Accessing Colorado Water Data

July 25, 2019

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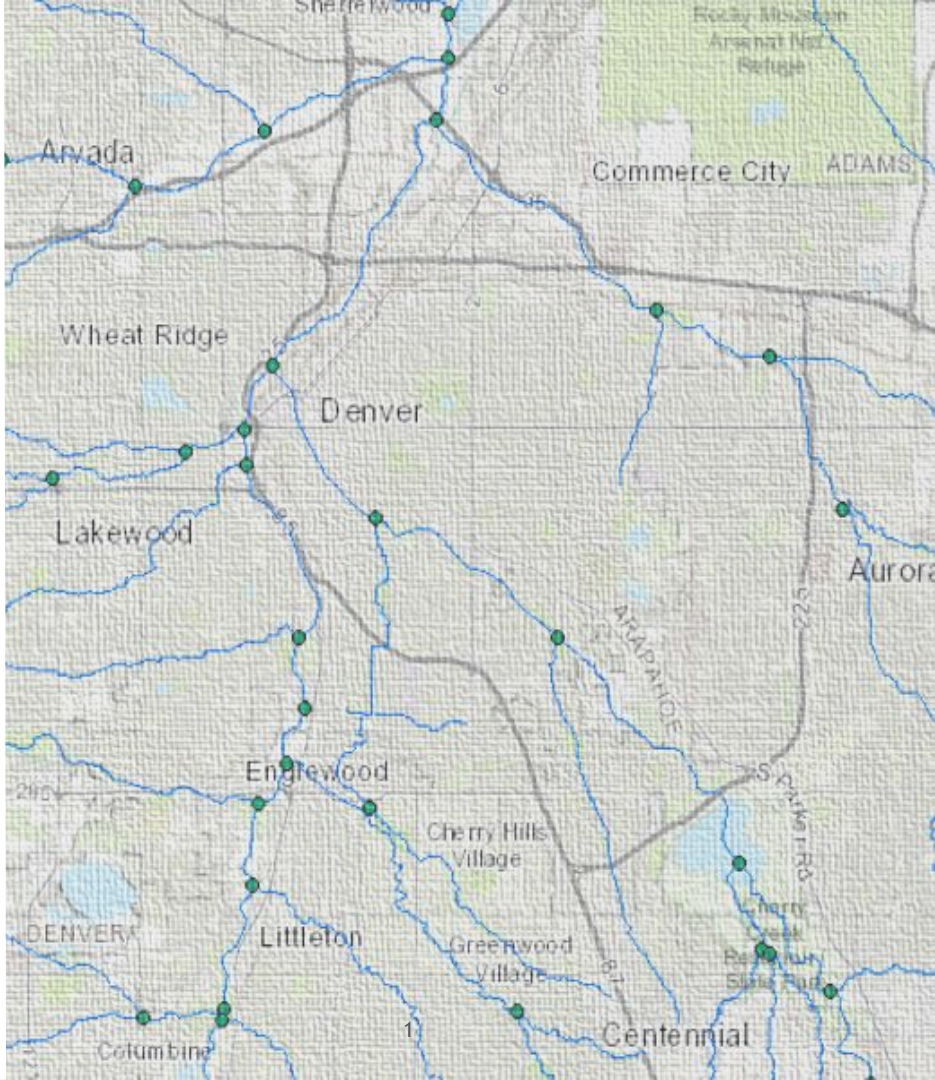
GIS Analyst



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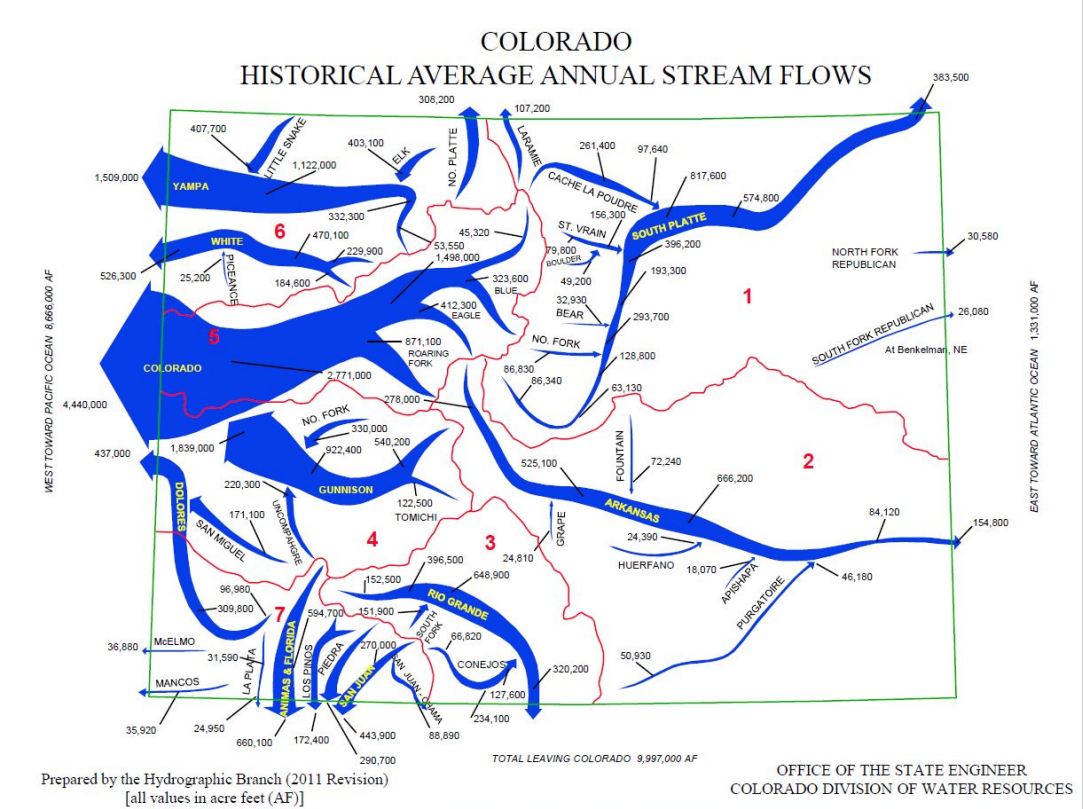
Presentation Overview

I. Water Supply and Demand in Colorado
II. Municipal Water Use Background
III. Office of the State Engineer (DWR)
IV. HydroBase - DWR's Water Database
V. Map Viewer Datasets and Tools
VI. CDSS Tools/REST site
VII. Colorado Information Marketplace
VIII. CDSS Data Download Page
IX. Improving Datasets/NHD Stewards

Water Supply & Demand

- 17 inches annual precip statewide
- 70% of surface water in CO is on the west slope
- 89% population on east slope, consumes 70% of the state's water[1]
- Shortfall of 500,000 acre-feet by 2050

[1] Colorado Water Conservation Board, "Colorado's Water Plan".



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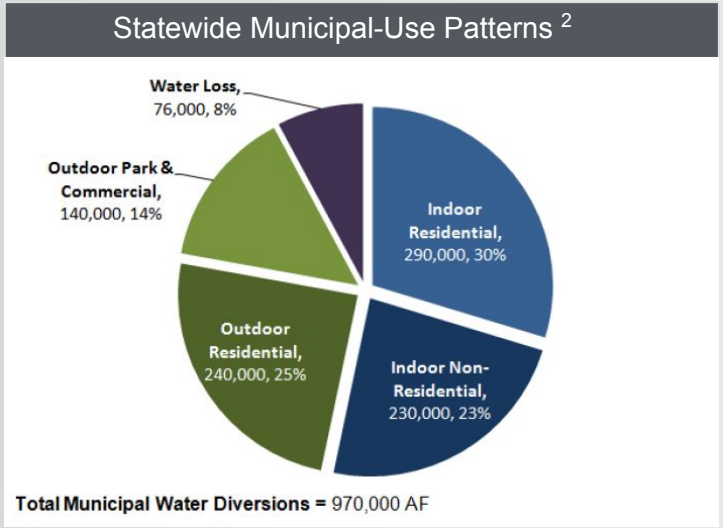
Municipal Water Use



[2] Colorado Water Conservation Board, Statewide Water Supply Initiative 2010

- Statewide municipal use patterns
  - 30% indoor residential
  - 23% indoor non-residential
  - 25% outdoor residential
  - 14% outdoor park & commercial
  - 8% water lost
- Total water consumed in Colorado
  - 89% agriculture
  - 7% municipal
  - 4% large industry

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Office of the State Engineer (DWR)

- DWR - Office of the State Engineer
  - Administer water rights
  - Ensure that dams and water wells are properly constructed and safe
  - Provide information about water resources to the public
- DWR Water Information Team
  - Improve access to more detailed information by developing online tools and displaying data in near real-time

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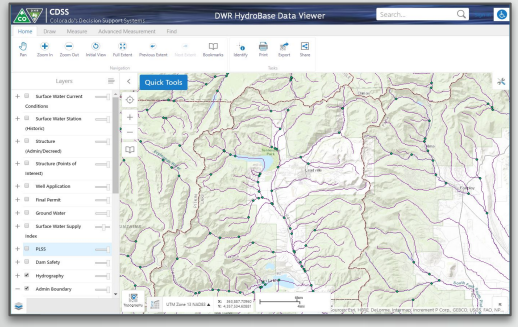
Water rights, administrative calls

Stream gauges, streamflow

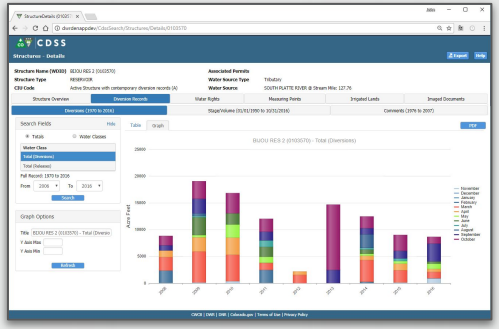
Diversion records, well permits

HydroBase

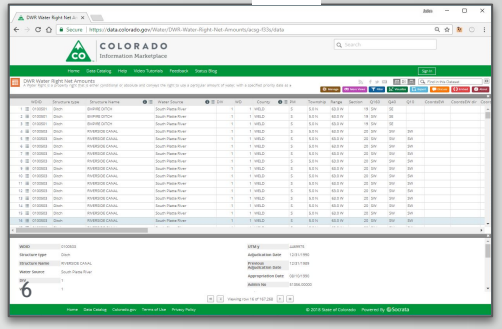
Map Viewer



CDSS



CIM



Map Viewer

http://water.state.co.us/DataMaps/GISandMaps/MapViewer/

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Home | Ground Water | Surface Water | Data & Maps | Documents & Forms | Division Offices

Data & Maps > GIS and Maps > **DWR Map Viewers**

- Buy Maps
- DWR Map Viewers
- GIS Data for Download
- NHD Stewardship

DWR Map Viewers

The Colorado Division of Water Resources (CDWR) provides a wide range of water related research tools that are available online free of charge. The CDWR Map Viewers are just one of these tools. Below are the CDWR's available research data viewers and layer list information.

For help using our data viewers, please see the FAQ Videos at the bottom of this page or visit CDWR's YouTube Channel.

Well Permit Research Viewer: For use in researching and locating well permits. Search for wells by...permit number, address, applicant name, PLSS description, UTM coordinates, Latitude/Longitude. Useful for realtors, change of ownership applicants and general well research. (Denver Basin Mylars, Atlases and Historical Photos are located under the Layer Catalog button.)

Launch Well Permit Research Viewer

Full Map Viewer: All inclusive map viewer with over 170 map layers of DWR and CWCB data. (Denver Basin Mylars, Atlases and Historical Photos are located under the Layer Catalog button.)

Launch Full Map Viewer

Layer List Information by Viewer: To view what datasets are in each viewer, use the link below to view a Google sheet that lists datasets by viewer.

View Layer List

FAQ Sheet: To view frequently asked questions and answers about Map Viewer functionality, use the link below.

View FAQ Sheet

Map Viewers Layer List

Well Permit Research Viewer | Full DWR Map Viewer

Display Order	Folder	Layer
1.01	Structure (Admin/Decreed)	All Structures
1.02		Surface Water
1.03		Ground Water
1.04		Reservoir
1.05		Minimum Flow
1.06		Other
2.01	Structure (Points of Interest)	All Points of Interest
3.01	Well Application	All Well Applications
3.02		Well Constructed
3.03		Permit Issued
3.04		Well Abandoned
3.05		OGCC Wells
4.01	Final Permit	Final Permit
4.01	Ground Water	Geophysical Log
4.02		Water Level
4.03		Transmissivity Contour
5.01	Surface Water Current Conditions	Active Gage Diversion
5.02		Active Gage Reservoir
5.03		Active Gage Stream
6.01	Surface Water Station (Historic)	All Stations
7.01	Dam Safety	Jurisdictional Dams
7.02		Non Jurisdictional Dams
7.03		Livestock Water Tank/Erosion Control Dams
7.04		EAP Inundation Areas (Internal Only)
7.05		Rainfall Intensity Zones (Internal Only)
8.01	Climate Station	Evaporation Station
8.02		Temperature Station
8.03		Precipitation Station
8.04		Snow Station
8.05		SNOWTEL

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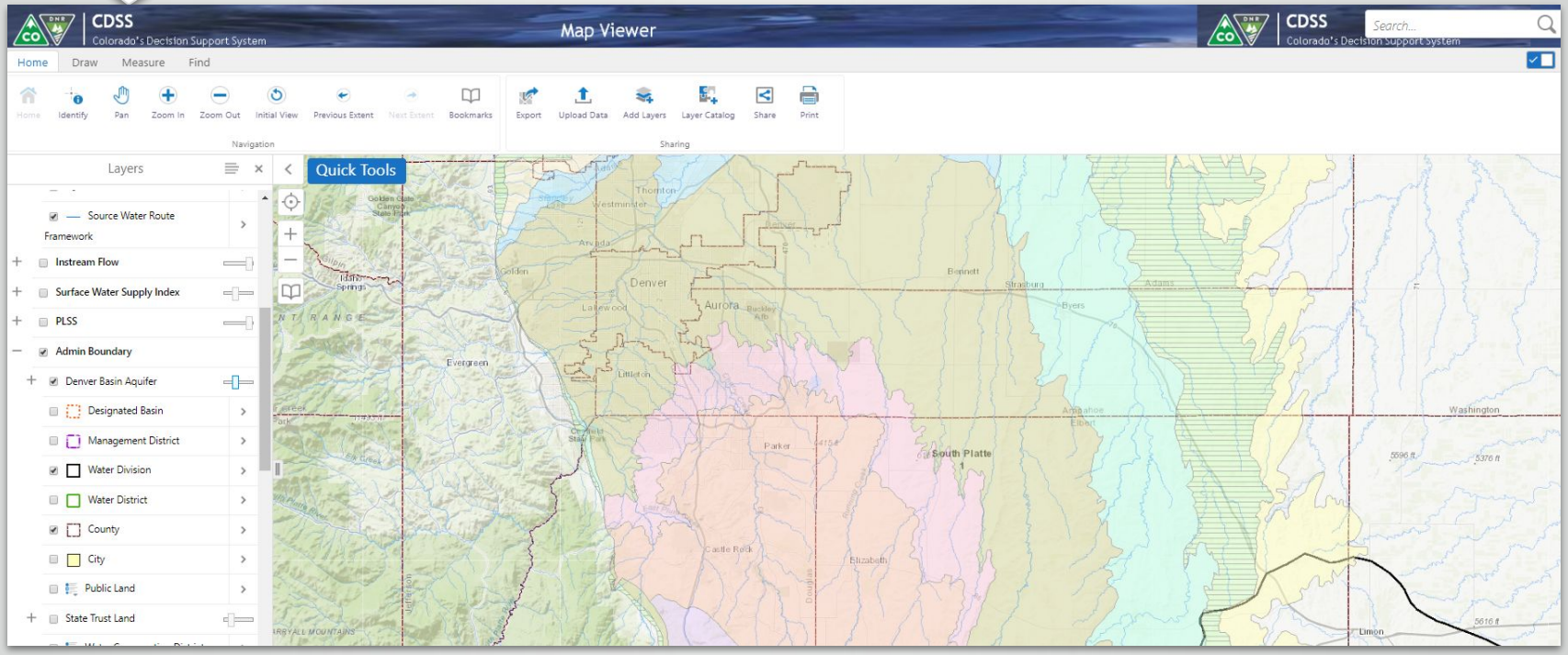
Search, buffer, query, measure, draw, share map, and more!

Map Viewer

http://water.state.co.us/DataMaps/GISandMaps/MapViewer/



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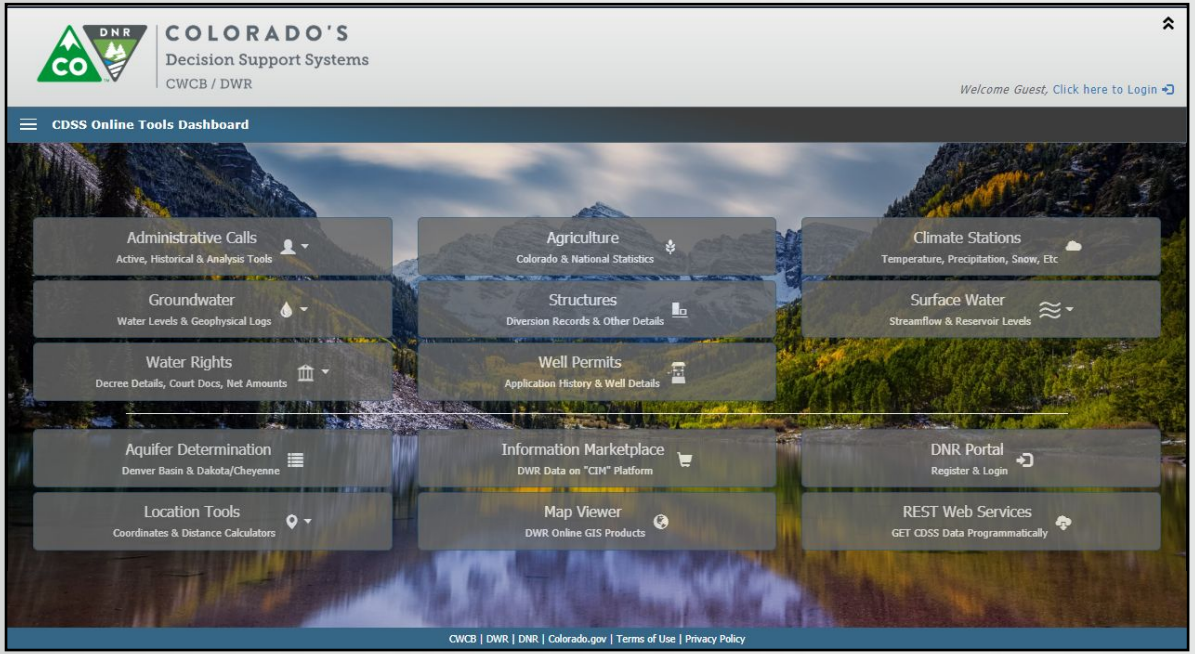
CDSS Online Tools Dashboard

https://dwr.state.co.us/Tools/



- New and improved dashboard!
- CDSS datasets (above the line) and tools (below)
- Click on any of the datasets to access that unique Search page.
- User Help, Data Dictionaries, and other links are provided for each dataset

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Colorado Information Marketplace

https://data.colorado.gov/

- Open Data portal hosted by State of Colorado OIT
- DWR data from HydroBase gets updated nightly
- Just points, no lines or polygons!

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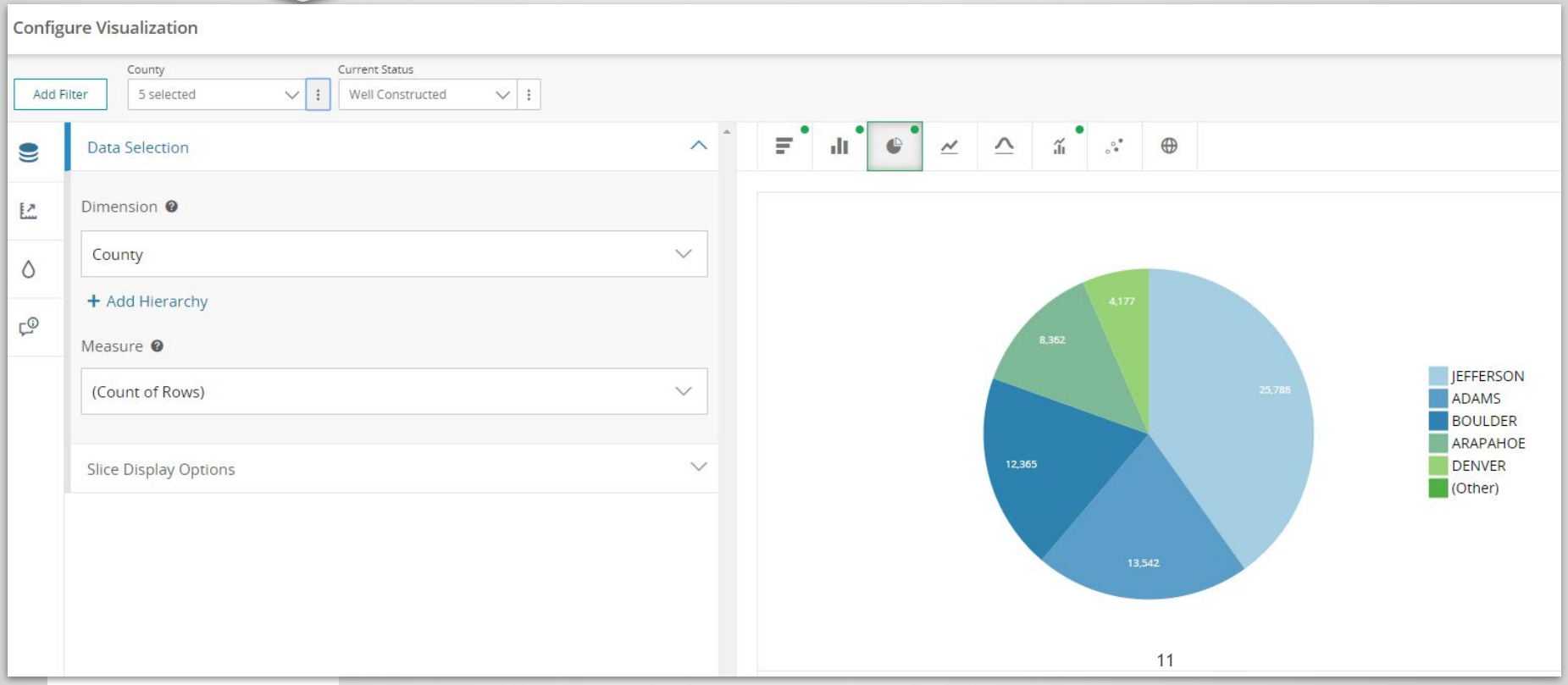
Data Visualizations in CIM

Configure visualizations like this pie chart comparing constructed wells in 5 Front Range Counties



Download Complete Datasets

https://www.colorado.gov/pacific/cdss/gis-data

GIS Data By Category

Where applicable, data is provided in ArcGIS geodatabases. All other data is downloadable as zipped shapefiles.

Boundaries

Boundary shapefiles for divisions, districts and groundwater management areas.

TITLE/DESCRIPTION	FILE TYPE	LAST UPDATED
Division Boundaries	Zipped Shapefile	2/1/2010
District Boundaries	Zipped Shapefile	3/30/2016
Groundwater Management Districts	Zipped Shapefile	9/1/1996
Designated Basins	Zipped Shapefile	9/1/1996
Produced Water Non Tributary Boundaries	Geodatabase (10.1 File GDB)	5/6/2015

Climate

Statewide climate isohyet shapefiles.

TITLE/DESCRIPTION	FILE TYPE	LAST UPDATED
Average Evaporation - Free Water (1956-1970)	Zipped Shapefile	1982
Average Precipitation (1951-1980)	Zipped Shapefile	1993
Solar Radiation	Zipped Shapefile	1992

HydroBase Point Data

HydroBase Data shapefiles include climate station, structures, surface water and well data. All shapefiles are in statewide coverages. These datasets are updated nightly.

TITLE/DESCRIPTION	FILE TYPE
Climate Data - climate, evaporation, temperature, precipitation & solar radiation stations	Zipped Shapefile
Structures - with water rights	Zipped Shapefile
Structure Features - points of interest, measuring locations, recharge areas, well fields, etc.	Zipped Shapefile
Surface Water Gages - Real Time (current conditions)	Zipped Shapefile
Surface Water Gages - Historic (with Period of Record)	Zipped Shapefile
Well Applications	Zipped Shapefile
Well Geophysical Logs	Zipped Shapefile
Wells with Water Levels	Zipped Shapefile
Final Permits - Designated Basins	Zipped Shapefile

- Download zipped files of DWR data
- Search by category or by basin
- Shapefiles and file geodatabases
- Not updated as regularly as Map Viewer, CDSS Dashboard, and CIM

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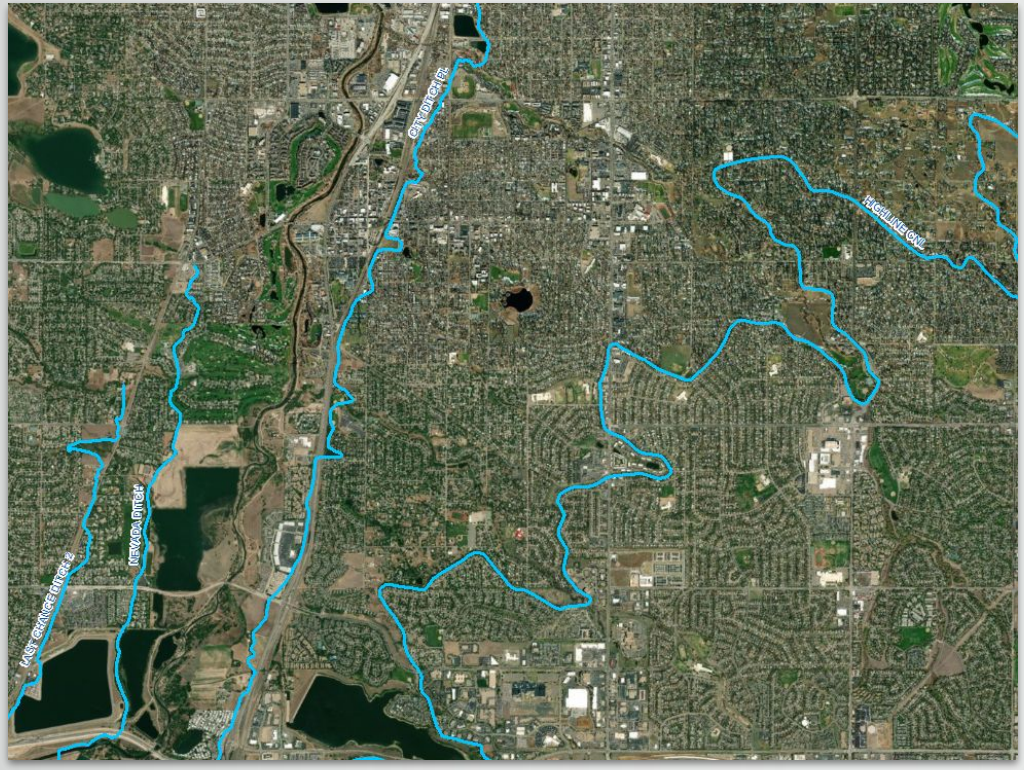
Data Improvements



- NHD Stewards
- Create an accurate statewide coverage of ditches and canals
  - Share your data!
  - alison.keener@state.co.us
- Improve locations of administrative structures

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Thanks!

Join our Mailing List!

cdss.state.co.us

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