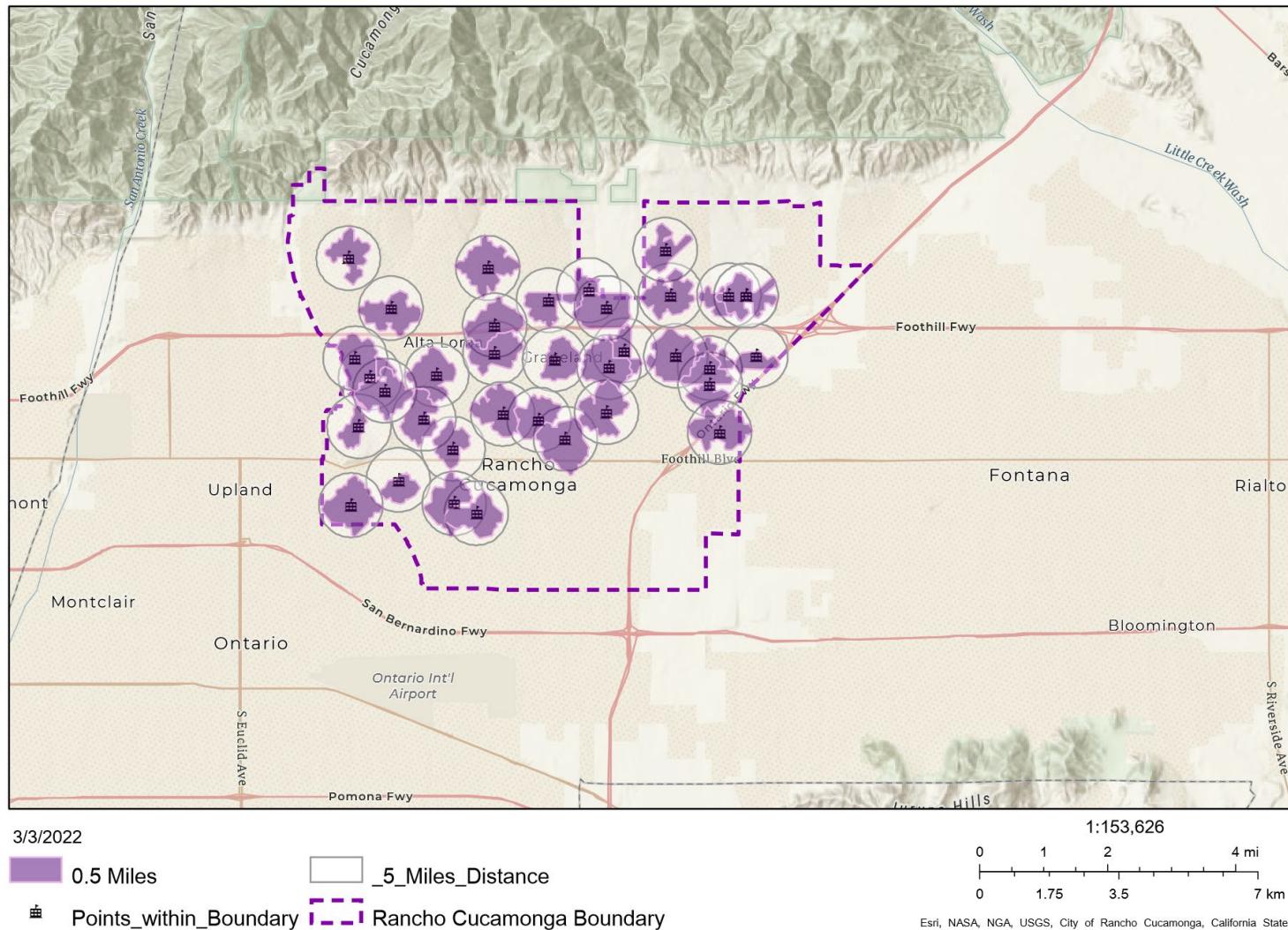
Agenda

- What is GIS?
- Classic ArcGIS online overview
- Base and Layers
- Analysis
- Edits
- Save and Send to New ArcGIS Online
- Print and Share
- Endnotes

Goal

- Navigate ArcGIS Online
- Make a simple map
- Run simple analysis with the data on your map
- Show your map your group or organization
- Make a PDF print for presentations and reports

QCLworkshop Map

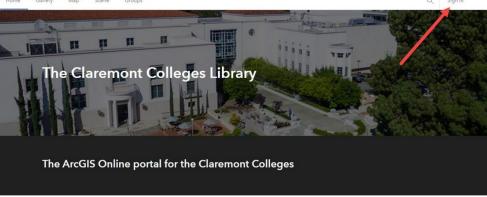


CMC – ArcGIS

Get an ArcGIS Account

You can access ArcGIS Online directly with your Single Sign-On (SSO) credentials when you click "Sign In" from the [Claremont Colleges Library ArcGIS Portal](#).

[Access the Claremont ArcGIS Portal](#)



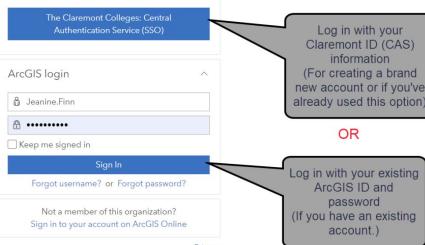
The Claremont Colleges Library
The ArcGIS Online portal for the Claremont Colleges

The Claremont Colleges Library Portal, sign in link is in the top right

If you have existing credentials from ArcGIS Online, you can continue to log in with those.

Sign in to The Claremont Colleges Library 

Two ways to log in to ArcGIS



ArcGIS login

Jeanine.Finn

Keep me signed in

Sign In

Forgot username? or Forgot password?

Not a member of this organization?
Sign in to your account on ArcGIS Online

Privacy

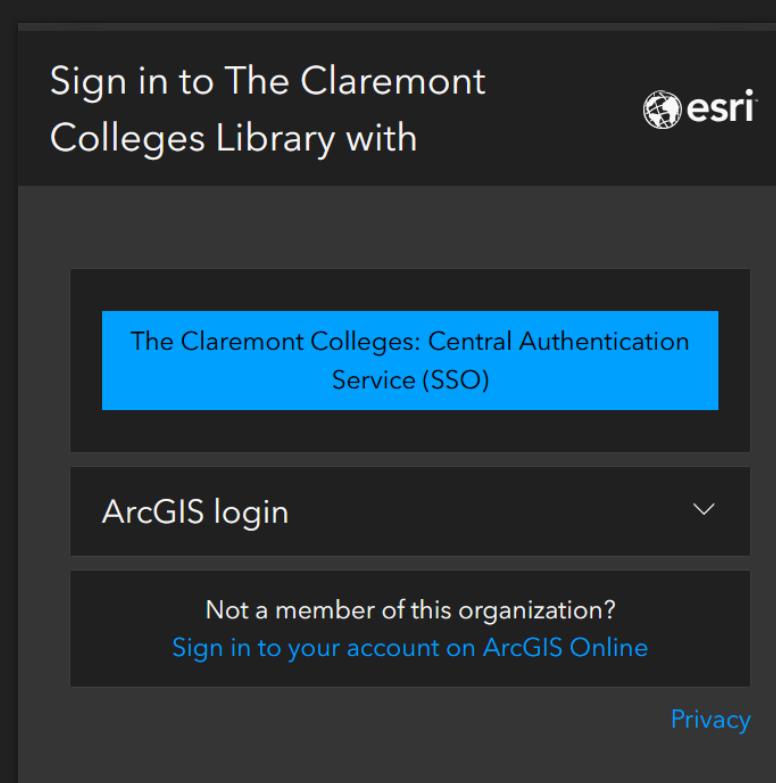
Log in with your Claremont ID (CAS) information
(For creating a brand new account or if you've already used this option)

OR

Log in with your existing ArcGIS ID and password
(If you have an existing account.)

ArcGIS sign on screen. Two ways to log in to ArcGIS: 1. Login with your Claremont ID (CAS) information (for creating a brand new account or if you've already used this option). OR 2. Log in with your existing ArcGIS ID and password (if you have an existing account).

Organization and login



The Claremont Colleges Library

Home Gallery Map Scene Groups Content Organization [Overview](#) [Members](#)

The Claremont Colleges Library

Subscription ID
9377927143

System health
✓ All systems operational

Newest members

View all members

CP Chardy Paige

MV Mirek Vanis

NS Nathan Shankar

JB Jon Burkart

Administrative contacts

JF Jeanine Finn

Open Data groups

View all

B Basemaps 2019
Contributors: 1 Items: 32

HMC Clinic
Contributors: 9 Items: 0

Latest content

Rincon Crater

by claremontcolleges

Created: Dec 31, 2021
Updated: Dec 31, 2021
View Count: 9

RinconCrater

by claremontcolleges

Created: Dec 31, 2021
Updated: Dec 31, 2021
View Count: 5

2022 Dia Mundial de la Tierra Con...

by CWeisman21@cmc.edu_clare...

Created: Dec 21, 2021
Updated: Jan 4, 2022
View Count: 3

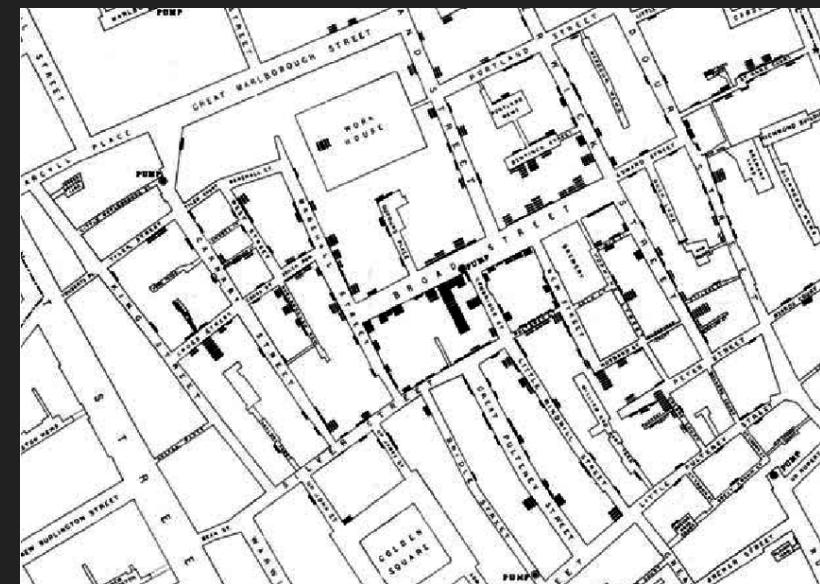
View all content

Trust Center | Contact Esri | Report Abuse | Contact Us

Home view

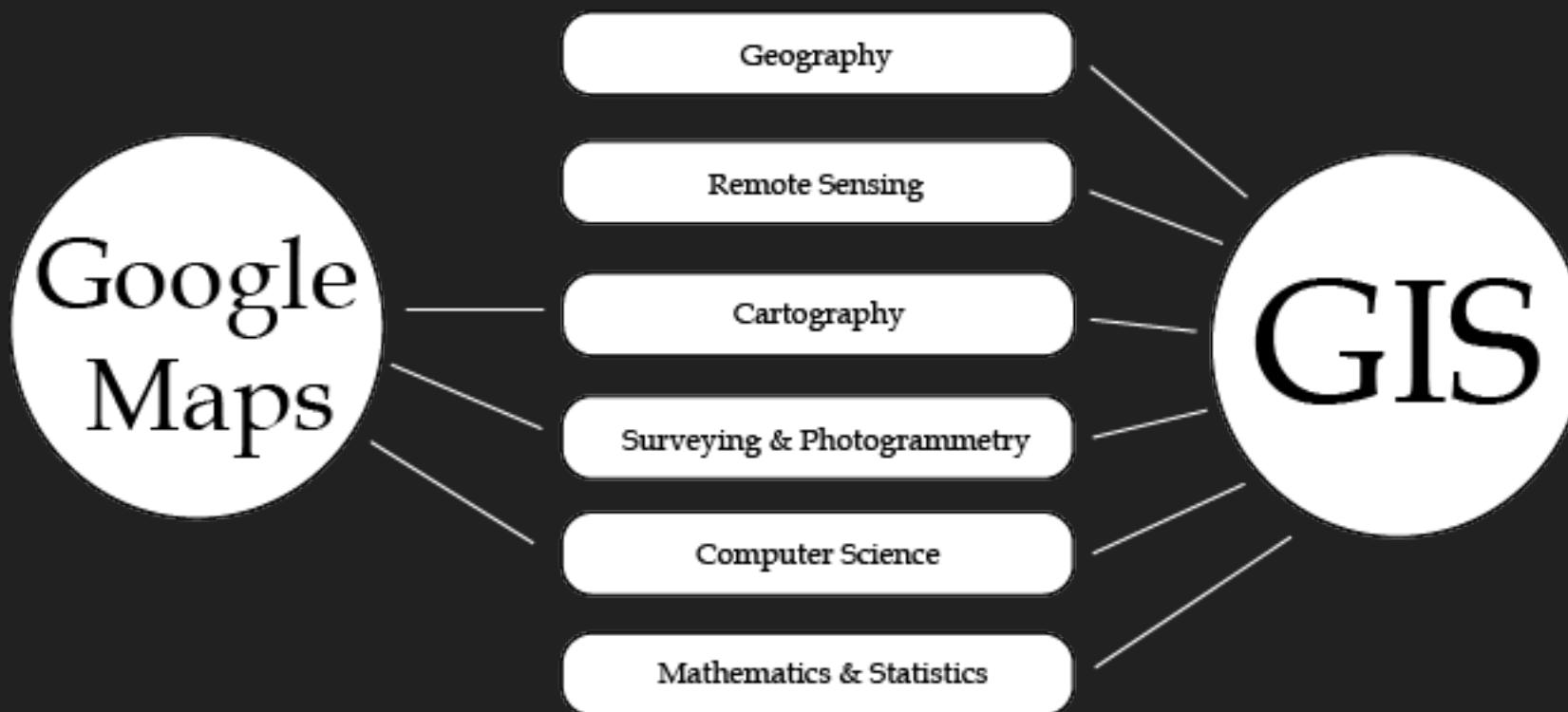
GIS? Quick Overview

- GIS: Geographic Information Systems
 - Storing, retrieving, comparing spatial data
 - ESRI: Environmental Science Research Institute (The Science of Where)
 - **Jack Dangermond** Redlands
 - 1854 Cholera Epidemic – London: Dr. John Snow
 - Mapped cholera deaths
 - Determined water pump source

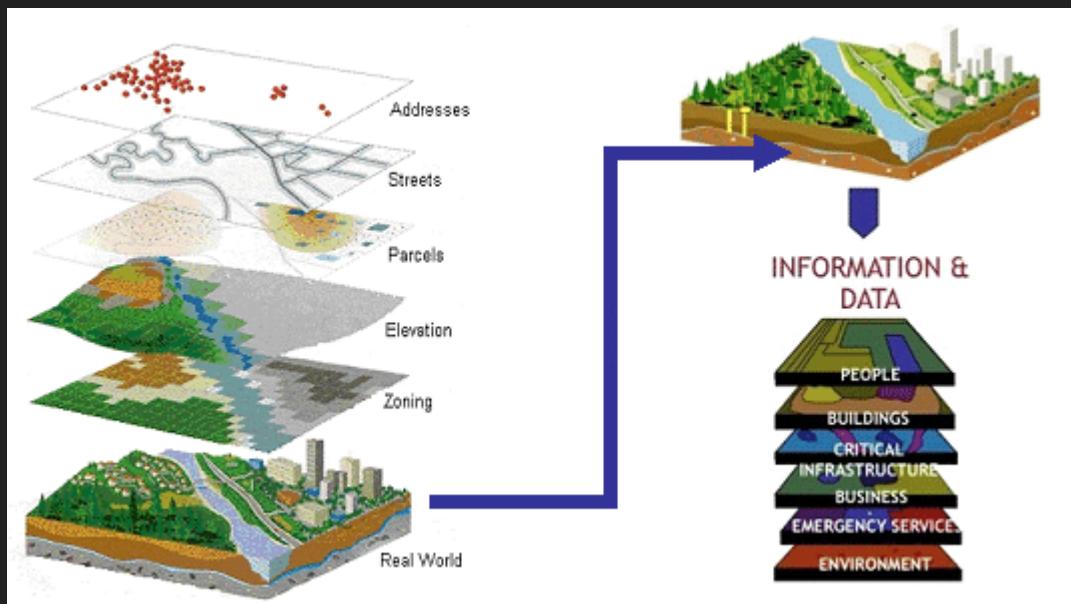


<https://www.researchgate.net/figure/John-Snows-famous-map-of-the-1854-Broad-Street-epidemic-attempted-to-positively-fight-22014418>

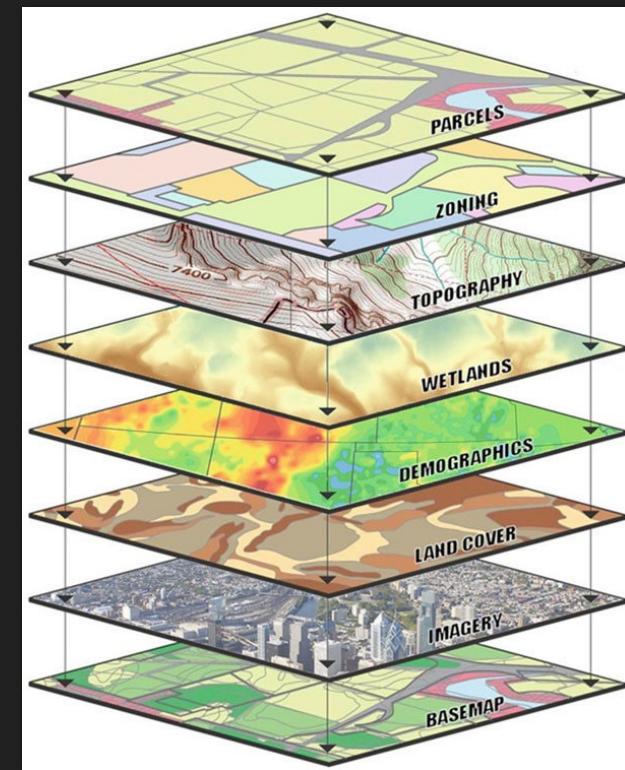
First Question people think of when learning GIS: GOOGLE MAPS – Is it GIS?



Layers and Layers and Layers



Shukla, Yogita. (2012). Innovative Geospatial Solutions - Key to India's Transport Infrastructure.



Kolios, Stavros & Vorobev, Andrei & Vorobeva, Gulnara & Stylios, Chrysostomos. (2017). WebGIS Applications for Weather, Marine, and Atmospheric Environments. 10.1007/978-3-319-53086-4_2.

Groups – add yourself

The screenshot shows a user interface for managing groups. At the top, there is a navigation bar with links for Home, Gallery, Map, Scene, Groups (which is underlined, indicating it's the active page), Content, and Organization. To the right of the navigation bar are icons for search, notifications, and a user profile. The user profile shows the name "Vanessa Casillas" and the email "VanCasillas@cmc.edu_cl...". Below the navigation bar is a blue header bar with the word "Groups" on the left, and three tabs on the right: "My Groups", "Featured Groups", and "My Organization's Groups". Underneath the header is a search bar with a placeholder "Search My Groups" and a "Create group" button. On the left side, there is a "Filters" section with a toggle switch for "Only show groups with new membership requests". Below the filters is a dropdown menu for "Owner" with options: "VanCasillas@cmc.edu_claremont", "Another organization member", and "Someone outside the organization". The main content area displays a single group entry: "QCL Workshop" (owner: VanCasillas@cmc.edu_claremont, created and last updated on Mar 3, 2022, viewable by Everyone (public)). There is also a "Delete group" link next to the group name.

Home Gallery Map Scene Groups Content Organization

Vanessa Casillas
VanCasillas@cmc.edu_cl...

Groups My Groups Featured Groups My Organization's Groups

+ Create group Search My Groups Title Filter

Filters

Only show groups with new membership requests

Owner

VanCasillas@cmc.edu_claremont
Another organization member
Someone outside the organization

1 - 1 of 1

QCL Workshop
Owner: VanCasillas@cmc.edu_claremont
Created: Mar 3, 2022 Last updated: Mar 3, 2022 Viewable by: Everyone (public)

Workshop

Delete group

Planning a Map: a simple map

1. Problem – why are we making a map?
2. Data – what layers do we need?
3. Analysis – what layers do we need to adjust or make?
4. Edits – who is looking at the map?
5. Results – does it tell a visual story?



Classic ArcGIS

Home ▾ My Map

Details Add Basemap Analysis

About Content Legend

Make your own map

It's easy to make your own map. Just follow these steps:

1. Choose an area.
Pan and zoom the map to an area or search by its name or address.
2. Decide what to show.
Choose a Basemap then Add layers on top of it.
3. Add more to your map.
Add map notes to draw features on the map.
4. Save and share your map.
Give your map a name and description then share it with other people.

Save Share Print Directions Measure Bookmarks Find address or place

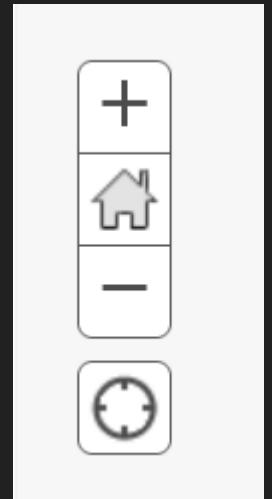
Open in new Map Viewer New Map Vanessa

0 2 4 km

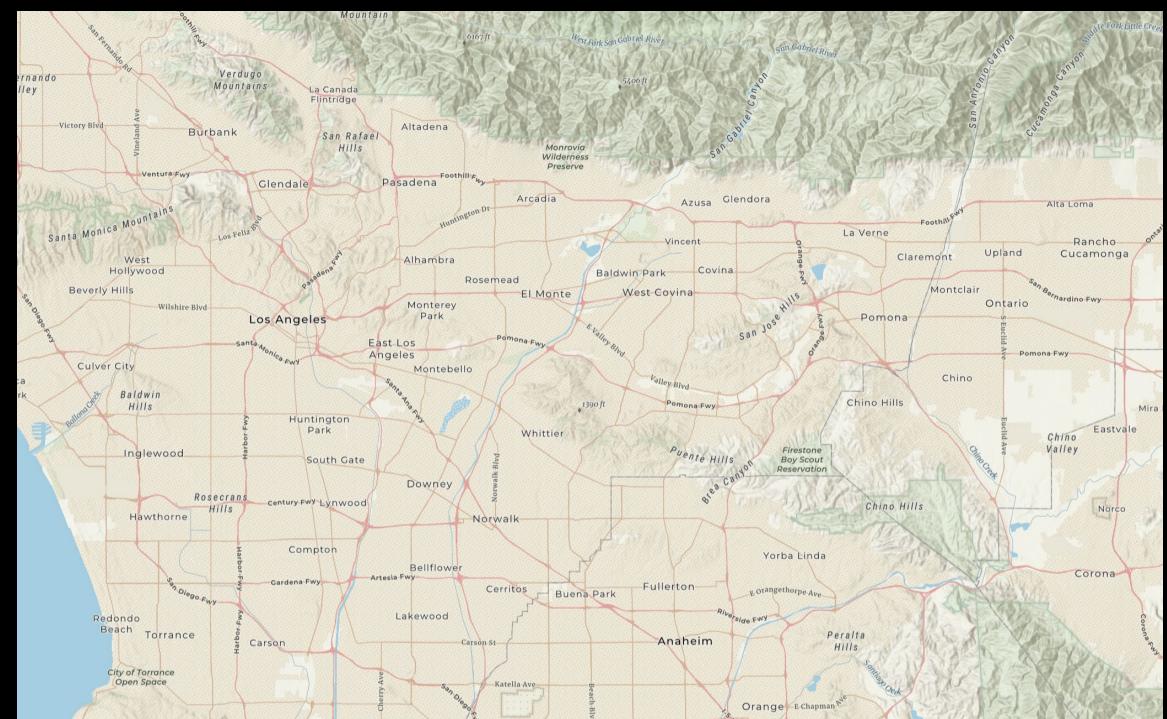
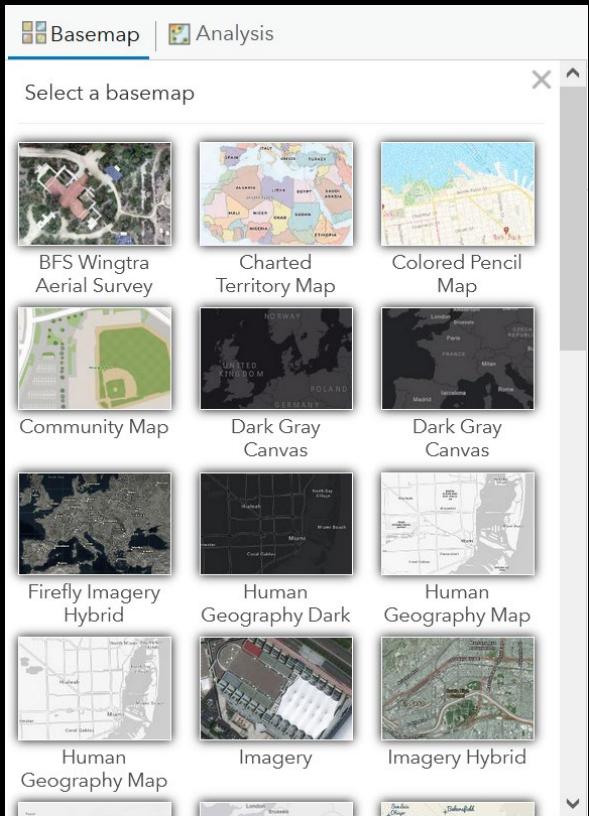
Built Center Contact Esri Report Abuse Contact Us

County of Los Angeles, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA | County of Los Angeles, Esri, HERE, Garmin, SafeGraph, METI/NASA, U...

esri

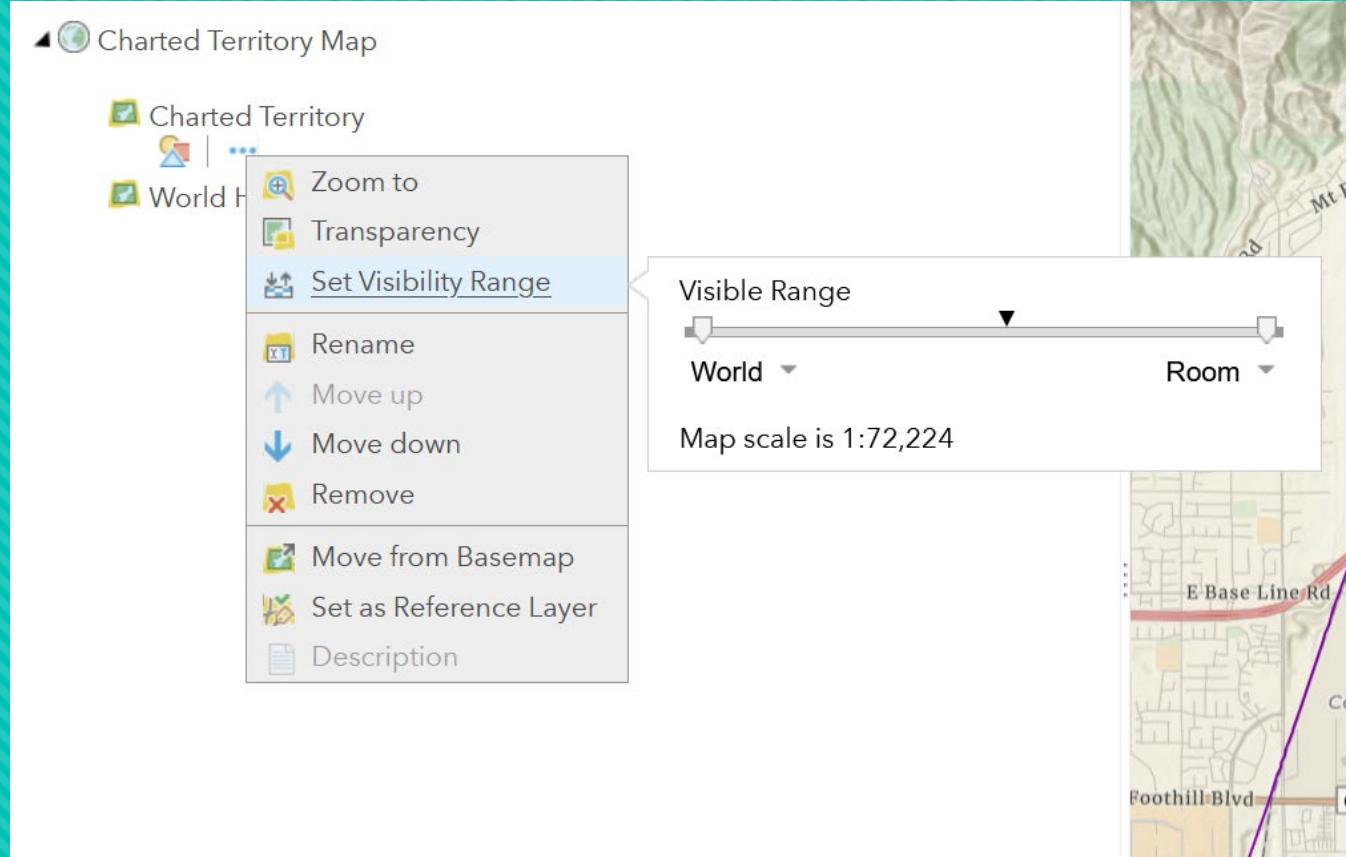


Base Maps



Base map

Overview



The screenshot shows the 'Living Atlas' search interface with the query 'schools'. It displays four layers listed vertically:

- School District Boundaries - Current**: Updated 2/18/22, by National Center for Education Statistics.
- NZ School Enrolment Zones**: Updated 10/19/21, by Eagle Technology Group Ltd.
- NZ Schools Directory**: Updated 3/3/22, by Eagle Technology Group Ltd.
- U.S. Public Schools (with Placekey)**: Updated 10/9/20, by esri_placekey.

Each listing includes a small thumbnail image, the layer name, a 'by' information link, and an 'Updated' date. There are also 'checkmark' and 'refresh' icons next to each listing, and a '+' icon at the bottom right of the list.

The screenshot shows the 'Add' ribbon in a map application. The ribbon tabs include:

- Add**: The active tab, indicated by a yellow background.
- Basemap**: A tab with a grid icon.
- Map Notes**: A tab with a green and blue checkered icon.

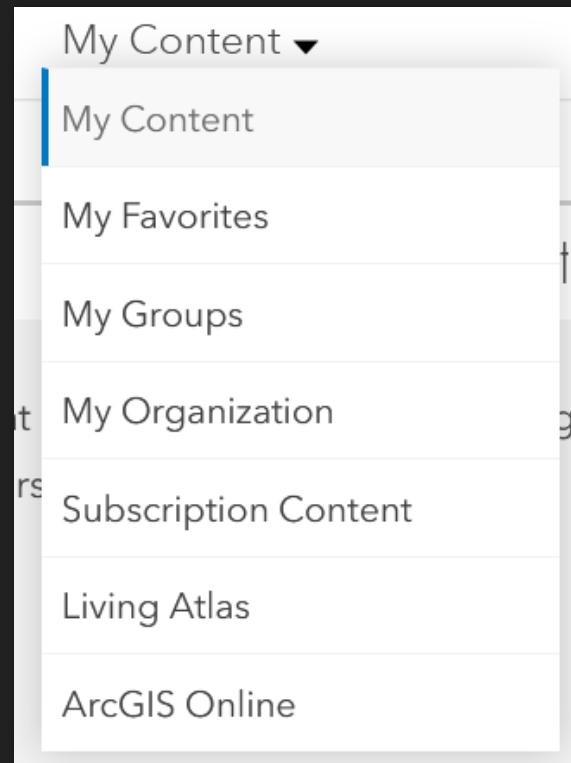
Below the ribbon, there is a search bar labeled 'Search for Layers' and a list of options:

- Search for Layers
- Browse Living Atlas Layers
- Add Layer from Web
- Add Layer from File
- Add Map Notes

Living Atlas

Layers and layers and layers

My Content



Reading Layers and giving credit



School District Boundaries - Current 

Feature Layer by National Center for Education Statistics

Updated: January 6, 2022

 Authoritative 

This composite file contains elementary, secondary, and unified school district boundaries collected for the National Center for Education Statistics by the U.S. Census Bureau.

Description

This composite file contains elementary, secondary, and unified school district boundaries collected for the National Center for Education Statistics by the U.S. Census Bureau.

The National Center for Education Statistics' (NCES) Education Demographic and Geographic Estimate (EDGE) program develops annually updated school district boundary composite files that include public elementary, secondary, and unified school district boundaries clipped to the U.S. shoreline. School districts are single-purpose administrative units designed by state and local officials to organize and provide public education for local residents. District boundaries are collected for NCES by the U.S. Census Bureau to support educational research and program administration, and the boundaries are essential for constructing district-level estimates of the number of children in poverty.

The Census Bureau's School District Boundary Review program (SDRP) (<https://www.census.gov/programs-surveys/sdrp.html>) obtains the boundaries, names, and grade ranges from state officials, and integrates these updates into Census TIGER. Census TIGER boundaries include legal maritime buffers for coastal areas by default, but the NCES composite file removes these buffers to facilitate broader use and cleaner cartographic representation. The NCES EDGE program collaborates with the U.S. Census Bureau's Education Demographic, Geographic, and Economic Statistics (EDGE) Branch to develop the composite school district files. The inputs for this data layer were developed from Census TIGER/Line and represent the most current boundaries available. For more information about NCES school district boundary data, see <https://nces.ed.gov/programs/edge/Geographic/DistrictBoundaries>.

Previous collections are available for the following years:

- SY 2019-20 TL 20
- SY 2018-19 TL 19
- SY 2017-18 TL 18
- SY 2015-16 TL 17
- SY 2015-16 TL 16
- SY 2013-14 TL 15
- SY 2013-14 TL 14

Terms of Use

All information contained in this file is in the public domain. Data users are advised to review NCES program documentation and feature class metadata to understand the limitations and appropriate use of these data.

Credits (Attribution)

NCES EDGE

Owner

 National Center for Education Statistics

Managed by:
 OpenDataMgr_NCES

View count: 994,240

Created: March 16, 2020

Shared with: Everyone (public)

- Title
- Updated
- Description
- Terms of Use
- Credits (Attribution)
- Owner
- Managed by
- View Count
- Created
- Shared with

Libraries

Living Atlas ▾

Q schools

Items: 238

School District Boundaries - Current
by National Center for Education Statistics

Updated: 1/6/22

(checkmark) (refresh)



A screenshot of the ArcGIS Living Atlas interface showing search results for "schools". The search bar contains "schools". Below it, a list shows one item: "School District Boundaries - Current" by National Center for Education Statistics, updated on 1/6/22. The interface includes standard search controls like filters and a refresh button.

ArcGIS Online ▾

Q claremont

Items: 183

Claremont City Boundary
by bsims_hplanning

Updated: 10/26/20

(+)



A screenshot of the ArcGIS Online interface showing search results for "claremont". The search bar contains "claremont". Below it, a list shows one item: "Claremont City Boundary" by bsims_hplanning, updated on 10/26/20. The interface includes standard search controls like filters and a plus sign for adding items.

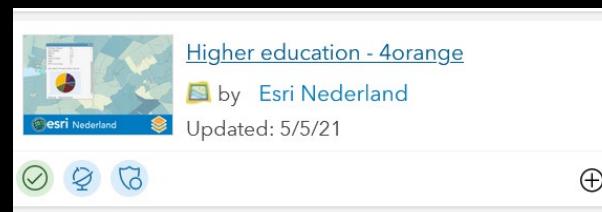
All fun and games till you run out of Credits!!!

○ Credits vs. Free

- Story time! (every GIS specialist has one) The time I blew all my credits on converting all addresses from regular mail to address to geocodes

○ Addresses vs. Geocodes

- latitude versus longitude



Living Atlas ▾

Items: 238

School District Boundaries - Current
by National Center for Education Statistics
Updated: 1/6/22

NZ School Enrolment Zones
by Eagle Technology Group Ltd
Updated: 10/19/21

NZ Schools Directory
by Eagle Technology Group Ltd
Updated: 1/7/22

U.S. Public Schools (with Placekey)
by esri_placekey
Updated: 10/9/20

Private School Locations - Current
by National Center for Education Statistics
Updated: 10/28/21

Public School Locations - Current
by National Center for Education Statistics
Updated: 6/29/21

Credits Talk

My settings

General

Licenses

Credits

Credits

Credits

Remaining **299.50**

Assigned **300.00**

Credits are the currency used across ArcGIS and are consumed for specific transactions and types of storage. Any ArcGIS software that interacts with ArcGIS Online can use credits. Most of what you do in ArcGIS Online does not require credits. In many cases, credit-consuming activities carry a relatively low cost.

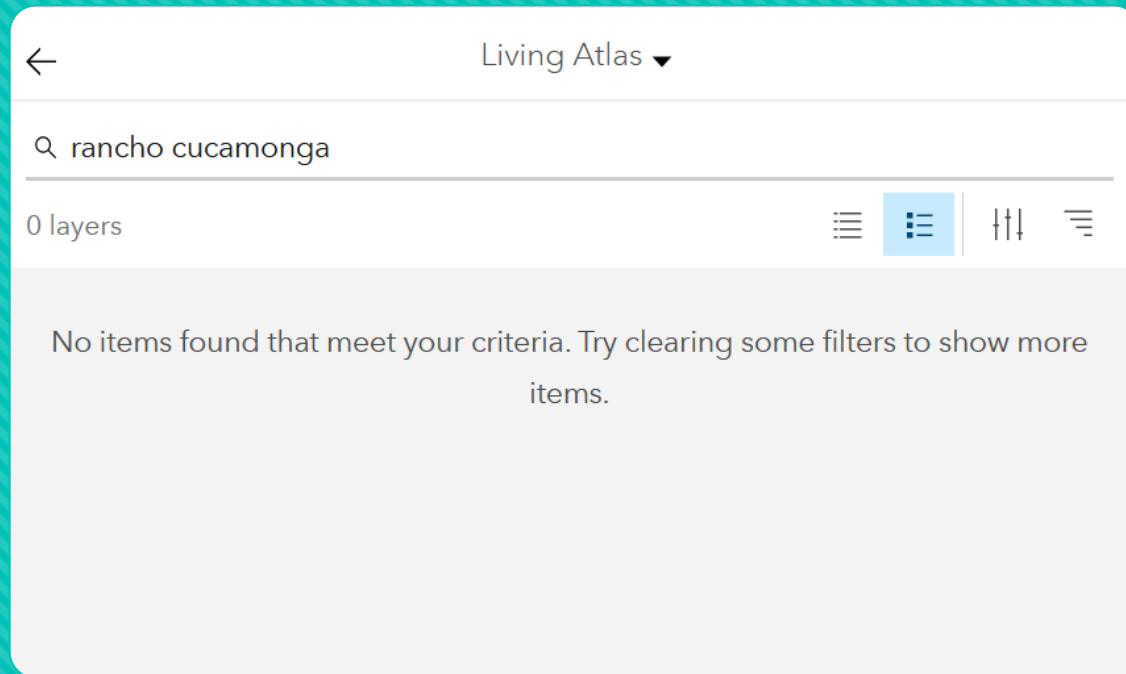
[Learn more about credits](#)

Living Atlas ▾

Q rancho cucamonga

0 layers

No items found that meet your criteria. Try clearing some filters to show more items.



ArcGIS Online ▾

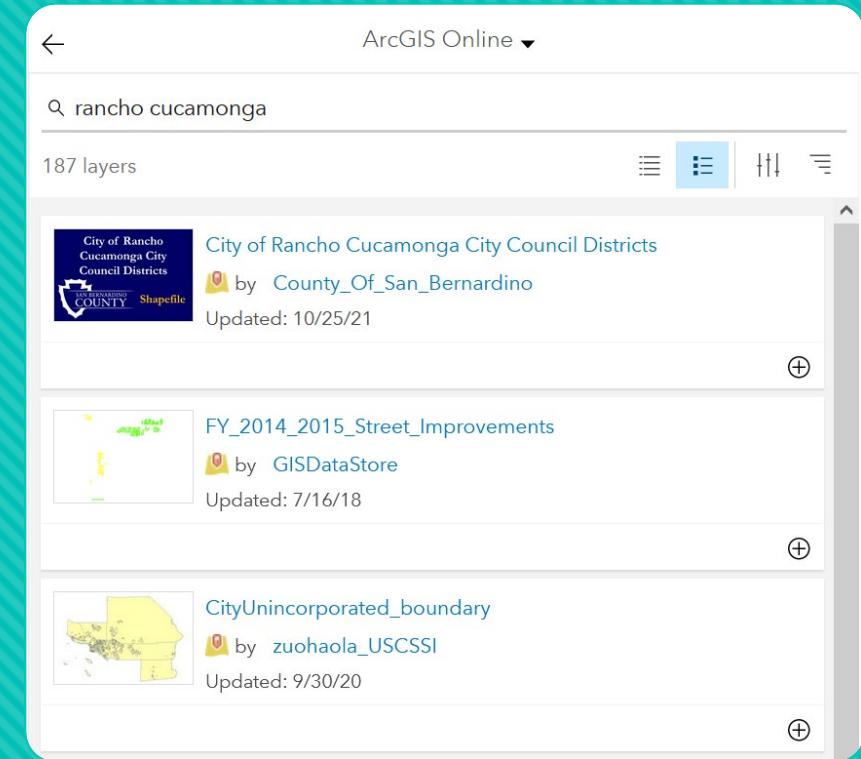
Q rancho cucamonga

187 layers

City of Rancho Cucamonga City Council Districts
by County_Of_San_Bernardino
Updated: 10/25/21

FY_2014_2015_Street_Improvements
by GISDataStore
Updated: 7/16/18

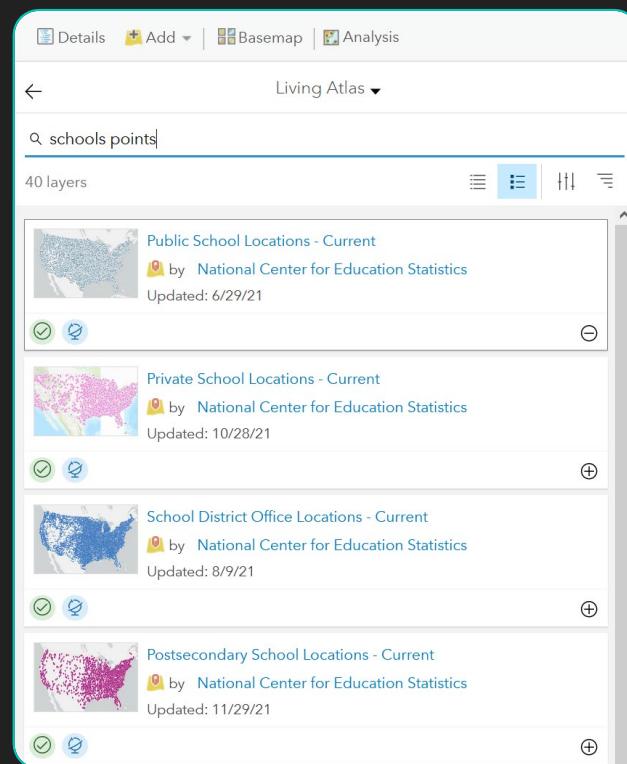
CityUnincorporated_boundary
by zuohaola_USCSSI
Updated: 9/30/20



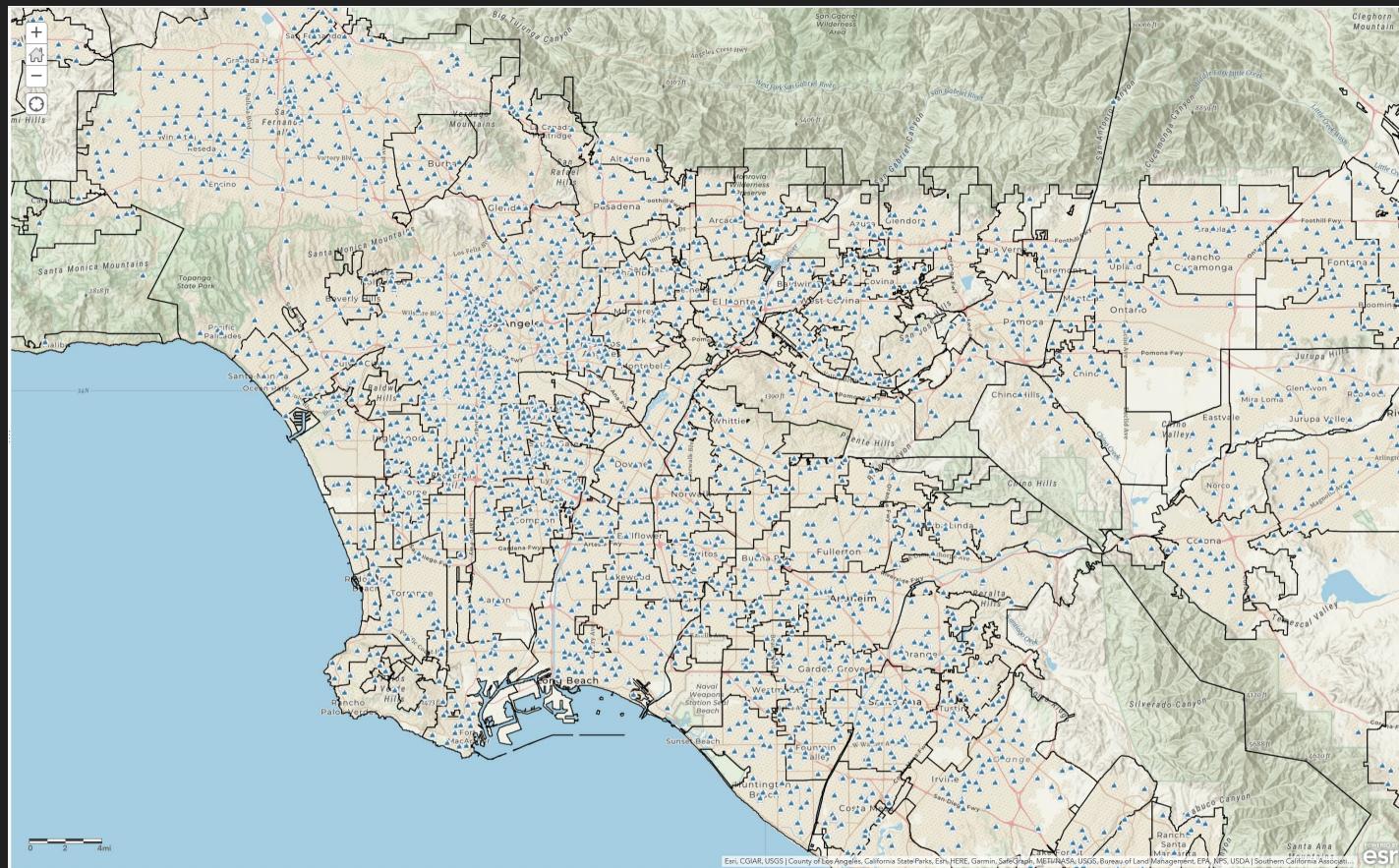
Rancho Cucamonga

Where to live?

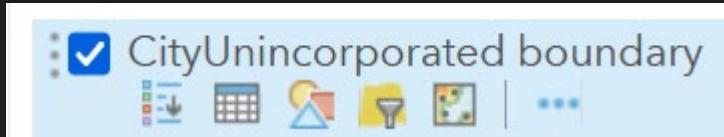
Schools in the area



So much information – it hurts my eyes!



Filter



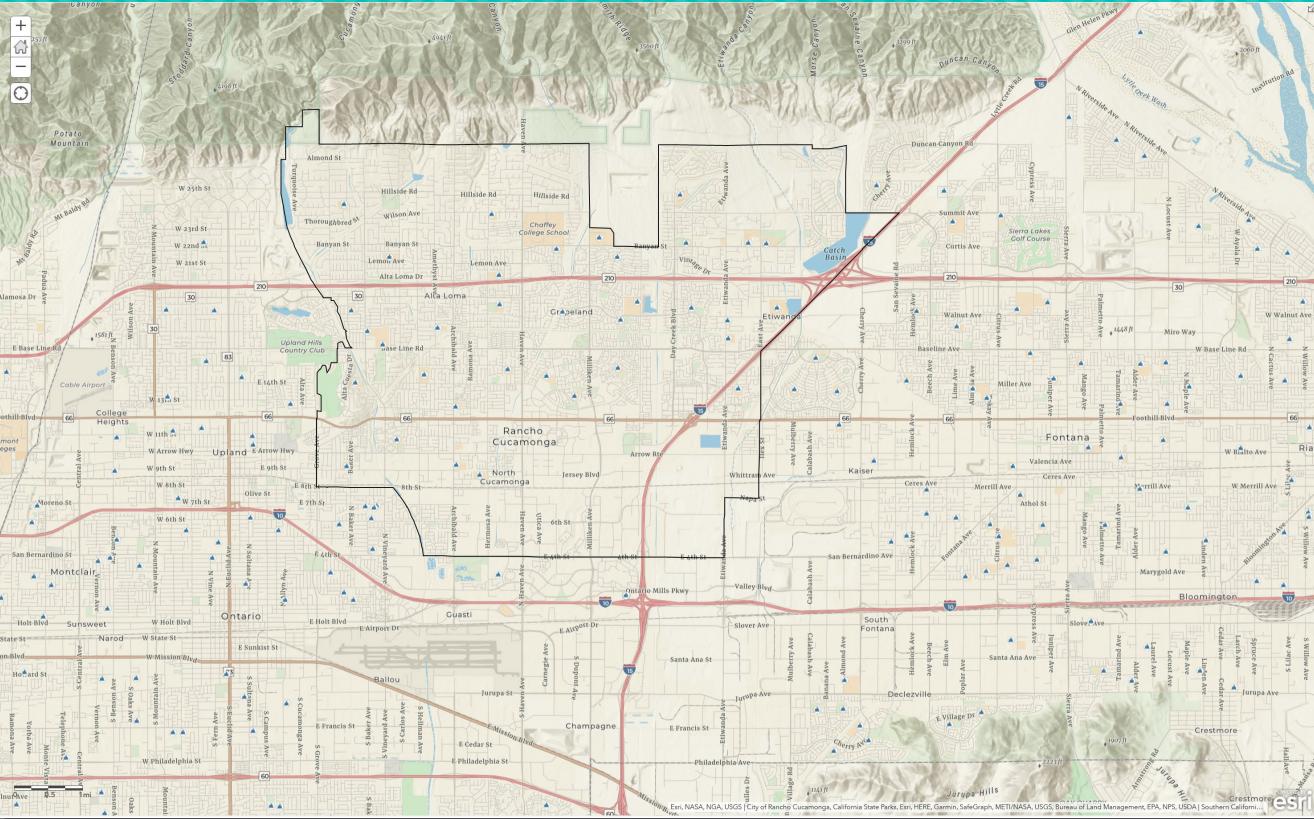
Filter: CityUnincorporated_boundary

Create X

Display features in the layer that match the following expression

CITY is Rancho Cucamonga
 Value Field Unique

Ask for values ▾

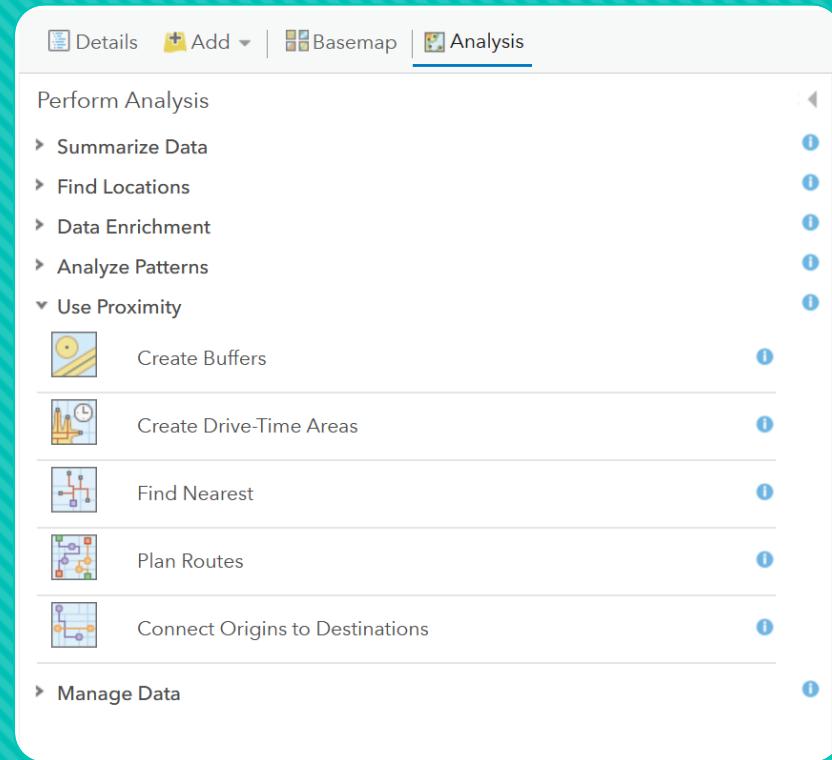
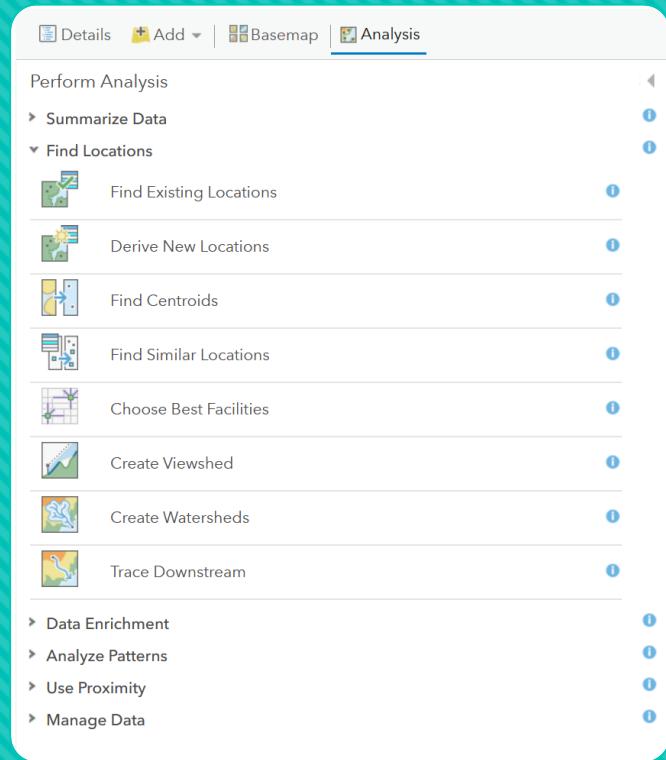


Result

Analysis – Making our own layers

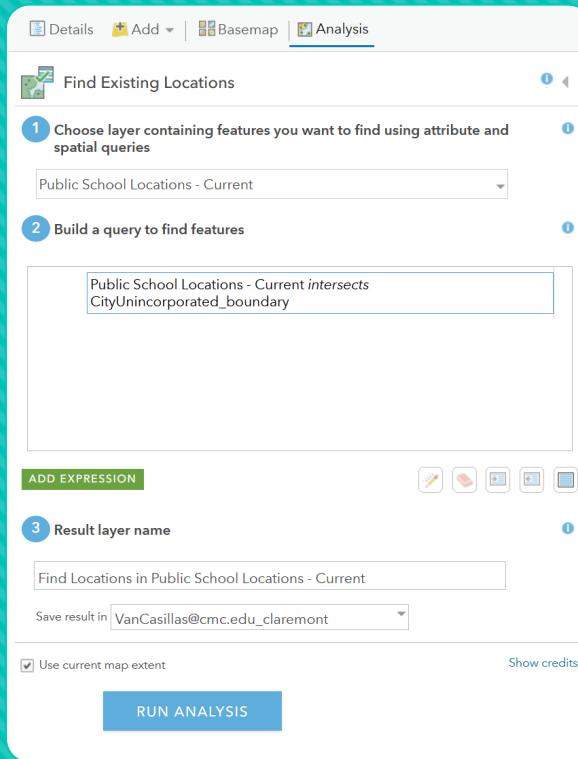
The screenshot shows a map application interface with a dark header bar. The header contains four tabs: 'Details' (selected), 'Add', 'Basemap', and 'Analysis'. Below the header, there are three buttons: 'About', 'Content' (selected), and 'Legend'. A 'Contents' section follows, listing three items: 'Public School Locations - Current' (checked), 'CityUnincorporated boundary' (checked), and 'Charted Territory' (with a plus sign icon). At the bottom right of the contents area, there are three small blue circular icons.

The screenshot shows the same map application interface with the 'Analysis' tab selected. The header and buttons are identical to the left screenshot. Below the header, a 'Perform Analysis' section is displayed, containing seven items with blue circular icons to the right: 'Summarize Data', 'Find Locations', 'Data Enrichment', 'Analyze Patterns', 'Use Proximity', and 'Manage Data'. The 'About' button at the bottom right is also present here.



Analysis

Coolest feature in ArcGIS Online – my opinion



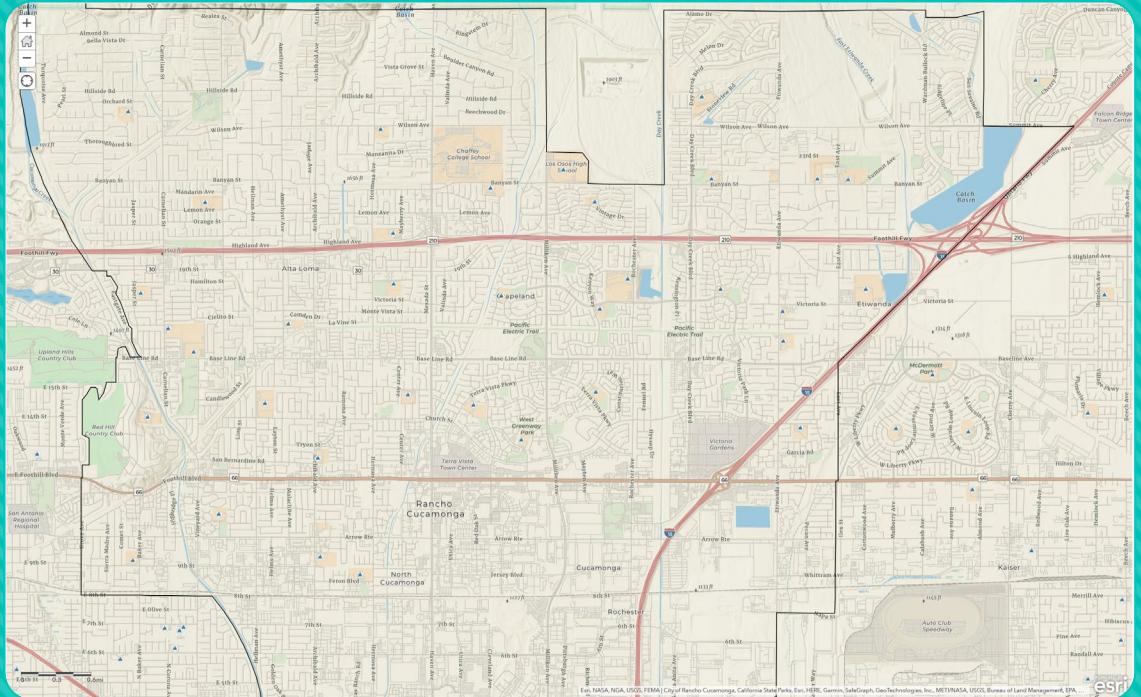
Add Expression

Public School Locations - Current intersects CityUnincorporated_boundary

ADD CLOSE

Adding an Expression

Think about what you want to get as a result



Credit Usage Report

Total records:

86

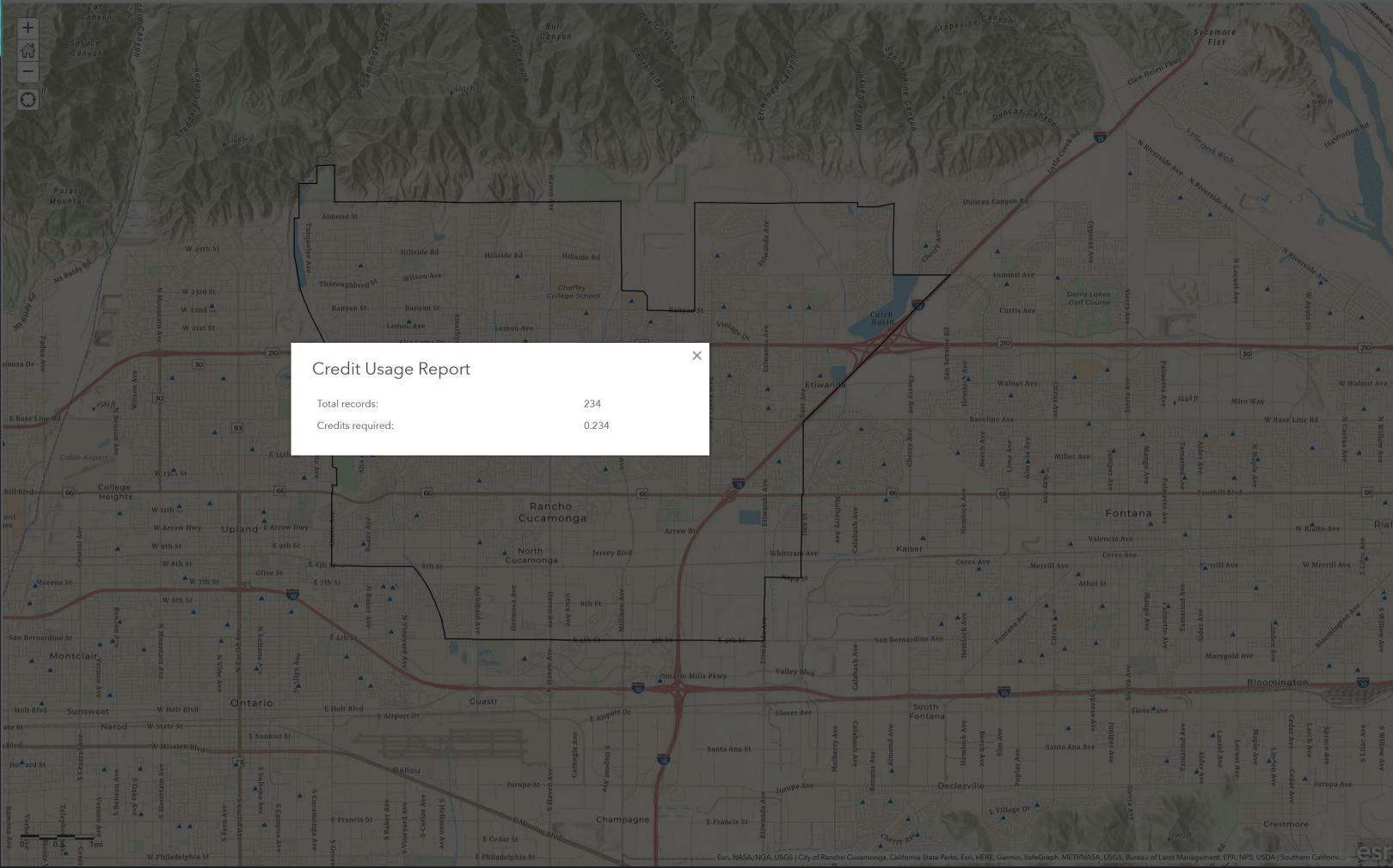
Credits required:

0.086

Credits...

Always think of credits

Credits...



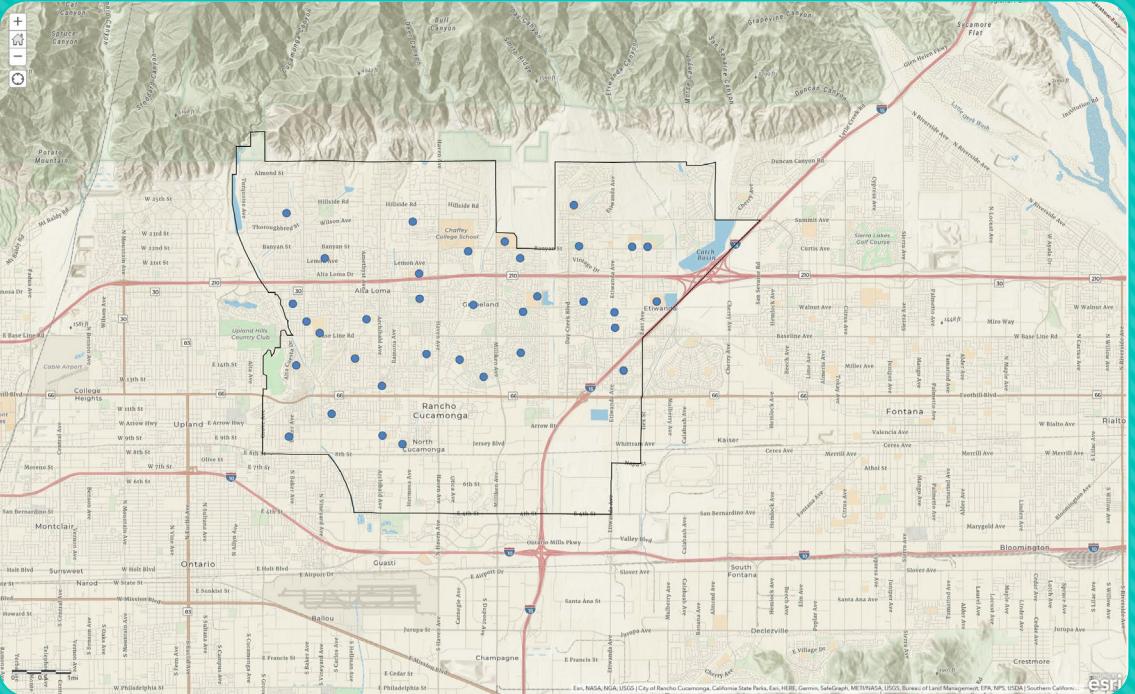
Home ▾ My Map

Details Add Basemap Analysis

About Content Legend

Contents

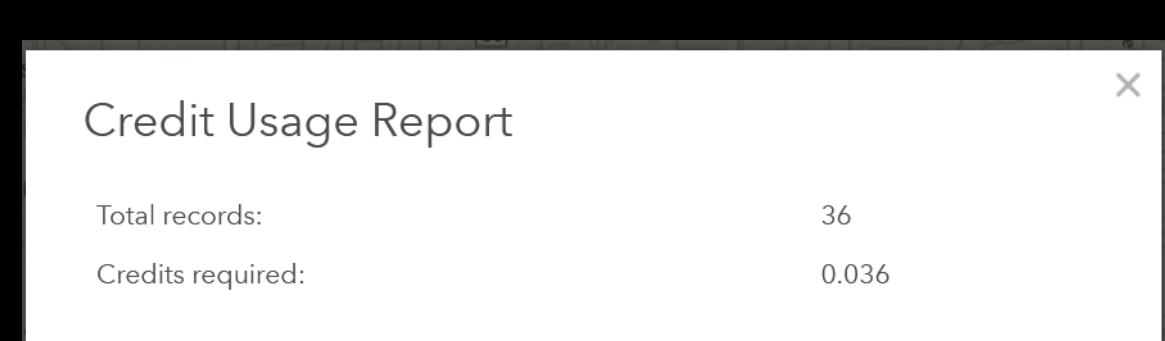
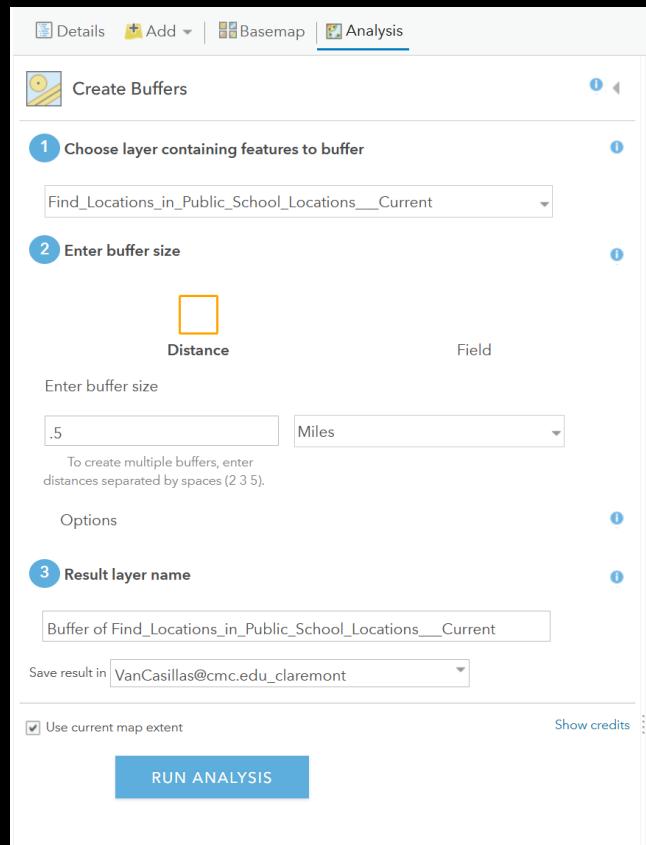
- Points within Boundary
- Public School Locations - Current
- CityUnincorporated boundary
- ▶ Charted Territory



Result

Points on map – so what?

Create Buffers - Analysis



Result

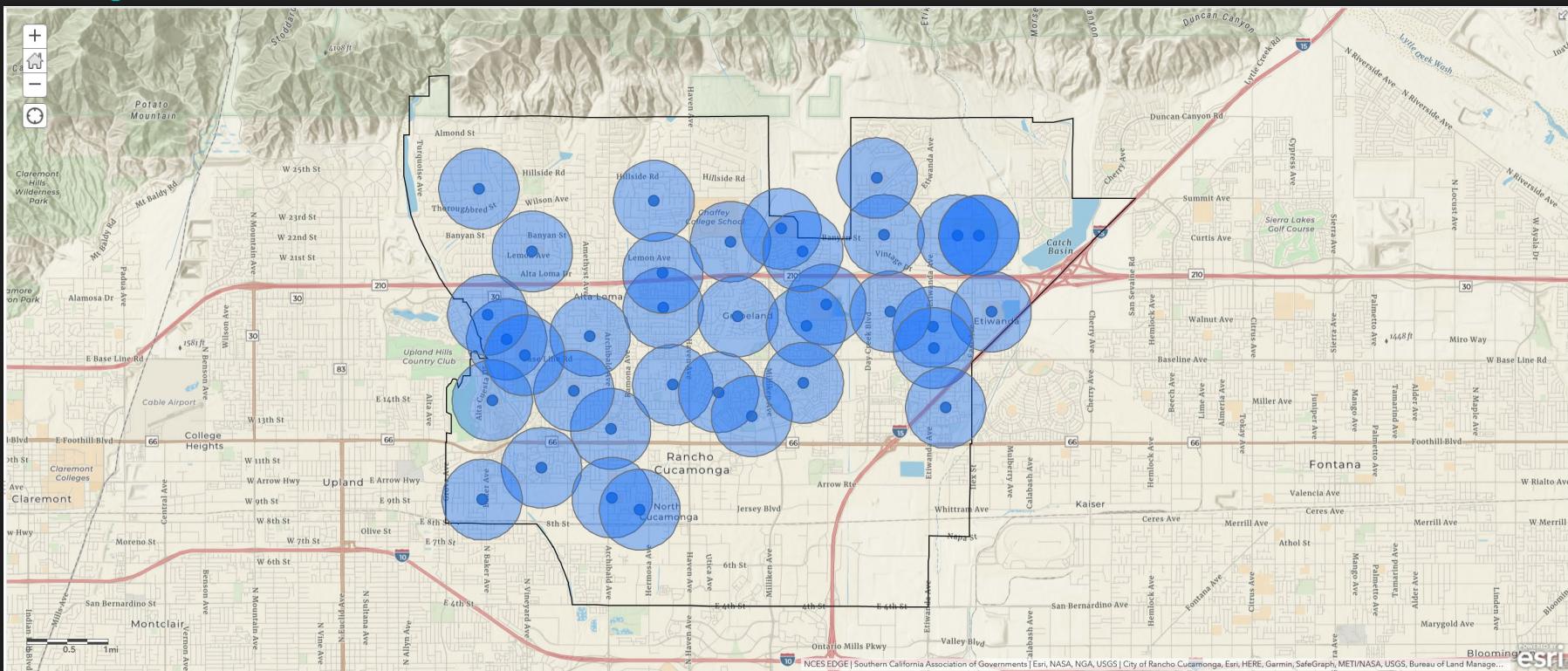
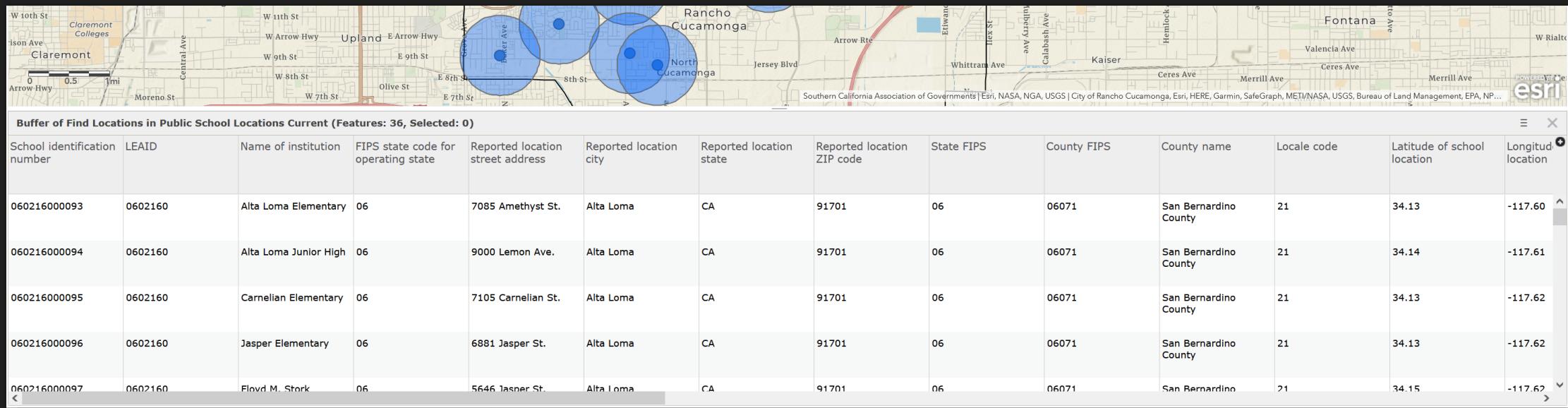
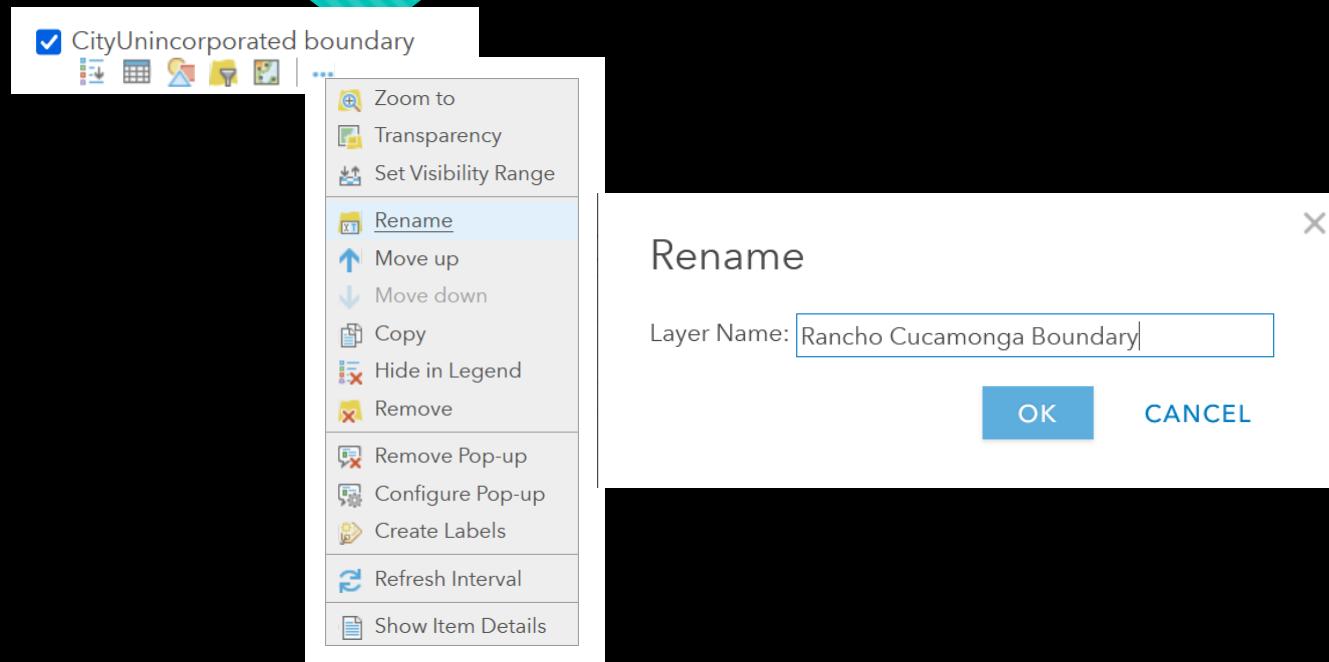


Table – Raw data



Renaming



- Renaming to make more sense to yourself in the future.

Rancho Cucamonga Boundary Line

Details Add | Basemap Analysis

Change Style
Rancho Cucamonga Boundary

1 Choose an attribute to show
Show location only

2 Select a drawing style

Location (Single symbol)

OPTIONS

Details Add | Basemap Analysis

Change Style
Rancho Cucamonga Boundary

Showing Location Only

Symbols

Transparency

Overall 0% 100%

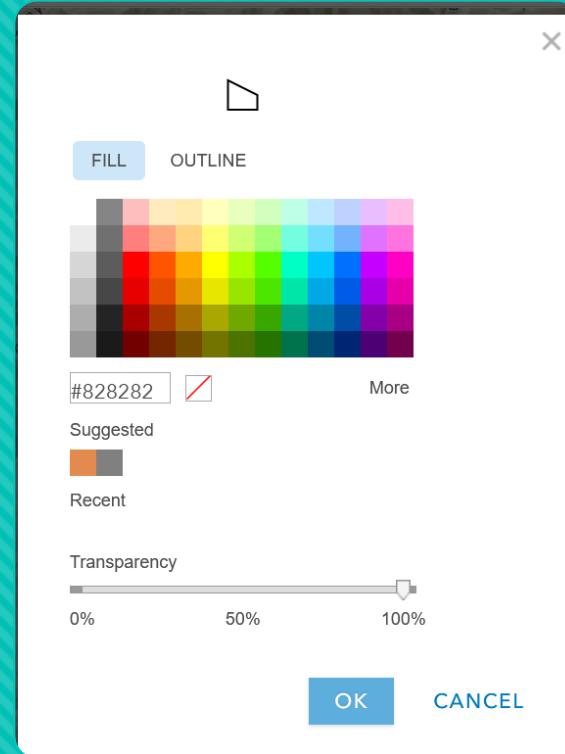
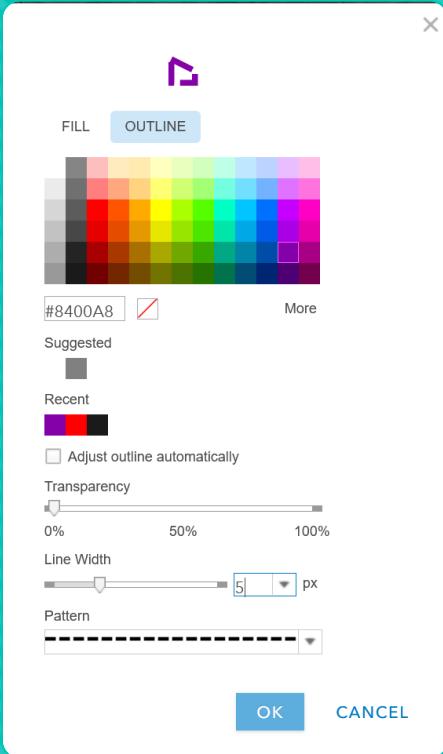
Per feature Set from Attribute Values

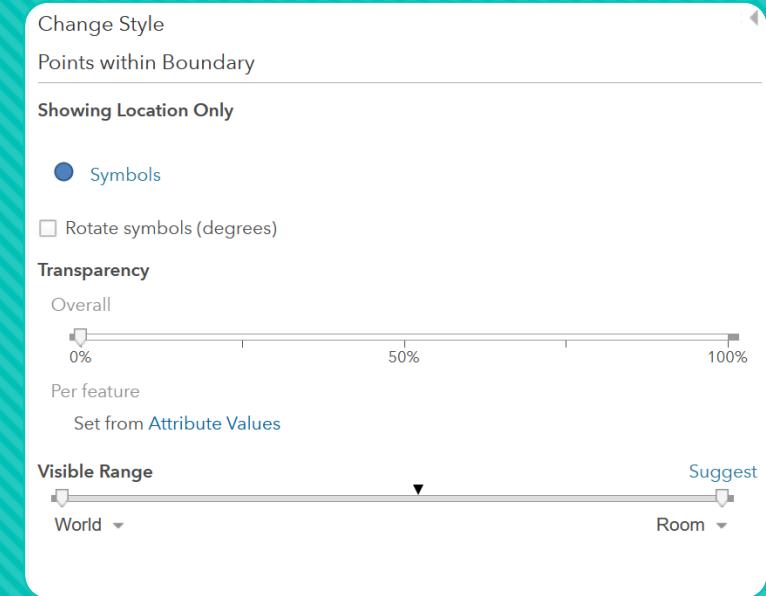
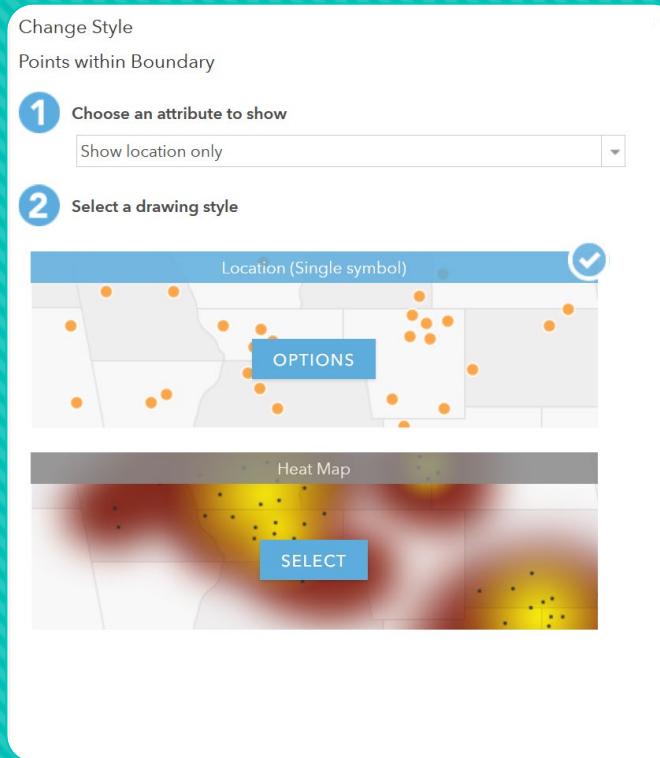
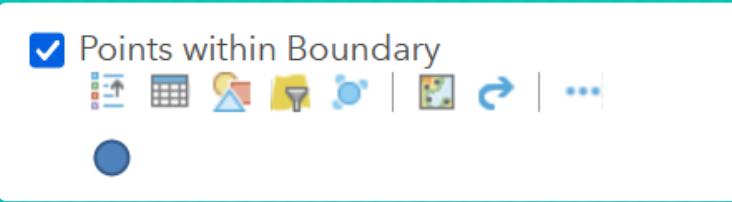
Visible Range Suggest 100%

World Room

Be Picky

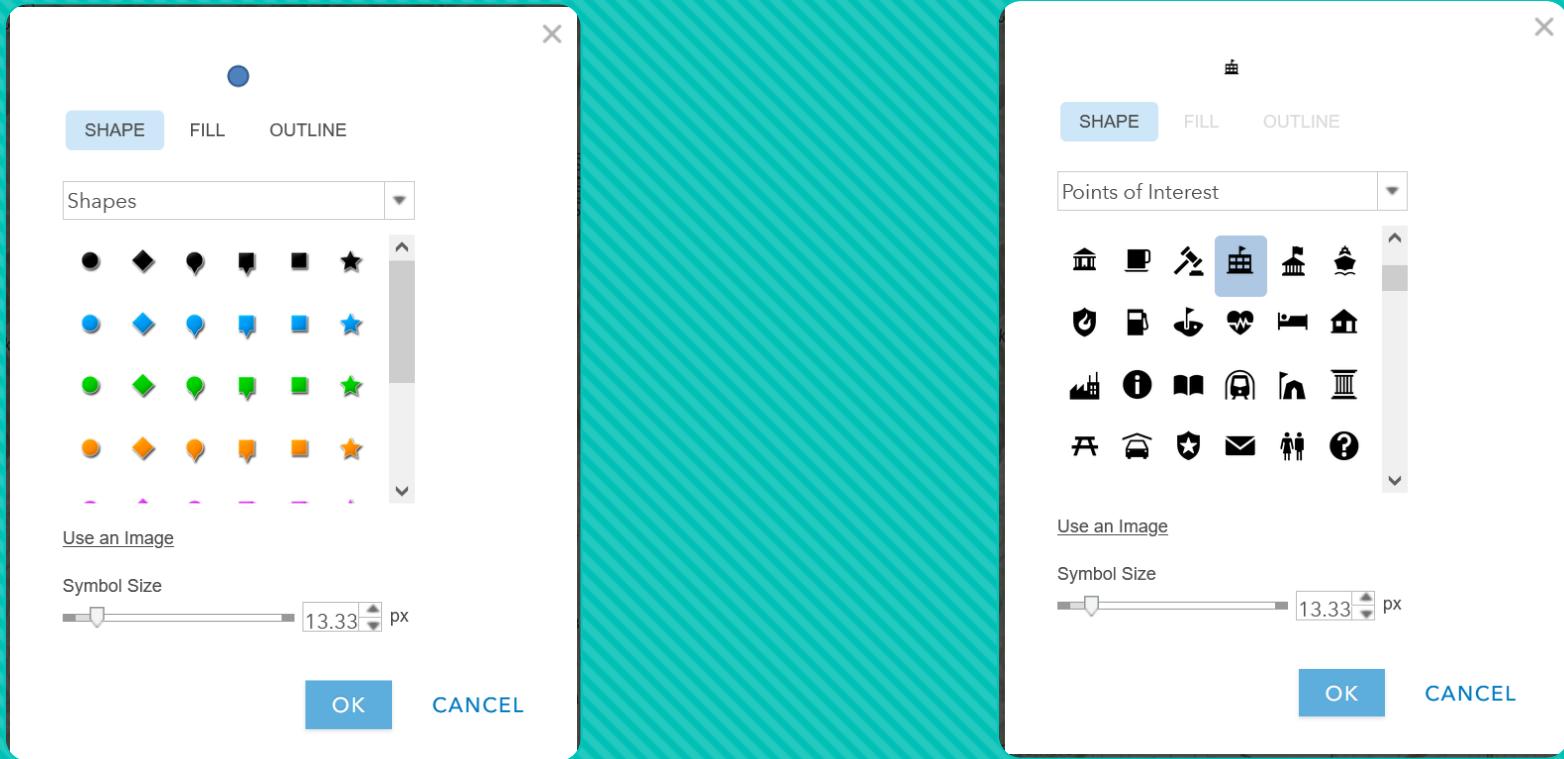
What will catch the eye?





RC Public Schools

Symbols

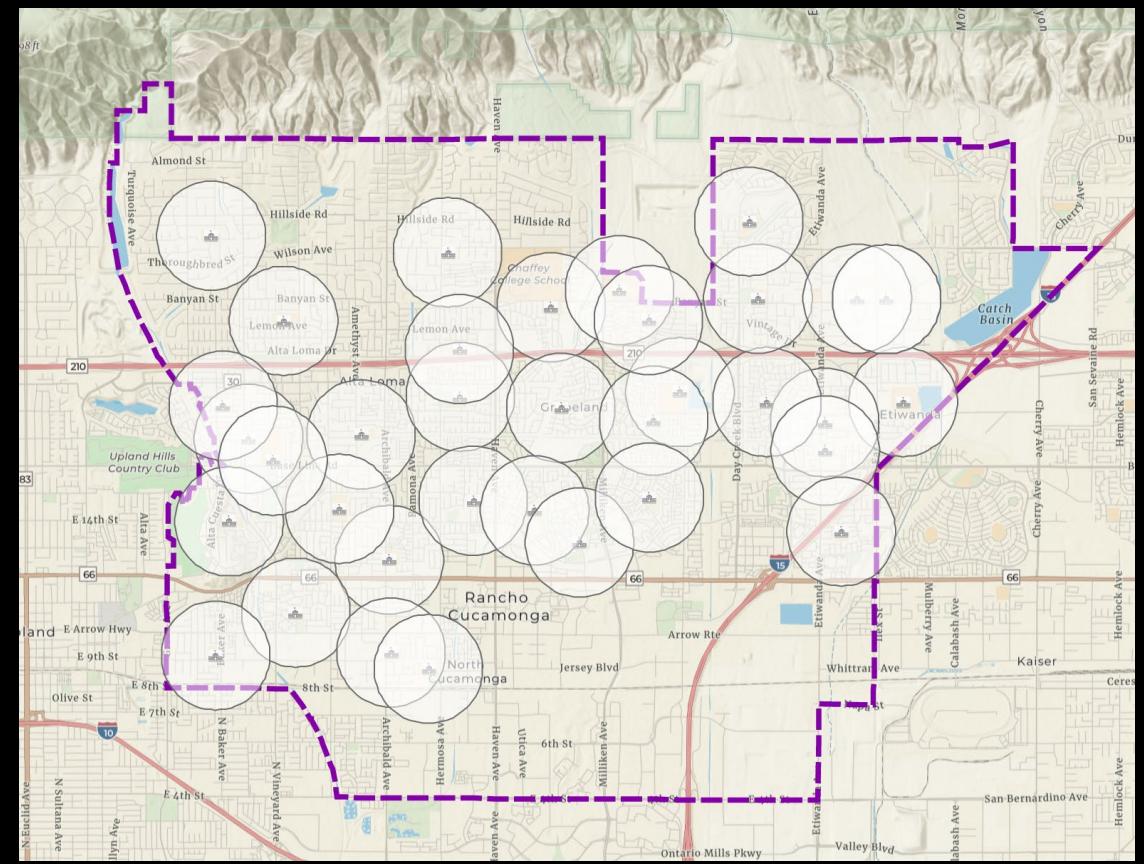
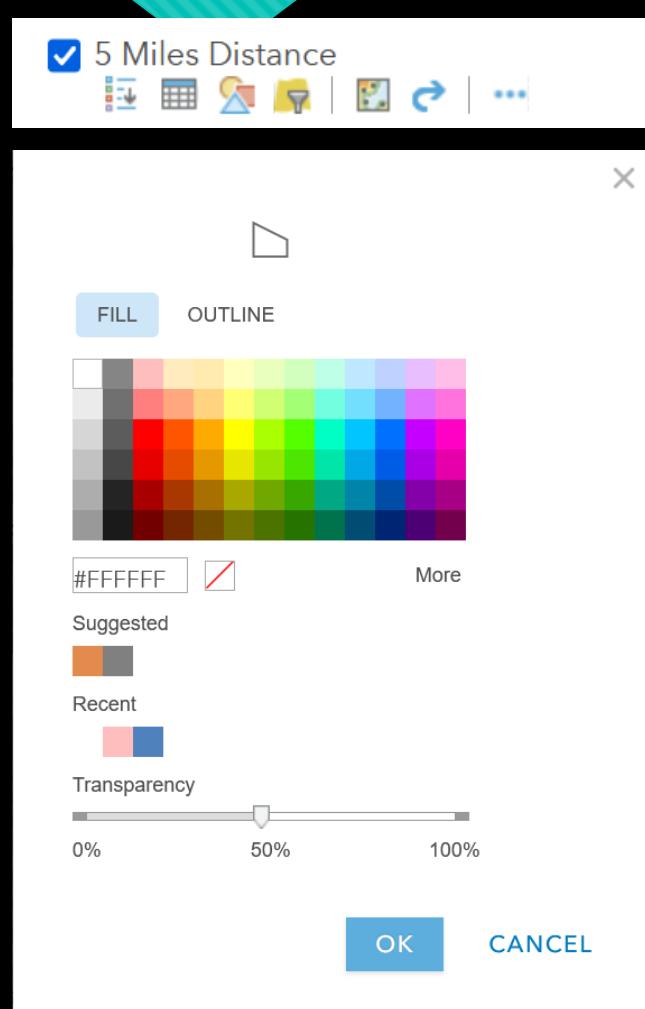


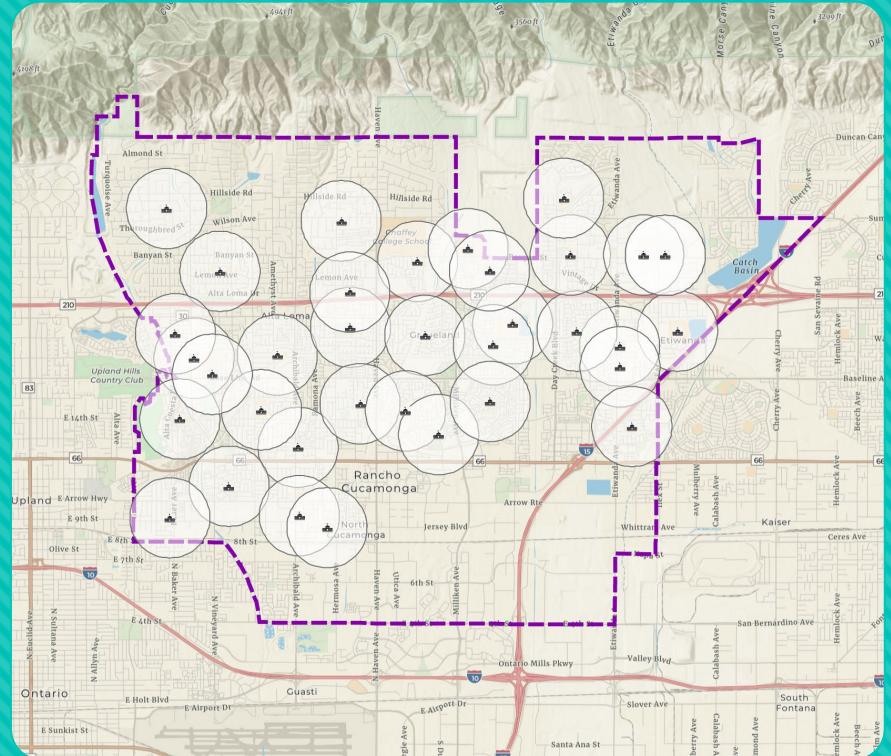
Default Image

Which will be quick for the eye?

Be Picky

⌚ Watch out for your overlapping layers





Details Add ▾ | Basemap | Analysis

About Content Legend

Contents

- Points within Boundary
- 5 Miles Distance
- Rancho Cucamonga Boundary
- Public School Locations - Current
- ▶ Charted Territory

Moving Layers Around

What is your story?

Create Drive-Time Areas

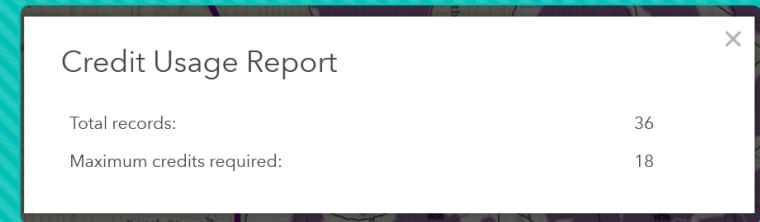
- Choose point layer to calculate drive-time areas around
RC Public Schools
- Measure
Walking Distance
.5 Miles
- Select barrier layers
Travel direction:
Away from Facility Towards Facility
- Areas from different points
Overlap Dissolve Split
- Show unreachable areas as holes
- Result layer name
Travel from RC Public Schools (.5 Miles)
- Include reachable streets
- Save result in VarCasillas@cmc.edu_claremont
- Use current map extent

RUN ANALYSIS

Analysis

Perform Analysis

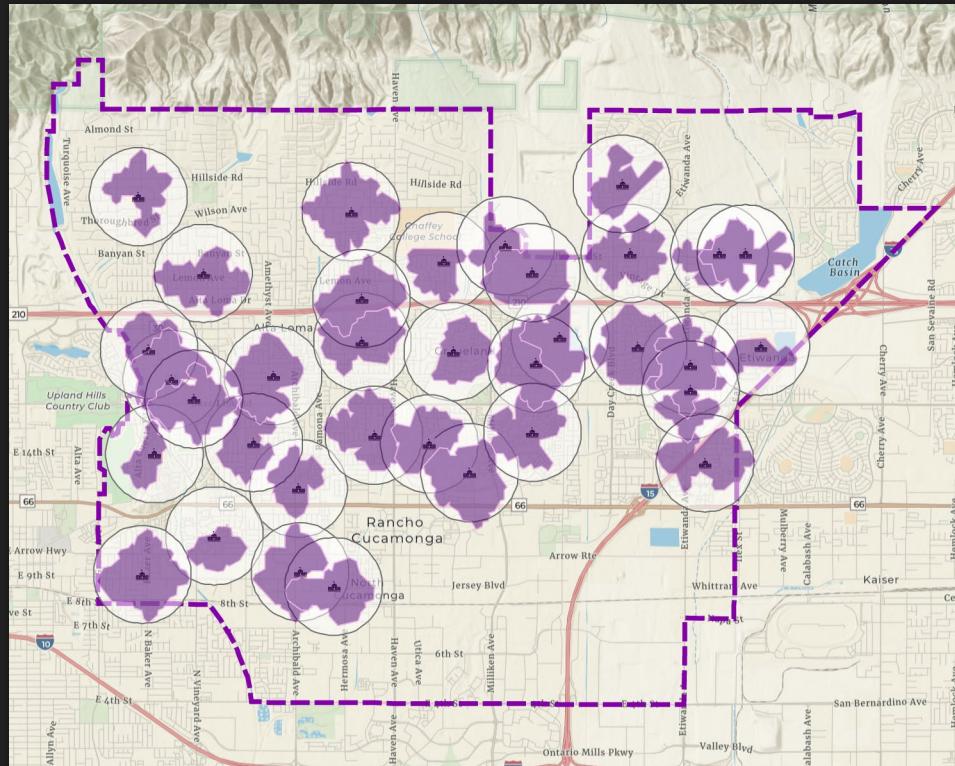
- Summarize Data
- Find Locations
- Data Enrichment
- Analyze Patterns
- Use Proximity
- Create Buffers
- Create Drive-Time Areas
- Find Nearest
- Plan Routes
- Connect Origins to Destinations
- Manage Data



Create Drive-Time Feature

Make sure to check your credits

A better visual story



Legend and Save

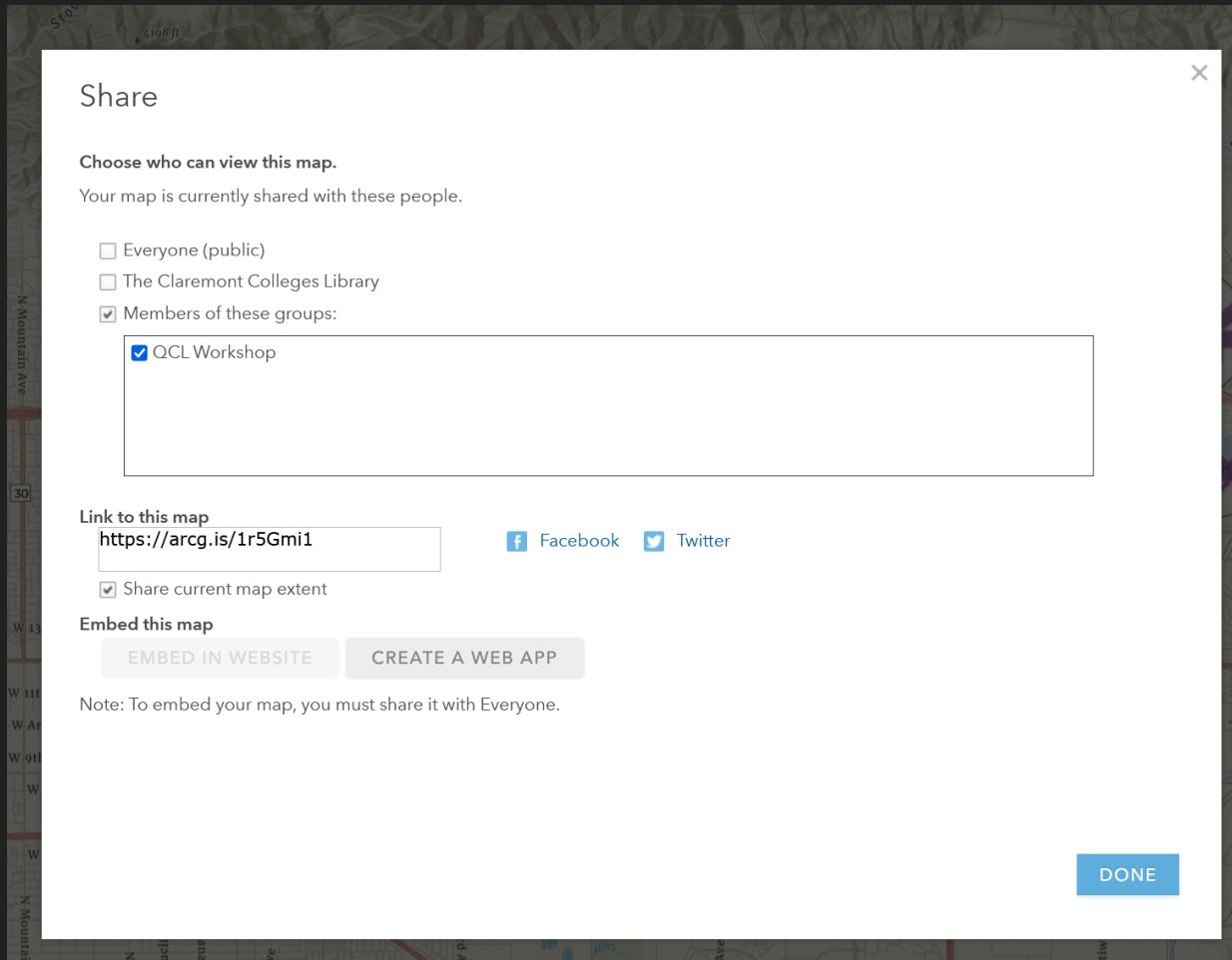
The screenshot shows a map application interface. At the top, there are navigation tabs: Details (selected), Add, Basemap, and Analysis. Below these are three buttons: About, Content, and Legend, with Legend being the active tab. The main area is titled "Legend". It contains four entries with corresponding icons:

- Travel_from_Points_within_Boundary_(5_Miles): A purple triangle icon.
- Points_within_Boundary: A blue ribbon icon.
- _5_Miles_Distance: A yellow triangle icon.
- Rancho Cucamonga Boundary: A purple dashed line icon.

The screenshot shows a map application interface with a dark theme. At the top, there are several buttons: Save (selected), Share, Print, Directions, Measure, Bookmarks, and a search bar. Below the buttons is a map view showing terrain. A context menu is open over the map, with the "Save" button highlighted. The menu options are:

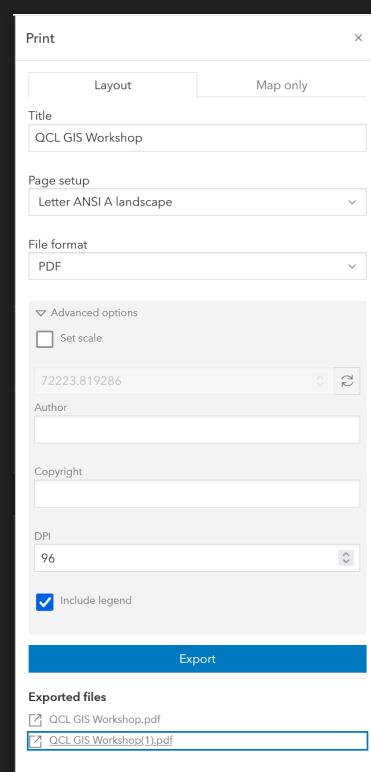
- Save
- Save As

Share

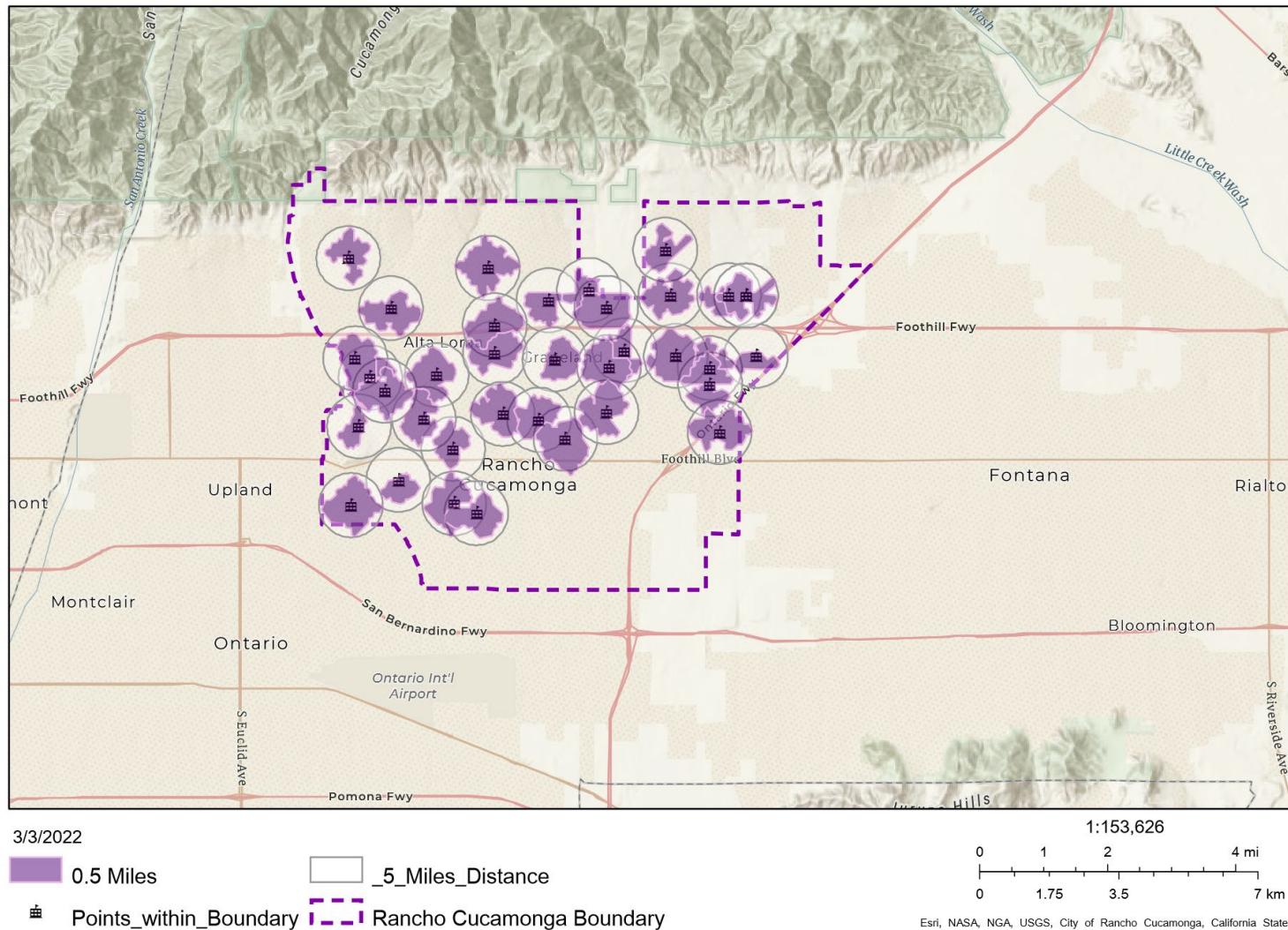


Printing a Map

Go to New ArcGIS Online Map



QCLworkshop Map



Edit your Layers Information

The screenshot shows the ArcGIS item page for a feature layer titled "Travel_from_RC_Public_Schools_(.5_Miles)". The page includes sections for Overview, Data, Visualization, Usage, and Settings. The Overview section displays a thumbnail of the data, a description ("Feature layer generated from Create Drive Times"), credits ("Feature Layer (hosted) by VanCasillas@cmc.edu_claremont"), and metadata ("Created: Jan 7, 2022 Updated: Jan 7, 2022 View Count: 10"). A "Add to Favorites" button is also present. The right sidebar contains a "Edit" button and a dropdown menu with options like "Open in Map Viewer", "Open in Scene Viewer", "Open in ArcGIS Desktop", "Publish", "Create View Layer", "Export Data", "Update Data", "Share", and "Metadata". The "Item Information" section shows a progress bar for improvement, currently at "Low". The "Details" section provides source information ("Source: Feature Service", "Data Last Updated: Jan 7, 2022, 12:59:29 PM", "Size: 2 KB", "Attachments Size: 0 KB"), a five-star rating, and social sharing links for Facebook, Twitter, and LinkedIn. The "Owner" section lists "VanCasillas@cmc.edu_claremont". The "Folder" section shows the item is located in "VanCasillas@cmc.edu_claremont". The "Categories" section indicates "This item has not been categorized". The "Tags" section lists "Analysis Result, Drive Times, RC Public Schools". The "Credits (Attribution)" section asks to "Acknowledge this item's source". The "URL" section provides the link "https://services.arcgis.com/fVnyNwbpF".

- Title
- Updated
- Description
- Terms of Use
- Credits (Attribution)
- Owner
- Managed by
- View Count
- Created
- Shared with

Homework – Be Creative

- Make a map using the City of Claremont or the Claremont colleges
 - Share it to the group receive create

GIS 2

- Continuing adding to map and looking at features
 - What makes a good map?
 - Visually
 - Contents
 - Importing your own data
 - Cleaning data before import
 - Having the right information for import
 - Exporting into another ESRI program: Story Maps

Resources

ESRI: <https://www.esri.com/en-us/home>

ArcGIS: <https://learn-arcgis-learngis.hub.arcgis.com/>

Library: GIS Mondays <https://library.claremont.edu/>

Contact

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