

## Interactive Legislative Districts Layers

Updated interactive legislative districts layers for the Drinking Water Tool (2023). Data processed and joined by Ari Libenson, Water Equity Science Shop, UC Berkeley

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**Geodatabase file name:** legislative\_interactive\_final.gdb

Feature class names: congressional\_districts\_113023.gdb; assembly\_districts\_112823.gdb;  
senate\_districts\_112823.gdb

### Spatial Reference

Geographic Coordinate System	NAD 1983	Projected Coordinate System	NAD 1983 (Teale) Albers (Meters)
WKID	4269	Projection	3310
Authority	EPSG	Authority	EPSG
Angular Unit	Degree (0.0174532925199433)	Linear Unit	Meters (1.0)
Prime Meridian	Greenwich (0.0)	False Easting	0.00
Datum	D North American 1983	False Northing	-4000000.0
Spheroid	GRS 1980	Central Meridian	-120.0
Semimajor Axis	6378137.0	Standard Parallel 1	34.0
Semiminor Axis	6356752.314140356	Standard Parallel 2	40.5
Inverse Flattening	298.257222101	Latitude of Origin	0.0

### Description

This geodatabase contains three feature classes with polygons that represent the boundaries of the 80 State Assembly, 40 State Senate, and 52 Congressional Districts in California. Legislative district boundaries were downloaded from the California State Geoportal ([CA.gov](https://www.ca.gov)).<sup>1</sup> To estimate a count of each entity per district, the following fields were spatially joined to the legislative districts: domestic wells locations, Groundwater Sustainability Agencies, public supply well locations, water system boundaries, severely disadvantaged and disadvantaged census places, and drinking water threats.

### Methods

#### Updating legislative district layer attributes

1. Spatially joined water system boundaries<sup>2</sup> to district polygons, using the Intersect argument.
  - a. Created a new field, CWS\_Count, populated with the count of systems per district.
2. Calculated population served by water systems<sup>2</sup> for each district.
  - a. Used geoprocessing tool “make feature layer” and selected the option for “use ratio policy” for population field.
  - b. Intersected layer with district boundaries.
  - c. Dissolved by district ID and calculated sum of population.

3. Spatially joined domestic well points<sup>3</sup> to district polygons, using the Completely Contained argument.
  - a. Created a new field, DomWells, populated with the count of wells per district.
  - b. Selected all domestic wells with completed depth > 0 ft. Used summarize within function to calculate average and standard deviation of completed well depth.
4. Calculated population served by domestic wells<sup>3</sup> for each district.
  - a. Used geoprocessing tool “make feature layer” and selected the option for “use ratio policy” for population field.
  - b. Intersected layer with district boundaries.
  - c. Dissolved by district ID and calculated sum of population.
5. Spatially joined Groundwater Sustainability Agency (GSA) boundaries<sup>4</sup> to district polygons, using the Intersect argument.
  - a. Created a new field, Num\_GSA, populated with the count of GSAs per district.
6. Spatially joined public supply wells<sup>5</sup> to district polygons in ArcGIS Pro, using the Completely Contained argument.
  - a. Created a new field, Num\_MunPub, populated with the sum of wells per district.
7. Calculated number of disadvantaged communities (DAC) and severely disadvantaged communities (SDAC) census designated places<sup>6</sup> in each district.
  - a. Intersected 2021 census designated places and district boundaries.
  - b. Selected by DAC and calculated the count of intersections per district.
  - c. Selected by SDAC and calculated the count of intersections per district.
8. Merged drinking water threat polygons representing superfund sites;<sup>7</sup> military installations, ranges, and training areas;<sup>8</sup> and airports permitted to use aqueous film-forming foam (AFFF)<sup>9</sup> into a single shapefile.
  - a. Removed duplicates, dummy coded polygons based on which dataset (or combination of datasets) it came from.
  - b. We categorized facilities based on site type(s) to avoid overcounting facilities with overlapping polygons. For example if a superfund (SRP) site polygon overlapped with a military (MIRTA) site polygon, this was categorized as 1 facility that was cross-listed as a SRP/MIRTA site. Categories were exclusive, meaning that an SRP/MIRTA facility was not also categorized as SRP and MIRTA.
  - c. Intersected polygons with districts and added the number of each type of facility by district.
9. Spatially joined with point data for the following drinking water threats layers:
  - a. Wastewater treatment facilities,<sup>10</sup> landfills,<sup>10</sup> refineries and terminals,<sup>10</sup> chrome plating facilities,<sup>10</sup> active oil and gas wells,<sup>11</sup> water samples with any PFAS detection and detections exceeding the proposed maximum contaminant level (MCL)<sup>12</sup>
  - b. Used the geoprocessing tool “summarize within” function to count the number of each threat by district.
10. Calculated total pesticide application<sup>13</sup> (pounds) for each district, 2011-2019.
  - a. Used geoprocessing tool “make feature layer” and selected the option for “use ratio policy” for pesticide sum.

- b. Intersected layer with district boundaries.
  - c. Dissolved by district ID and calculated sum of pesticides.
11. Joined district contact information.<sup>14,15</sup>

**Attribute Table 1: Congressional Districts**

Field Heading	Field type	Field Description	Source
OBJECTID_12	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
CongDistri	Text	Congressional District	CA.gov
CongDist_1	Text	Congressional District Identifier	CA.gov
CongAreaSq	Double	District area	Ca.gov
CWS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells (ft)	WESS
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a Congressional District	WESS
Num_MunPub	Float	Count of municipal public supply wells	WESS

Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS
SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS
P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS
SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS
Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS

WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of well water samples with PFAS concentrations above any EPA proposed Maximum Contaminant Level (MCL)	WESS
Excd_DL	Float	Count of well water samples with PFAS concentrations above the detection limit but below any EPA proposed Maximum Contaminant Level (MCL)	WESS
Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
Member	Text	Member name	house.gov
Party	Text	Party affiliation (R)= Republican (D) =Democrat	house.gov
Office Room	Text	Office room number	house.gov
Phone	Text	Member phone number	house.gov
Committee Assignment	Text	Committee that member belongs to	house.gov

**Attribute Table 2: State Assembly Districts**

Field Heading	Field type	Field Description	Source
OBJECTID_1	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
AssemblyDi	Text	Assembly District	CA.gov
Assembly_1	Text	Assembly District Identifier	CA.gov
AssemblyAr	Double	District area	Ca.gov
CWS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells (ft)	WESS
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a State Assembly District	WESS
Num_MunPub	Float	Count of municipal public supply wells	WESS
Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS

SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS
P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS
SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS
Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS
WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of well water samples with PFAS concentrations above any EPA proposed	WESS

		Maximum Contaminant Level (MCL)	
Excd_DL	Float	Count of well water samples with PFAS concentrations above the detection limit but below any EPA proposed Maximum Contaminant Level (MCL)	WESS
Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
Party	Text	Assembly district and party  (R)= Republican  (D) =Democrat	Senate Office of Demographics
Member	Text	Member name	Senate Office of Demographics
Phone	Text	Member phone number	Senate Office of Demographics
Address	Text	District office address	Senate Office of Demographics

**Attribute Table 3: State Senate Districts**

Field Heading	Field type	Field Description	Source
OBJECTID_1	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
SenateDist	Text	Senate District	CA.gov



SenateDi_1	Text	Senate District Identifier	CA.gov
SenateArea	Double	District area	Ca.gov
CWS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells (ft)	WESS
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a State Assembly District	WESS
Num_MunPub	Float	Count of municipal public supply wells	WESS
Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS
SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS

P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS
SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS
Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS
WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of well water samples with PFAS concentrations above any EPA proposed Maximum Contaminant Level (MCL)	WESS
Excd_DL	Float	Count of well water samples with PFAS concentrations above the detection limit but below any EPA proposed Maximum Contaminant Level (MCL)	WESS

Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
Senate Member	Text	Name of the senate member	Senate Office of Demographics
Party	Text	Party affiliation (R) = Republican (D) = Democrat	Senate Office of Demographics
SD Web Page	Text	Hyperlink to senate district website	Senate Office of Demographics
Phone	Text	Phone number of senate member	Senate Office of Demographics

## References

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