

Tulare Lake Basin Data Collaborative

ESRI UC 2019

Tuesday 10 am Room SDCC 29c
Michael Hickey Tulare County GIS

Overview of the TLB GeoDatabase

There is a wealth of GIS data available to study water issues in California. Unfortunately, this data is in a number of “data silos” using different conventions.

Tulare County GIS has tried to collect this data in a single geodatabase, using a consistent set of naming conventions, symbology, etc.

It is time to release this “work in process” so that others may point out imperfections & data gaps. It is hoped that others in our region will participate by becoming “Data Stewards”

Major Issues Encountered:

- Why is data so hard to find?
- How is the data kept current?
- What does the data mean?
- How is the data shared?

Why is data so hard to find?

Data is kept in many SILOS

The screenshot shows the State of California GEOPORTAL website. The header includes the California state logo and the text "State of California GEOPORTAL". Below the header is a navigation bar with buttons for Home, Gallery, Search, Browse, Learning Center, and a Launch Map Viewer button. The main content area is organized into several categories, each with a title and a row of thumbnail images representing different data resources. The categories are: Public Safety (Alquist-Priolo, Fire Threat, Megan's Law, Natural Hazards, Tsunami, Water Quality, Wildlife), Natural Resources (Amador Farmland, Cal-Adapt, CDFW BIOS, CDFW Lands, CDFW MarineBIOS, CSMW WebMapper, DOGG), Education (Assessment Network, Charter Schools, Demographics, Referral Programs, Summer Meal Service), Health (Cardiovascular, Dental Shortage, Health Care in SF, Medical Service, Medically, Professional Shortage, Stroke), and Government. Each thumbnail image shows a map or a data visualization related to the category.

State of California
GEOPORTAL

The California Geoportal provides easy and convenient ways to discover and share geospatial data resources. [Learn more about us >>](#)

[Home](#) [Gallery](#) [Search](#) [Browse](#) [Learning Center](#) [Launch Map Viewer](#)

Public Safety

Alquist-Priolo Fire Threat Megan's Law Natural Hazards Tsunami Water Quality Wildlife

Natural Resources

Amador Farmland Cal-Adapt CDFW BIOS CDFW Lands CDFW MarineBIOS CSMW WebMapper DOGG

Education

Assessment Network Charter Schools Demographics Referral Programs Summer Meal Service


Health

Cardiovascular Dental Shortage Health Care in SF Medical Service Medically Professional Shortage Stroke


Government


Why is data so hard to find?

Data is kept in many SILOS



San Joaquin Valley Gateway

Search by keyword or location 



powered by DATA  BASIN

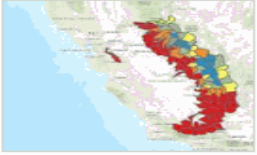
[Get Started](#)[Explore](#)[Create](#)[Workspace](#)

SJV GATEWAY | DATASETS


Datasets

Showing 1 - 18 of 635 Items; Page 1 of 36


Sort by: Creation Date (newest to oldest) ▼ Display:  




San Joaquin Valley - April Snow Pack Loss (percentage, 2040-2069)




San Joaquin Valley - Areas Impacted by Northern Tributaries Proposal



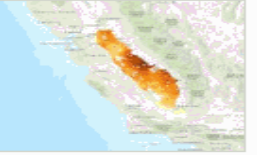
San Joaquin Valley - Areas of Highest GW Overdraft




San Joaquin Valley - Critically Overdrafted Basins



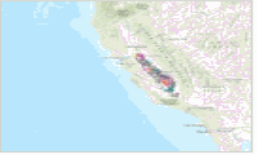
San Joaquin Valley - Urban Growth Since 1984




San Joaquin Valley - Projected increase in Applied Water ...




San Joaquin Valley - Development Threat Level




San Joaquin Valley - Cropland Data Layer (2016)



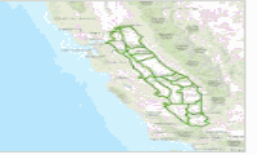
San Joaquin Valley - Urban Areas




San Joaquin Valley - Projected increase in Applied Water (acre ...



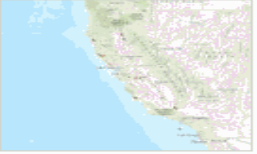
San Joaquin Valley - Applied Water (acre feet)




San Joaquin Valley - C2VSim Planning Areas




San Joaquin Valley - Agricultural Land Quality (Final 2018)




California Conservation Easement Database (CCED)




San Joaquin Valley - Agricultural Land Quality/Water Stress Combination ...



San Joaquin Valley - Agricultural Water Stress (Final 2018)




San Joaquin Valley - Soil Agricultural Groundwater Banking Index ...



San Joaquin Valley - Farmland Mapping and Monitoring Program (FMMP), ...


123456789 next > last >>

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Why is data so hard to find?


Data is kept in many SILOS




All




Trending ▾




Basemaps ▾




Imagery ▾




Boundaries ▾



People ▾



Infrastructure ▾



Environment ▾

Filters:

Layers ▾


All time ▾

United States ▾


☐ Esri-only content

Sort by: Relevance ▾

168 Results




USA Federal Lands


 Imagery Layer By: [esri](#)

This layer displays lands in the United States managed by six federal agencies.

☒ Subscriber ☒ Authoritative

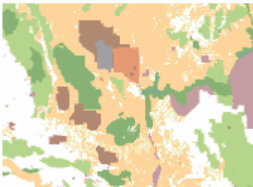


U.S. National Grid


 Map Image Layer By: [Federal_User_Community](#)

This map layer portrays U.S. National Grid data. It provides a nationally consistent grid reference system.

☐ ☐ ☐




USA Generalized Federal Lands


 Map Image Layer By: [esri](#)

Lands owned or administered by the federal government. Derived from the National Map Small Scale, National Atlas of the United States.

☒ Authoritative

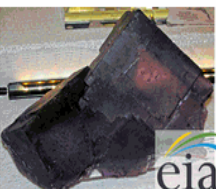


Watershed Boundaries


 Map Image Layer By: [Federal_User_Community](#)

This U.S. Geological Survey (USGS) map layer displays the National Watershed Boundary Dataset (WBD)

☐ ☐ ☐




Shale Gas Plays


 Map Image Layer By: [Federal_User_Community](#)

This map layer, derived from Energy Information Administration data, depicts current shale gas resource areas within the continental U.S.

☐ ☐ ☐



Charted Territory

 Tile Layer By: [esri](#)

This (v2) vector tile layer provides a detailed basemap for the world featuring a geopolitical style reminiscent of a printed atlas plate or a school classroom wall map. This layer is designed for use with shaded relief.

☒ Authoritative

Why is data so hard to find?

Data is kept in many SILOS

The National Map

From Wikipedia, the free encyclopedia

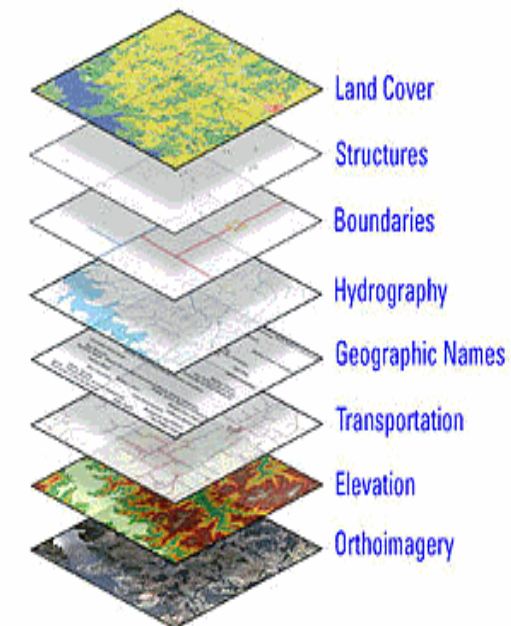
The National Map is a collaborative effort of the [United States Geological Survey](#) (USGS) and other federal, state, and local agencies to improve and deliver [topographic](#) information for the [United States](#).^[1] The purpose of the effort is to provide "...a seamless, continuously maintained set of public domain geographic base information that will serve as a foundation for integrating, sharing, and using other data easily and consistently".^[2]

The *National Map* is part of the USGS [National Geospatial Program](#).^[3] The geographic information available includes [orthoimagery](#) ([aerial photographs](#)), [elevation](#), [geographic names](#), [hydrography](#), boundaries, transportation, structures and land cover. *The National Map* is accessible via the [Web](#), as products and services, and as downloadable data. Its uses range from recreation to scientific analysis to emergency response.^[1]

The *National Map* is a significant contribution to the [National Spatial Data Infrastructure](#) (NSDI) and currently is being transformed to better serve the [geospatial](#) community by providing high quality, integrated geospatial data and improved products and services including new generation digital [topographic maps](#). In addition, the National Map is foundational to implementation of the [U.S. Department of the Interior](#) (DOI) [Geospatial Modernization Blueprint](#).^[1]

The USGS also utilizes data from *The National Map Corps*, which consists of volunteers who devote some of their time to provide [cartographic](#) information on structures.^[4]

The *National Map* is the official replacement for the USGS topographic map program.^[5]



Why is data so hard to find?

Data is kept in many SILOS

TNM Download (V1.0) [How to](#) [Start Over](#) [Custom Views](#) [Share Link](#) [Contact Us](#)

Datasets

[Advanced Search Options](#) [Find Products](#)

Map

☐ US Topo

☐ Historical Topographic Maps


Data

☒ Boundaries - National Boundary Dataset

[Show Preview](#)

[Product Search Filter](#)

[Preview Legend](#)

 [Description](#)

☐ Elevation Products (3DEP)

☐ Elevation Source Data (3DEP) - Lidar, IfSAR

☐ Hydrography (NHDPlus HR, NHD, WBD)

☐ Imagery - NAIP Plus (1 meter to 1 foot)

☐ Map Indices

☐ Names - Geographic Names Information System (GNIS)

☐ Small-scale Datasets

☐ Structures - National Structures Dataset

☐ Topo Map Data and Topo Stylesheet


☐ Transportation

☐ Woodland Tint

☒ Use Map ☐ Box/Point ☒ Current Extent ☐ Coordinates ☐ Located Point ☐ Polygon:

☐ Map Indices ☐ 1 Degree ☐ 15 Minute ☐ 7.5 Minute ☐ All

Address/Place Search location. [Go](#) [Clear](#)



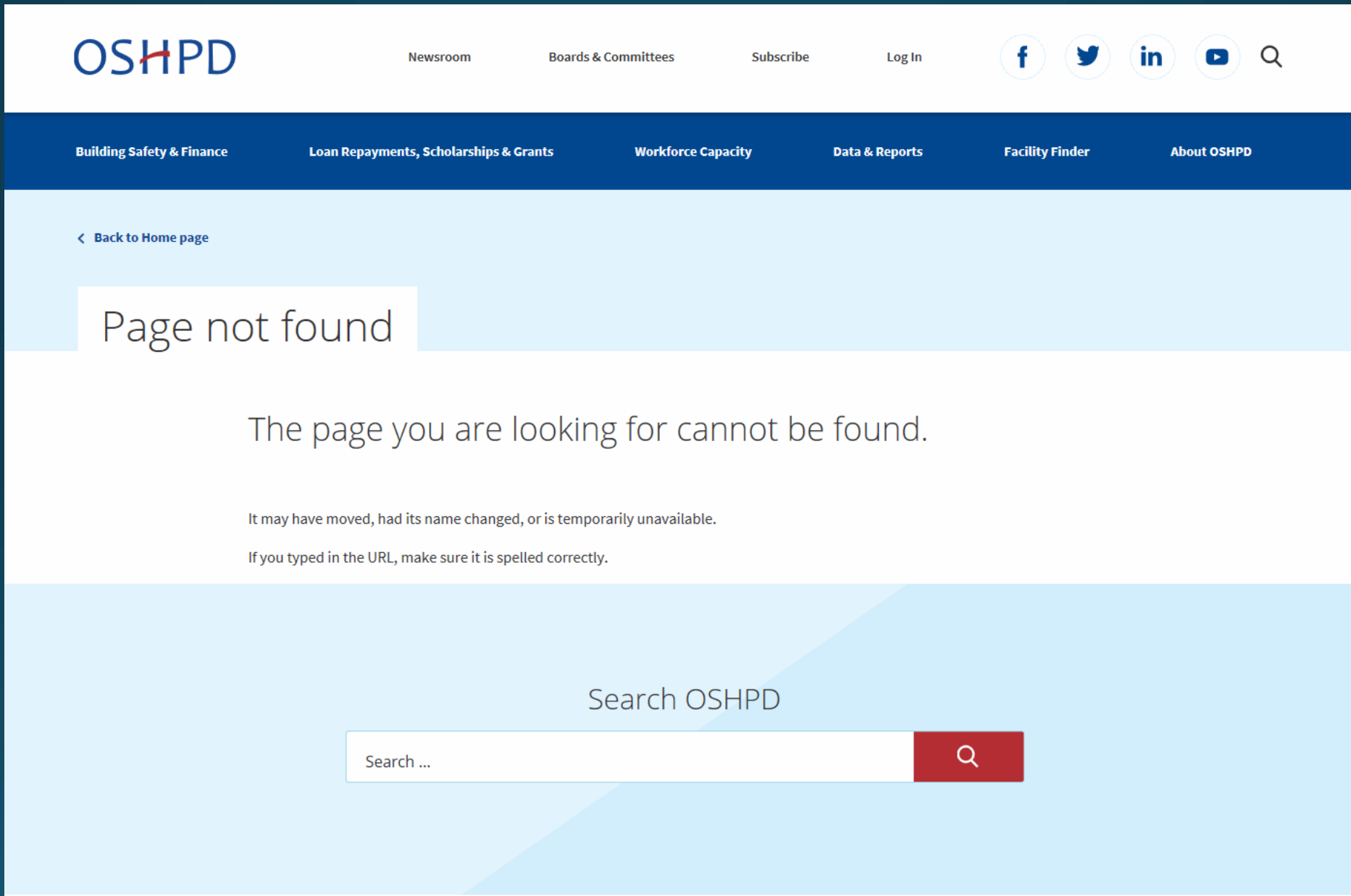
Lat/Lng 45.8370, -63.3105

Leaflet | Powered by Esri | The National Map

[Accessibility](#) [FOIA](#) [Privacy](#) [Policies and Notices](#)

Why is data so hard to find?

Data is kept in many SILOS



Why is data so hard to find?

The Alphabet is a poor organizing concept

STUDENT: “How do spell ‘Sy Kohl Oh Gee’?”

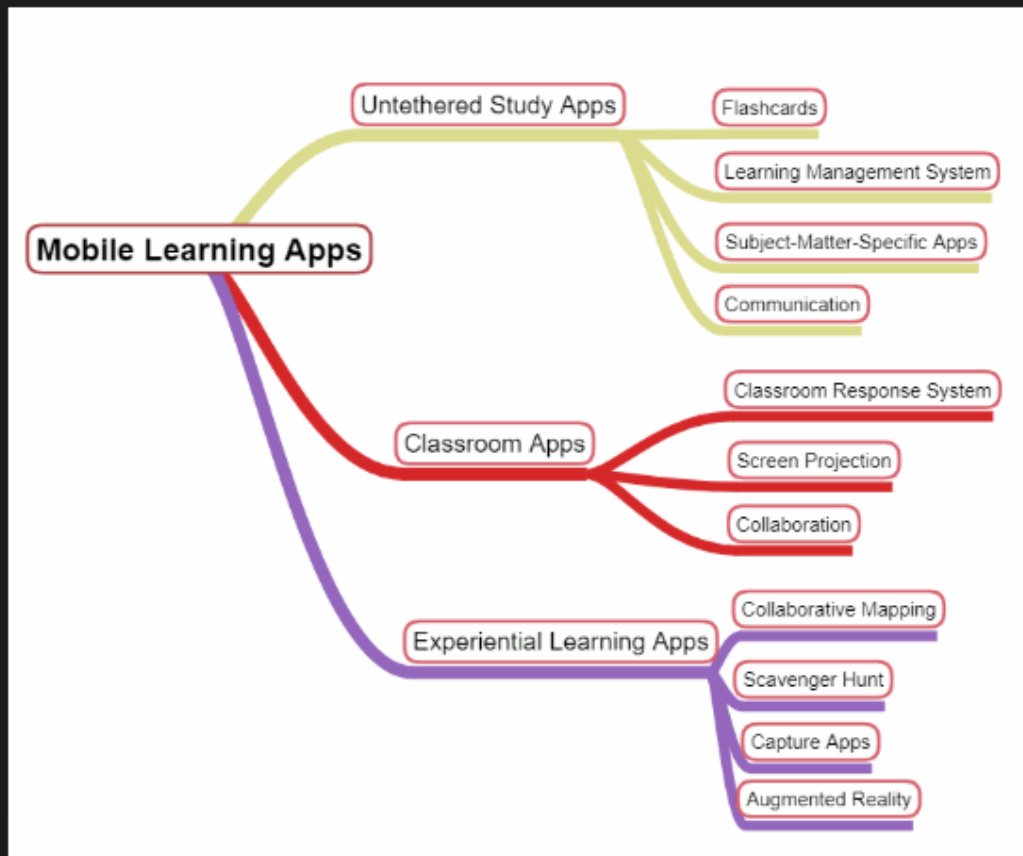
TEACHER: “Sound the word out, and look it up in the dictionary!”

The student will NOT be rewarded for his efforts!

Most data silos lack a coherent TAXONOMY and rely using “keywords” ... But am I looking for STREET, ROAD, HIGHWAY?
(Do you really need to use a thesaurus to search for data?)

Why is data so hard to find?

GIS lacks TAXONOMY



544 × 453 - Images may be subject to copyright. Learn More



tax·on·o·my

/takˈsänəmē/

noun

BIOLOGY

the branch of science concerned with classification, especially of organisms; systematics.

- the classification of something, especially organisms.

"the taxonomy of these fossils"

- a scheme of classification.

plural noun: taxonomies

"a taxonomy of smells"

Taxonomy clusters similar things together.

One way to view TAXONOMY is that it is little more than a consistent set of naming conventions.

TAXONOMY CUBE FOR GIS



NHDPlus High Resolution Availability

Legend:

- NHDPlus HR Beta available (Blue)
- NHDPlus HR Beta in production (Yellow)
- NHDPlus HR Beta production not started (Grey)
- Closed to NHD/WBD stewardship editing (Red outline)
- WBD Hydrologic Regions with 2-digit codes (Blue outline)
- Partial NHDPlus data available upon request (Green)

U.S. Department of the Interior
U.S. Geological Survey

Date updated: 6/11/2019

Surface water drainage areas is the organizing principle.

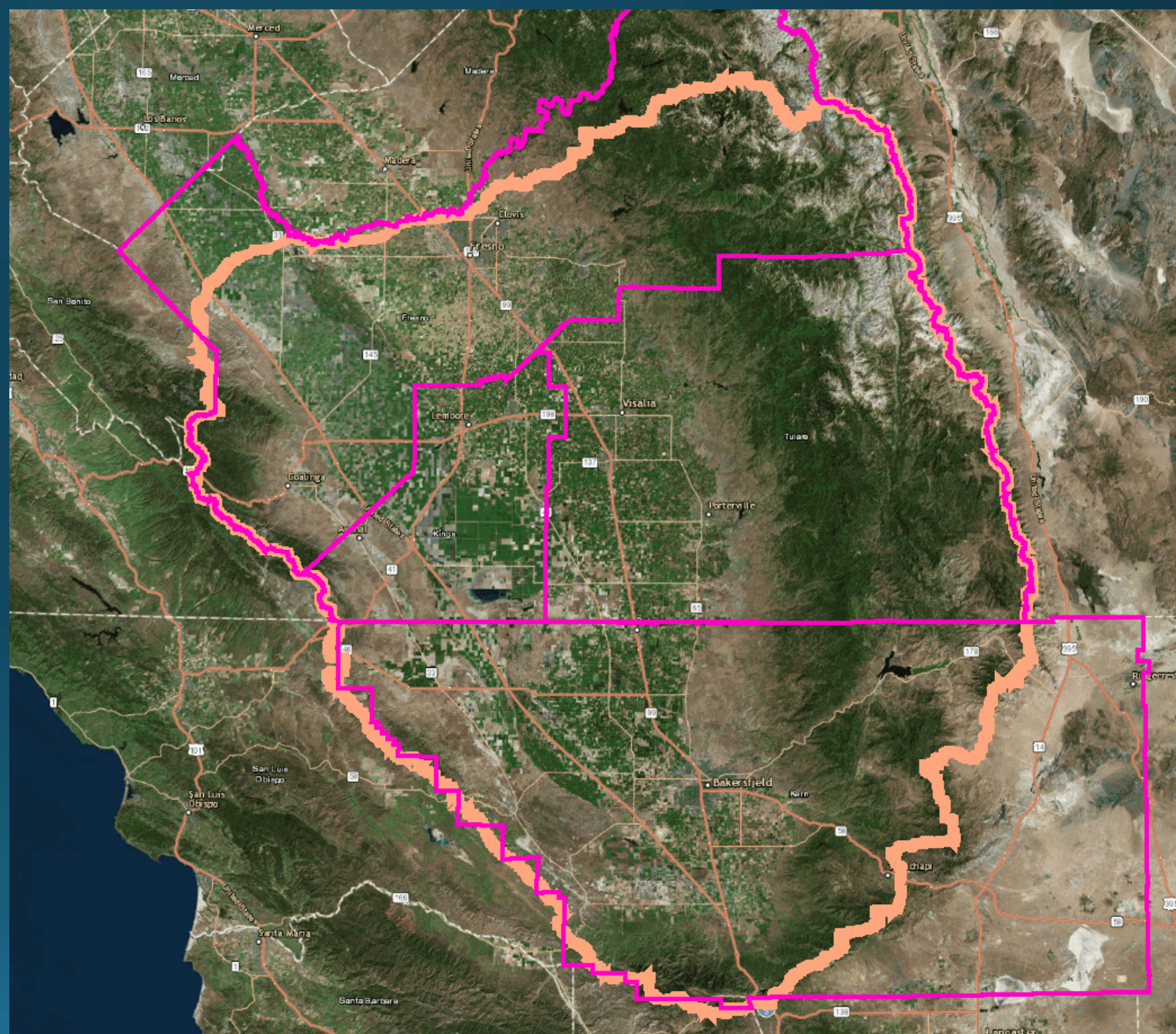
Why is data so hard to find?

The Tulare Lake Basin (TLB) GeoDataBase is a collection of GIS data focusing on the four counties of Fresno, Kern, Kings, and Tulare.

All data is in Web Mercator projection;

follows of consistent set of naming conventions;

and is made available through web services.



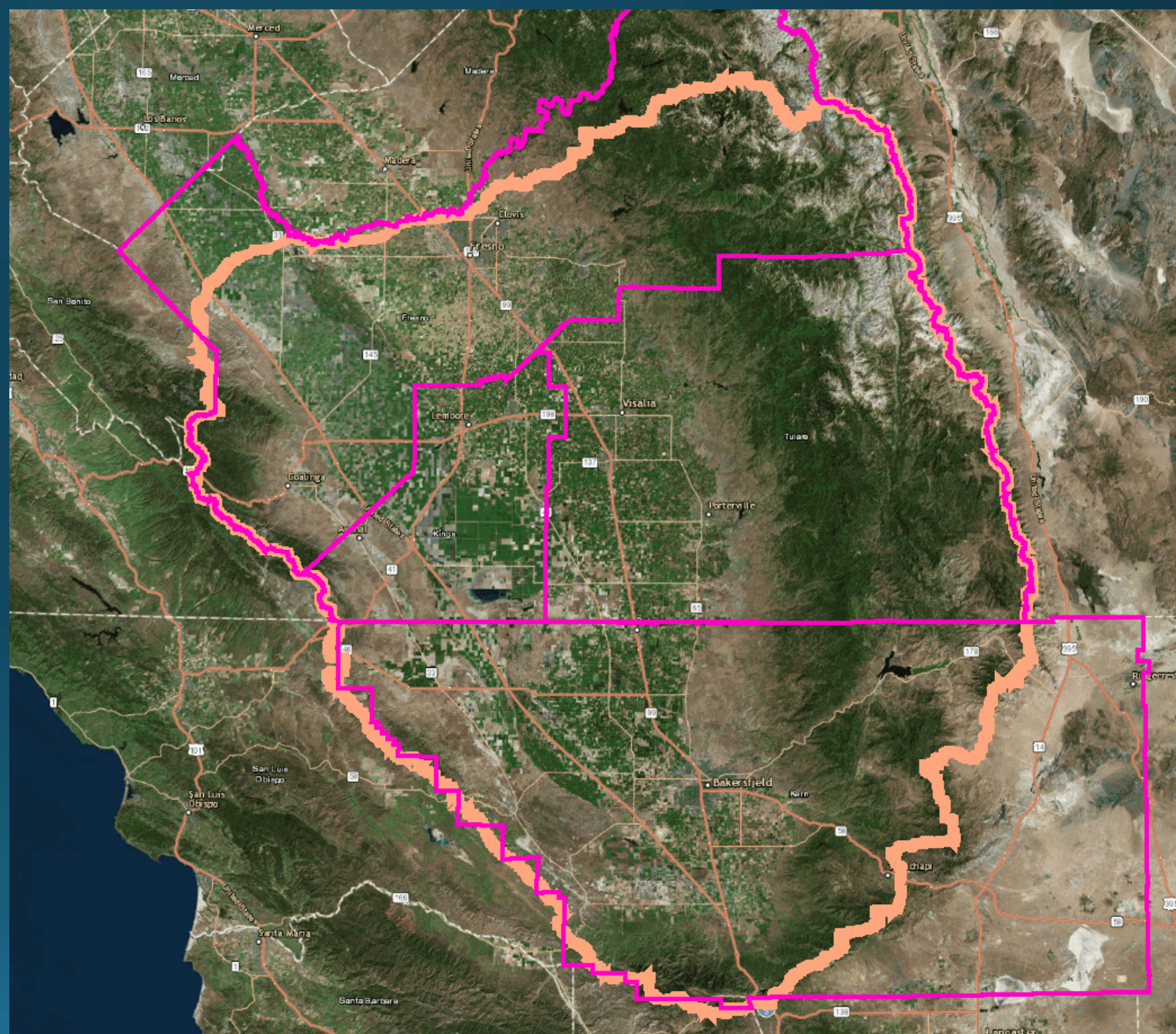
Why Web Mercator?

Most Web Services have standardized on Web Mercator projection.

For a long time my reaction was “UGH!” ... because Mercator data is so distorted.

Some how Web Mercator avoids this problem.

Web Mercator data is
NOT in Decimal Degrees!

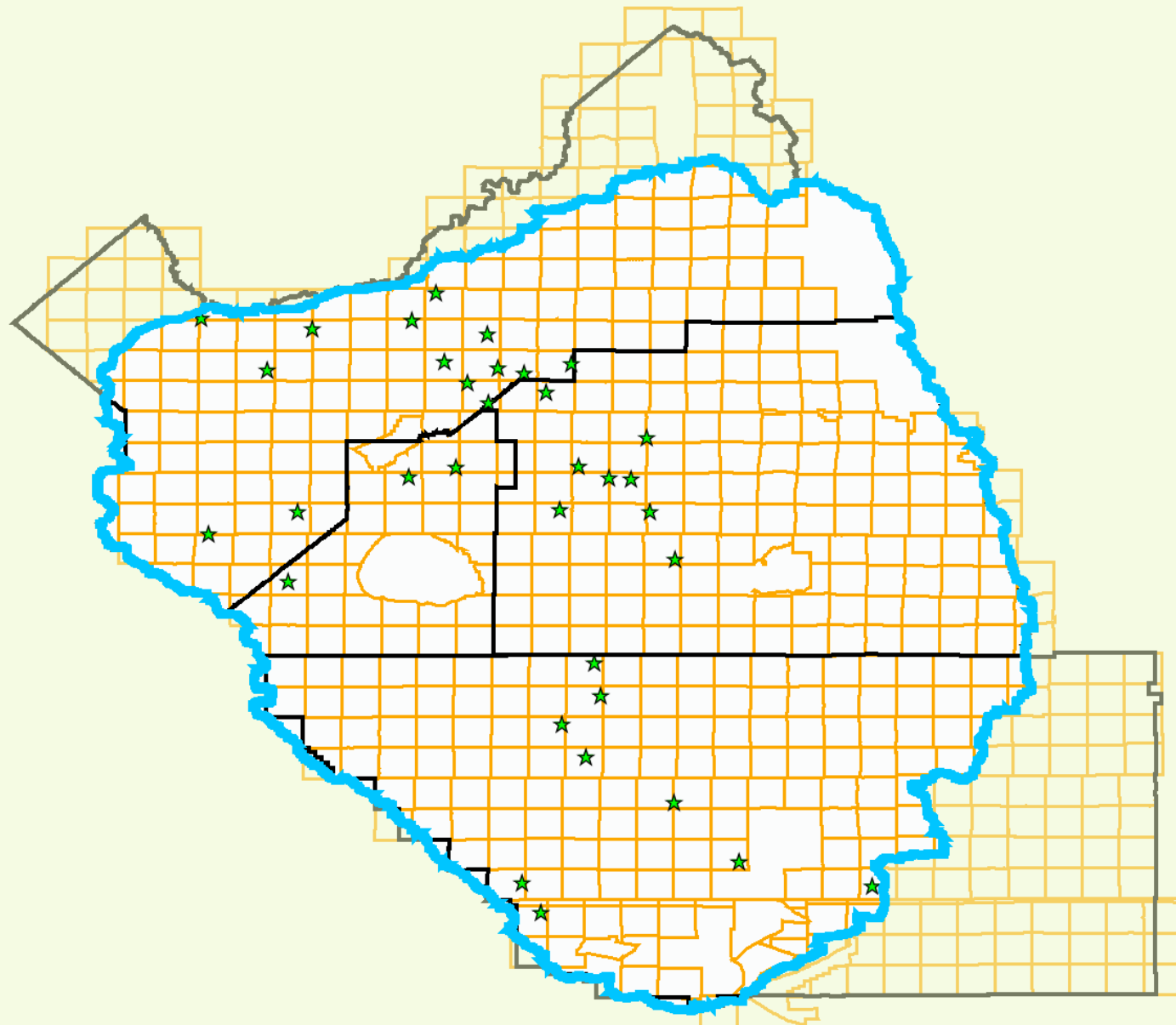
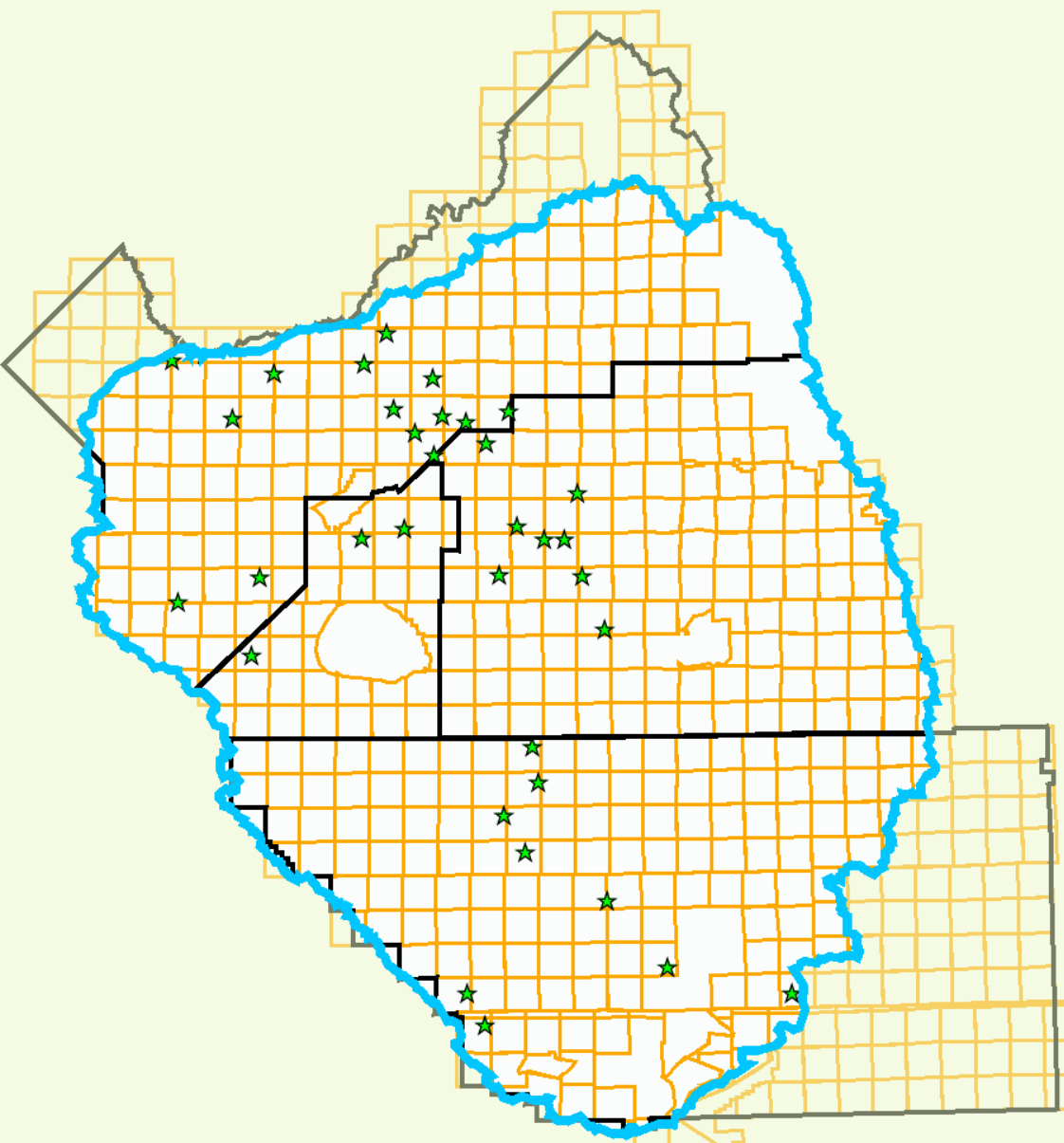


TLB in Teale Albers Projection

- the preferred projection for state-wide data in California -

TLB in Standard Mercator Projection

- GPS data (decimal degrees) is ALWAYS Standard Mercator -



TLB GeoDataBase Taxonomy (shapes / tables / raster)

TLB01 – PLSS Framework

TLB02 – Districts

TLB03 – Topography

TLB04 – Surface Water

TLB05 – Ground Water

TLB06 – Land Cover / Land Use

TLB07 – Demography / Address Points

TLB08 – Transportation

TLB09 – Climate

(and possible additions)

- TLB_EDIT.SDE.TLB01a_TulareLakeBasinFramework
- TLB_EDIT.SDE.TLB01b_PLSS_Fresno
- TLB_EDIT.SDE.TLB01c_PLSS_Kern
- TLB_EDIT.SDE.TLB01d_PLSS_Kings
- TLB_EDIT.SDE.TLB01e_PLSS_Tulare
- TLB_EDIT.SDE.TLB02a_LAFCO_Settlements
- TLB_EDIT.SDE.TLB02b_PlanningPlaces
- TLB_EDIT.SDE.TLB02c_LAFCO_Irrigation
- TLB_EDIT.SDE.TLB02d_CommunityWaterSystems
- TLB_EDIT.SDE.TLB02e_DACs
- TLB_EDIT.SDE.TLB02f_SchoolDistricts
- TLB_EDIT.SDE.TLB02f_SchoolSites_CSCD2016
- TLB_EDIT.SDE.TLB02f_SchoolSites_CSCD2016_Supplemental
- TLB_EDIT.SDE.TLB02g_ElectionDistricts
- TLB_EDIT.SDE.TLB02h_FederalLands
- TLB_EDIT.SDE.TLB02i_OverlayDistricts
- TLB_EDIT.SDE.TLB03a_NEDs_and_Hillshades
- TLB_EDIT.SDE.TLB03b_Soils_SSURGO
- TLB_EDIT.SDE.TLB03c_Geology
- TLB_EDIT.SDE.TLB04a_WaterSheds
- TLB_EDIT.SDE.TLB04b_SurfaceWater_NHD
- TLB_EDIT.SDE.TLB04c_FloodZones
- TLB_EDIT.SDE.TLB05a_Aquifers
- TLB_EDIT.SDE.TLB05a_CorcoranClay
- TLB_EDIT.SDE.TLB05b_WellPnts
- TLB_EDIT.SDE.TLB05b_WellPoints_ReferenceData
- TLB_EDIT.SDE.TLB06b_DevelopmentFootprint
- TLB_EDIT.SDE.TLB06f_GeneralPlans_n_Zoning
- TLB_EDIT.SDE.TLB07a_CensusGeometry_2010
- TLB_EDIT.SDE.TLB07a_CensusGeometry_2017LUCA
- TLB_EDIT.SDE.TLB07c_AddressPoints_RAWdata
- TLB_EDIT.SDE.TLB07d_BuildingFootPrints
- TLB_EDIT.SDE.TLB08a_RoadWays
- TLB_EDIT.SDE.TLB08b_PublicTransit
- TLB_EDIT.SDE.TLB08c_RailRoads
- TLB_EDIT.SDE.TLB08d_Trails_BikeWays
- TLB_EDIT.SDE.TLB08e_OtherTransportation
- TLB_EDIT.SDE.DataDictionary_TLB05b_WellPoints
- TLB_EDIT.SDE.DataDictionary_TLB05c_HazMat
- TLB_EDIT.SDE.DataDictionary_TLB07b_AddressPoints

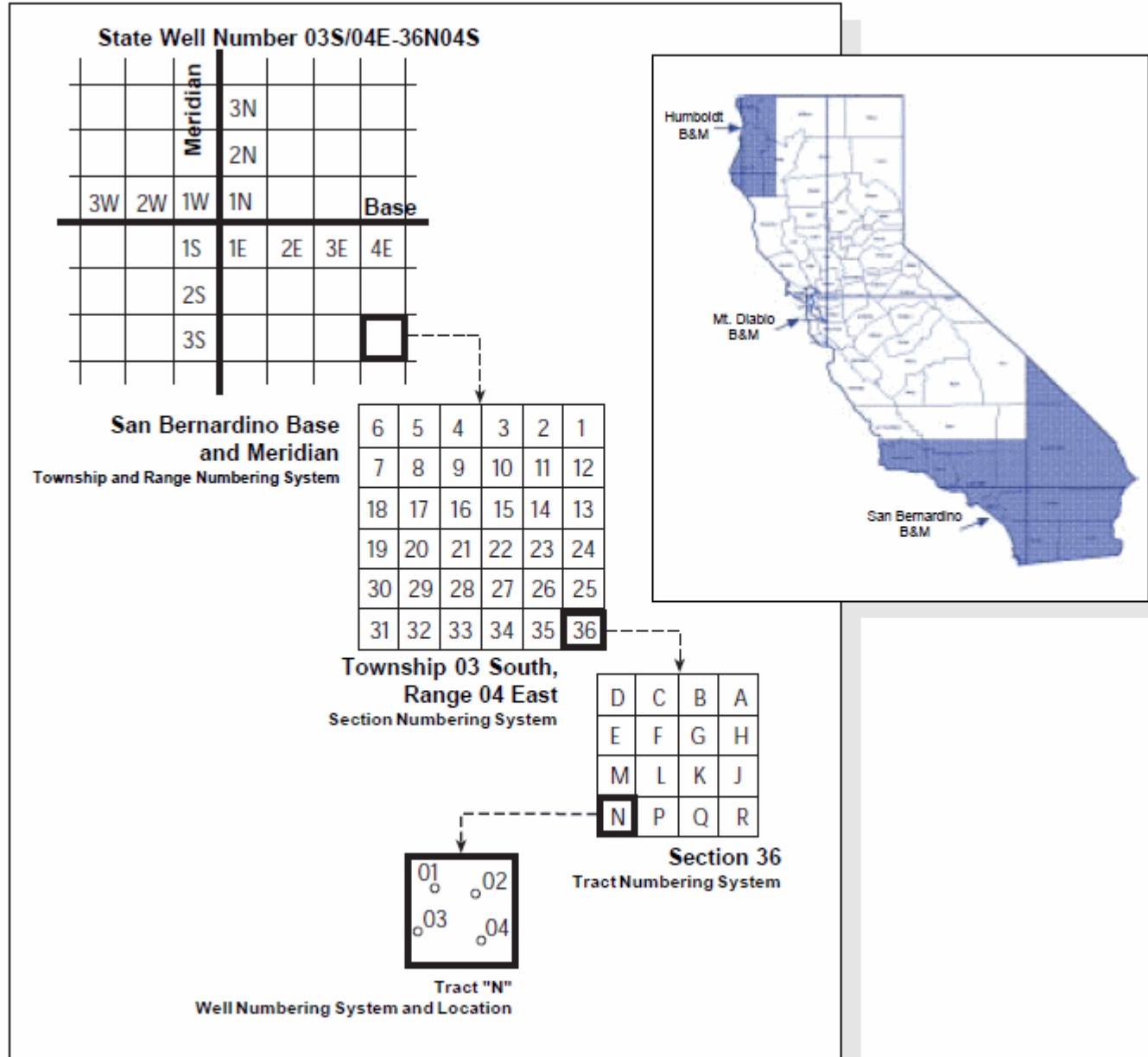
TLB01_Framework

The Public Lands Survey System has been used in all states admitted to the Union after 1800.

Each state has exceptions

In California these exceptions are old Spanish land grants & Indian Reservations

This system is also used as a coding system to locate places, such as wells.



TLB01_Framework

Data Stewards:

PLSS:

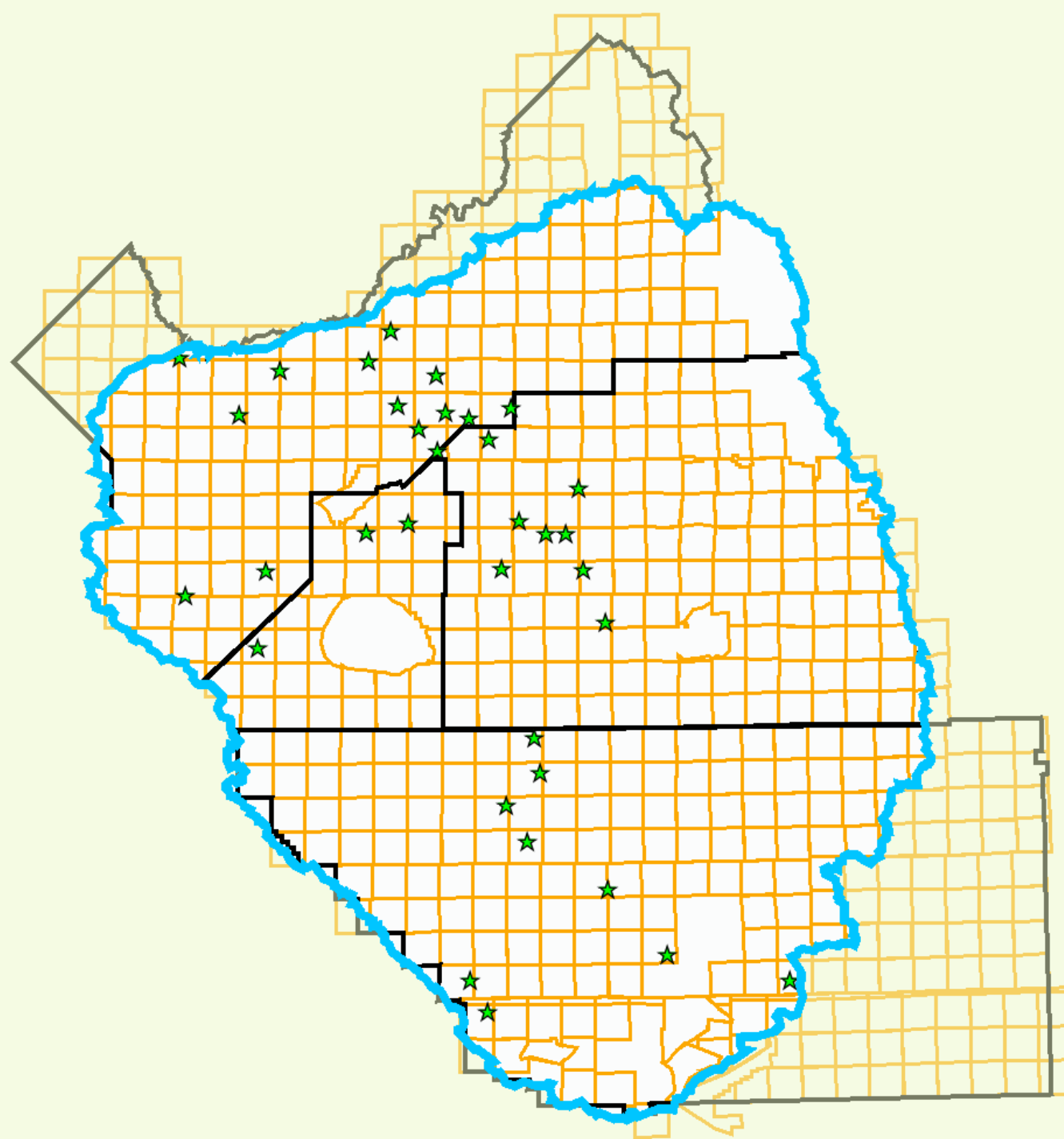
BLM: National PLSS grid
County GIS(s): Fill in gaps

County Boundaries

Each County is on its own
(no state standard)

Parcels

County Assessors/GIS



- ☒ TLB01_PLSS_Framework
 - ☒ TLB_HUC06_TulareLakeBasin
 - ☒ TLB_HUC06_TulareLakeBasin_Mask
 - ☒ TLB_Basin_Cities
 - ☒ TLB_PLSS0_Counties
 - ☒ TLB_PLSS1_Townships
 - ☒ TLB_PLSS2_Sections
 - ☒ TLB_PLSS3_Tracts
 - ☐ TLB_PLSS5_SpecialSurvey
 - (no notes)
 - Exchange Survey
 - Homestead Entry Survey
 - Land Grant
 - Mineral Survey
 - Townsite
 - Tract
 - ☐ TLB_PLSS6_Pnts_USGSraw

TLB01_Framework

All GIS data is flawed, if you look too close...

In time, these inconsistencies will be resolved.

Currently, most PARCELS are drawn from assessor's pages, which were developed without the benefit of valid electronic PLSS data.

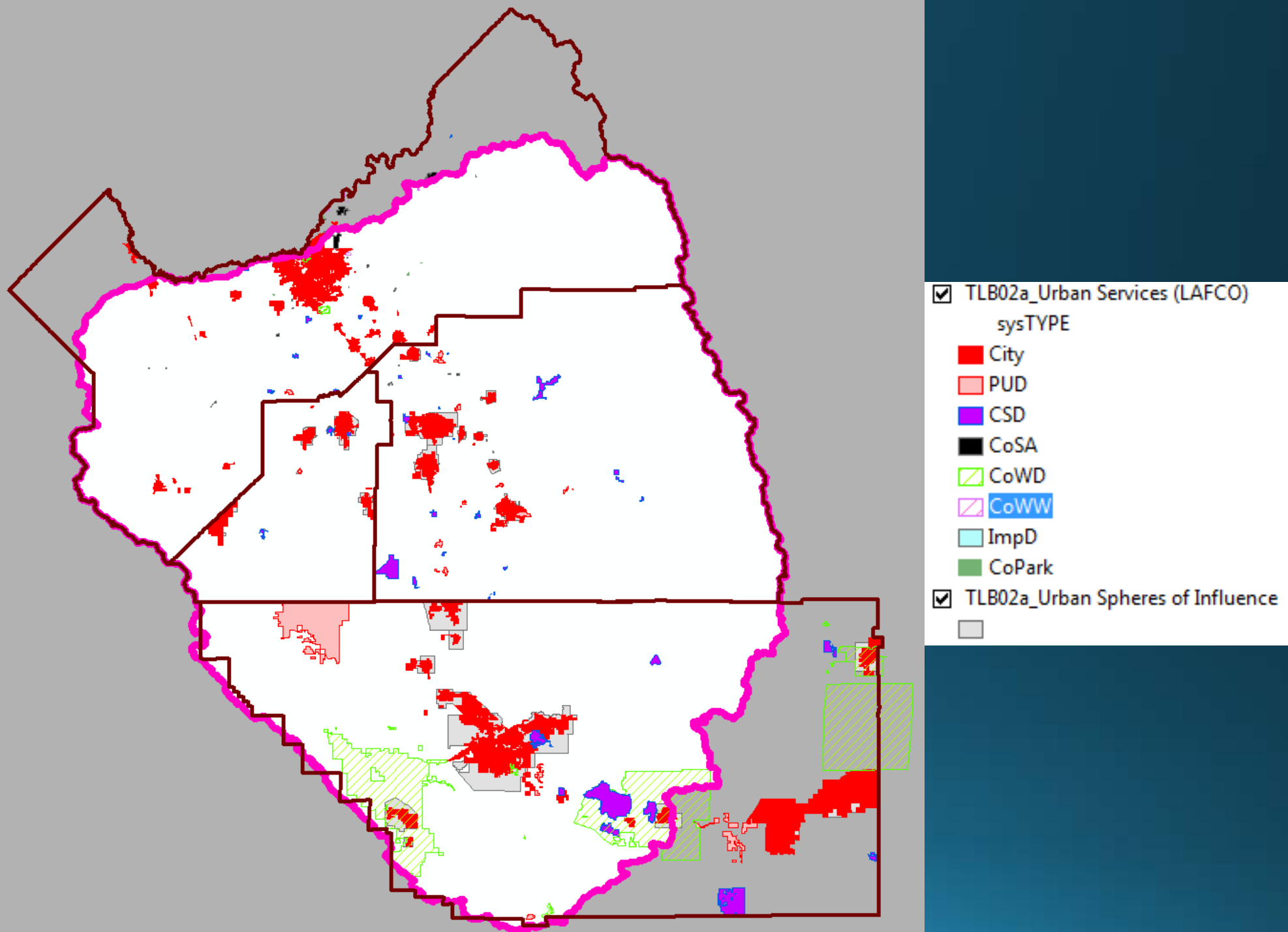


TLB02_Districts

TLB02a_LAFCO Settlements

An assemblage of the boundaries of local governments that provide Urban Services within their district.

County LAFCOs are the Data Stewards of such data.

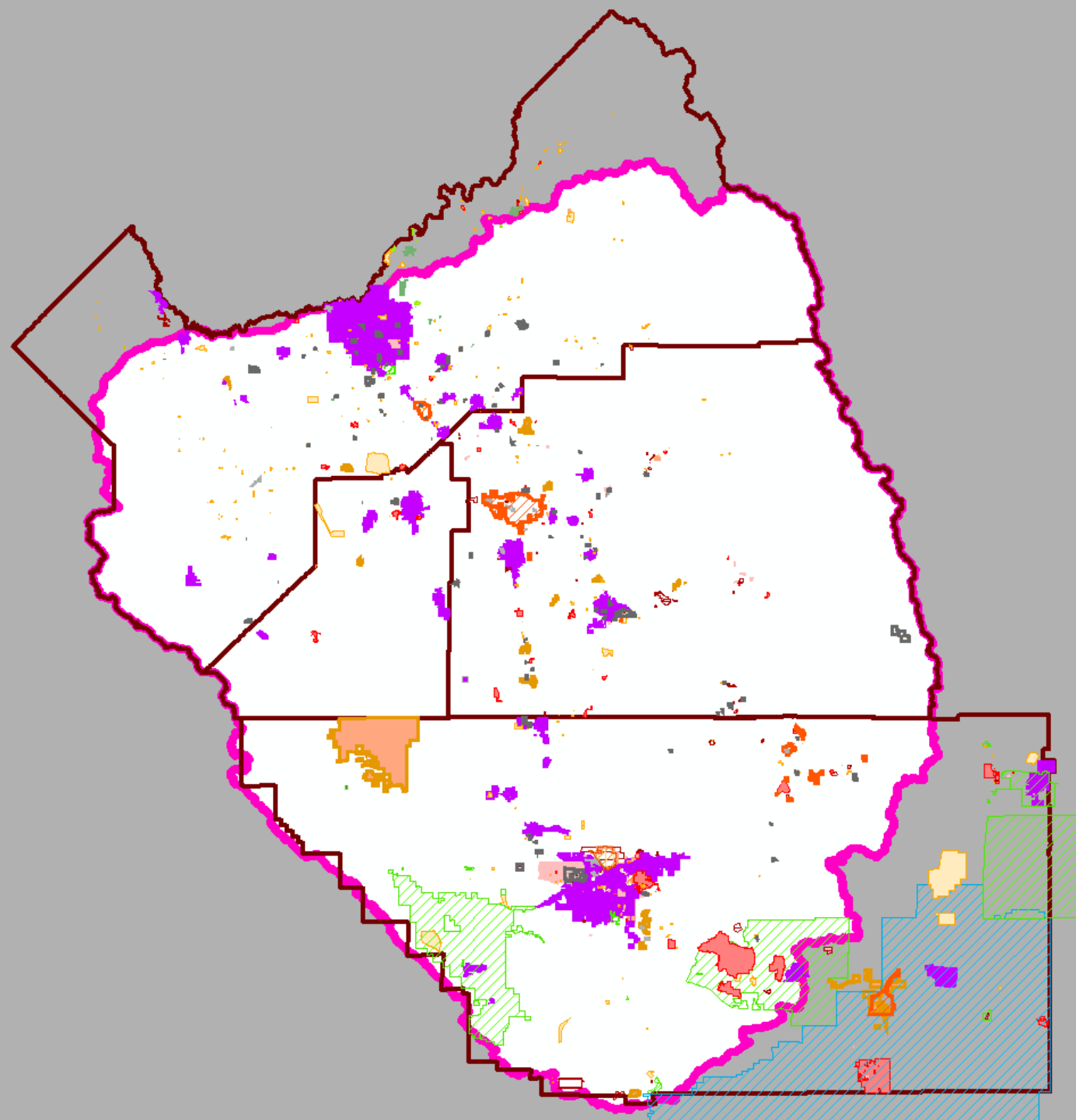


TLB02_Districts

TLB02d_PWS

The “Public Water Systems” layer is an assemblage of agencies that provide drinking water to the population of a designated area.

Some of these agencies of local governments, some are private corporations. These water service agencies are NOT under the jurisdiction of LAFCOs.



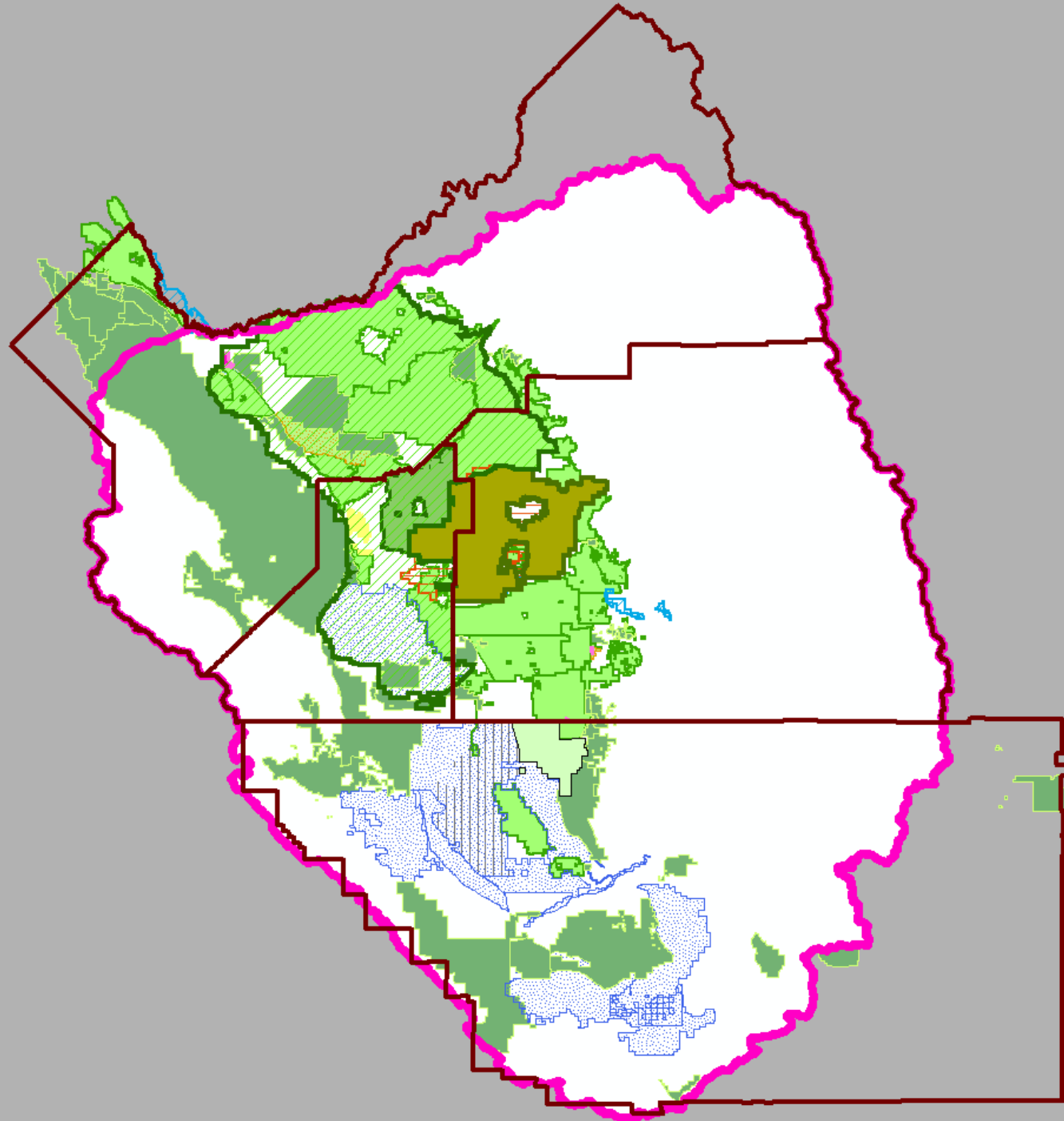
- ☒ TLB02d_DrinkingWaterSystems
 - WaterServiceArea (Incorporated City)
 - Water Authority
 - CountyServiceArea
 - CountyWaterWorks
 - CountyWaterDistrict
 - CalirfWaterServiceCo
 - Municipal WaterDistrict
 - CommunityServiceDistrict
 - PublicUtility District
 - ImprovementDistrict (of some other district)
 - Mutual Water Company
 - PropertyOwnerAssoc
 - Mobile Home Park
 - WaterCompany
 - WaterSystem
 - nonSYSTEM
 - (inactive) CountyWaterWorks
 - (inactive) CalWaterServCo
 - (inactive) PublicUtilityDistrict
 - (inactive) MutualWaterCompany
 - (inactive) MobileHomePark
 - (inactive) WaterCompany
 - (inactive) WaterSystem

TLB02_Districts

TLB02d_Irrigation

An assemblage of the boundaries of local governments that provide Irrigation Water to farmers within their district.

There are also private ditch companies that still operate. If the service areas of these companies are known, they are included in the database.



- ☒ TLBp02c_IrrigationAgencies.lyr
- ☐ ☒ TLB02c_KingsRiverConservationDistrict
- ☐ ☒ TLB02c_KaweahDeltaWaterConservationDistrict
- ☐ ☒ TLB02c_PrivateWaterContractors
- ☐ ☒ TLB02c_IrrigationWaterProviders
- W.D.
- IrrigationDistrict
- Water Storage District
- Ditch Co.
- Ag.Assoc
- DistributionDistrict
- ImprovementDistrict
- Rec.D.
- Co.W.D.
- MunicipalUtilityDistrict
- MutWC (Irr).

TLB03_Topography

Topography is divided into three subsets:

TLB03a ... Surface,
represented by
contour lines, DEMS,
& Lidar data

TLB03b ... Soils
The “Near Surface”

TLB03c ... Geology
The “Deep Surface”

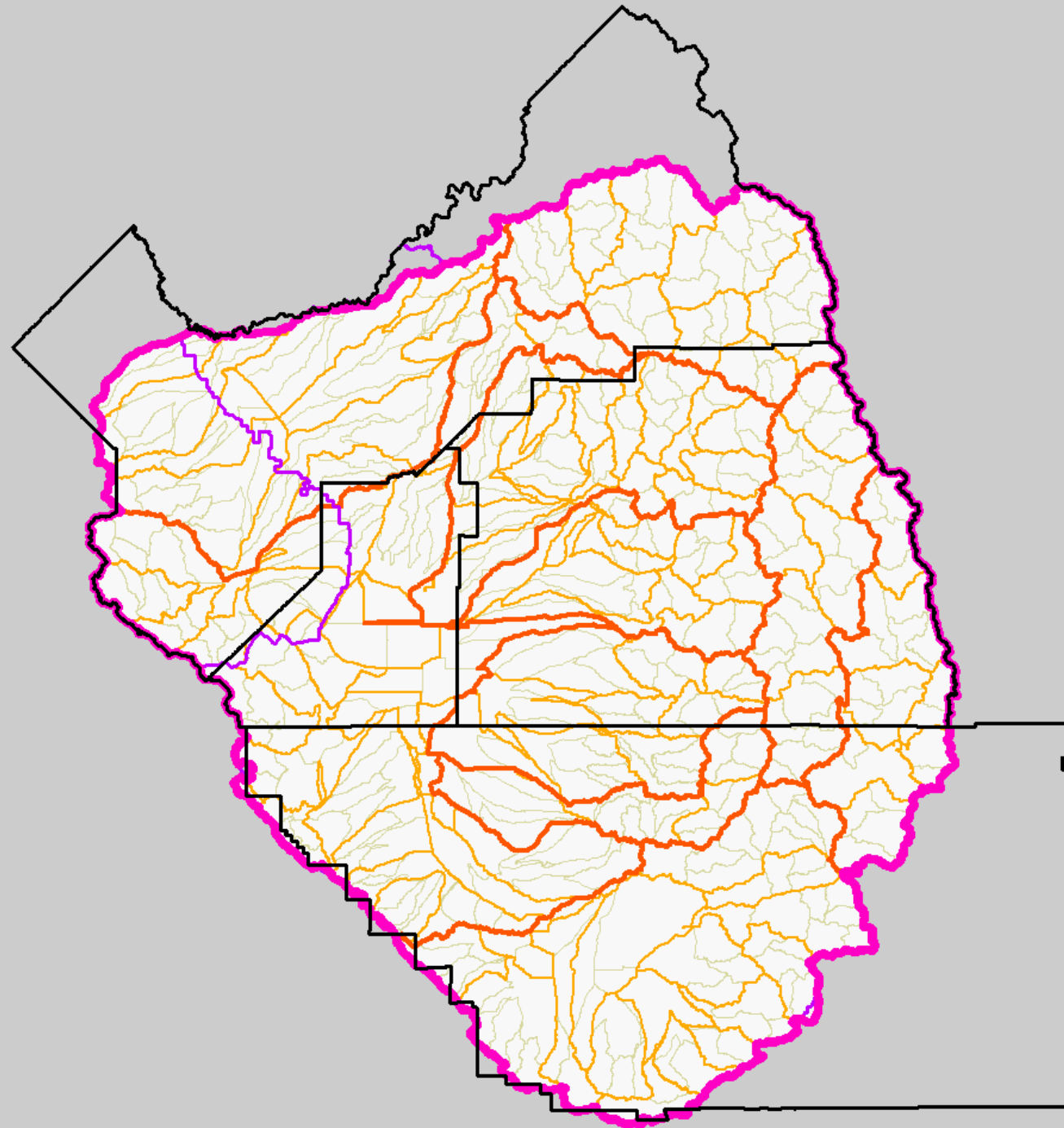


TLB04_Surface Water

TLB04a_Water Shed

The drainage area of each “water reach” is a part of the NHD (National Hydrological Database)

These drainage areas are organized into a hierarchical set of “drainage regions”.

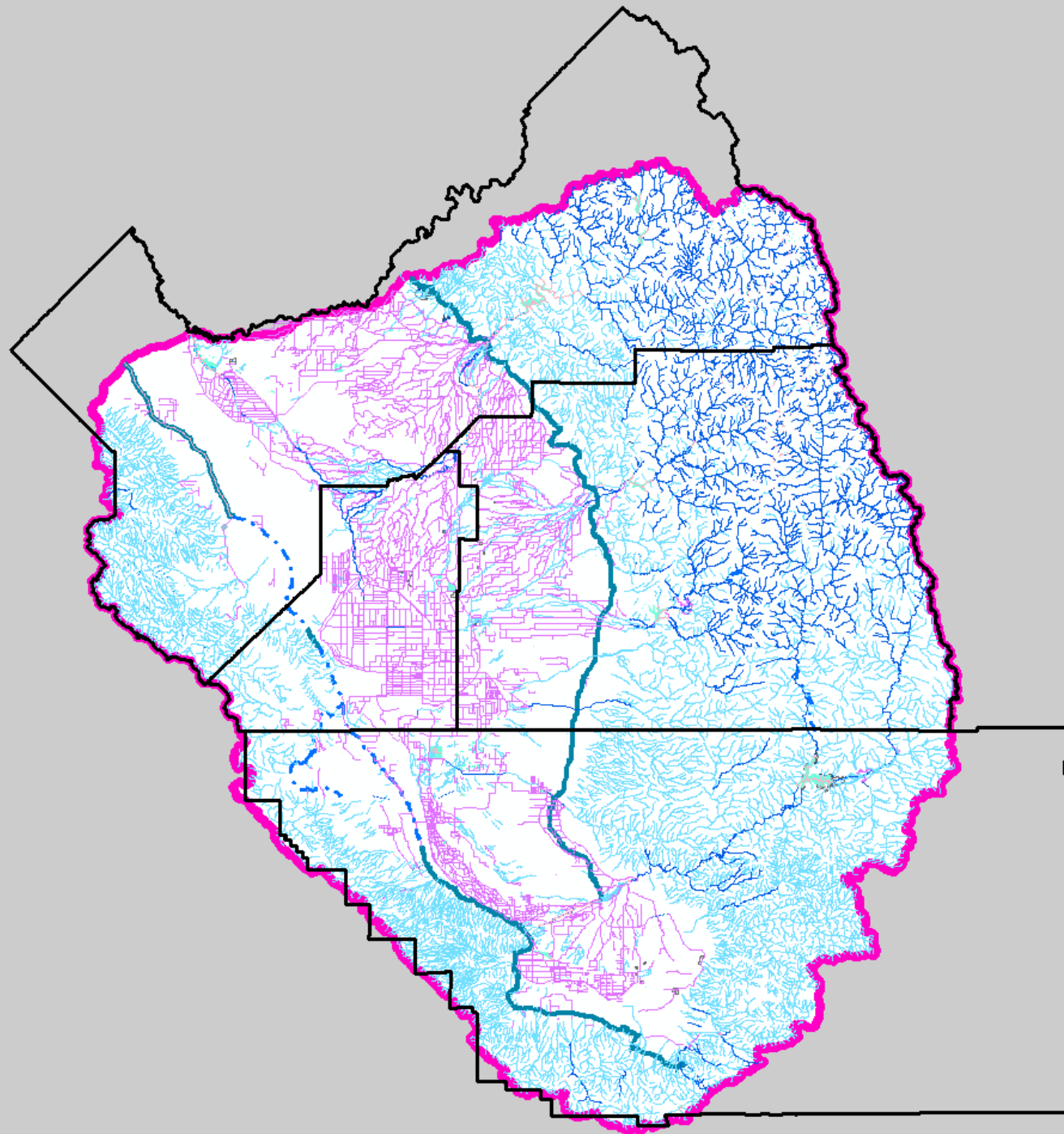


- ☒ TLB04a_Water Sheds
- ☐ ☒ TLB04a_HUC06 (DWR)
 - ☐ HUC06 (dwr)
- ☐ ☒ TLB04a_HUC06 (USGS)
 - ☐
- ☐ ☒ TLB04a_HUC08
 - ☐
- ☐ ☒ TLB04a_HUC10
 - ☐
- ☐ ☒ TLB04a_HUC12
 - ☐

TLB04_Surface
Water

TLB04b_Surface
Water

This is the core of
the NHD

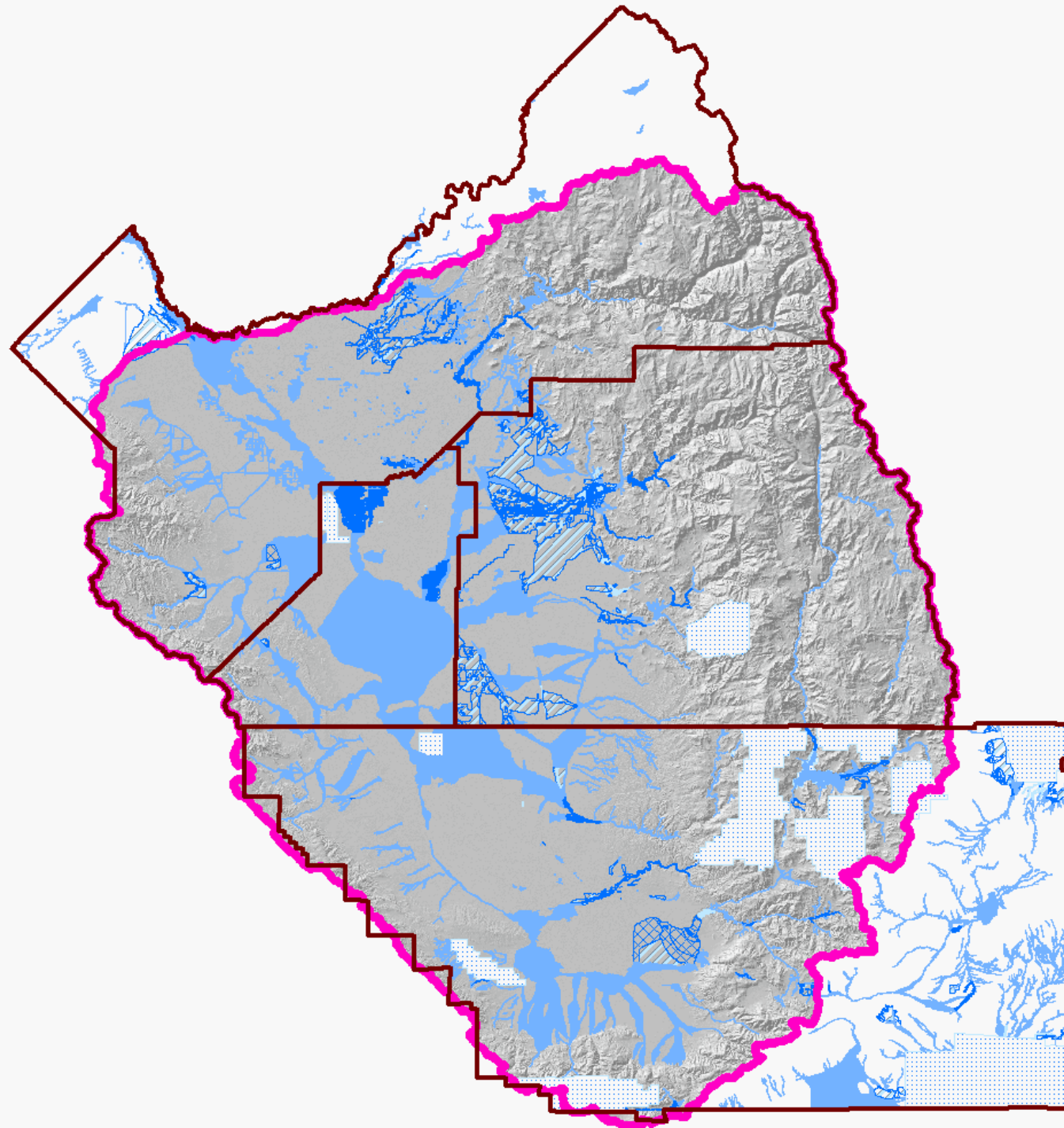


- ☒ TLB04_Surface Water (NHD)
- ☐ ☒ TLB04b_NHD_FlowLines
 - <all other values>
 - 33400: Connector
 - 33600: Canal Ditch
 - 33601: Aquaduct
 - 42801: Aquaduct (pipeline at surface)
 - 42803: Aquaduct (pipeline underground)
 - 42813: Aquaduct (siphon)
 - 46003: Stream (intermittent)
 - 46006: Stream (perennial)
 - 46013: River (intermittent)
 - 55800: Artificial Path
- ☐ ☒ TLB04b_NHD_WaterAreas
 - 33600: Irrigation Ditch
 - 33601: Acquaduct
 - ▨ 40307: Inundation Area (uncontrolled)
 - ▨ 40308: Inundation Area (controlled)
 - 46003: Rivers (Intermittent)
 - 46006: Rivers (Perennial)
 - 48400: Wash
- ☐ ☒ TLB04b_NHD_WaterBodies
 - 37800: Ice Mass
 - 39001: Pond (Intermittent)
 - 39004: Lake/Pond (Perennial)
 - 39009: Lake/Reservoir (Perennial)
 - 39010: Reservoir (Perennial)
 - 43600: Reservoir
 - 43606: Reservoir - Disposal
 - 43624: Waste Water Treatment Pond
 - 46600: Swamp/Marsh

TLB04_Surface Water

TLB04c_FEMA Flood Zones

An evaluation of the
“flood risk” of all lands
in the USA...



- ☒ TLB.SDE.TLB04c_FEMA_Flood_Zones
- Representation: TLB.SDE.TLB04d_FEMA_Flood_Z
- AE: Base Flood Plain (with Flood Elevations Calculated)
 - A: 1% Annual Flood Zone (25% over 30 yrs)
 - AH: Shallow (<3ft) Flood Plain (1% Annual)
 - ▨ AO: River/Stream Shallow (<3ft) flood ZONE
 - ▨ X1: 0.2% Annual Flood Risk
 - ▤ D: Undetermined Flood Risk
 - X Outside of 500 yr Flood Zones

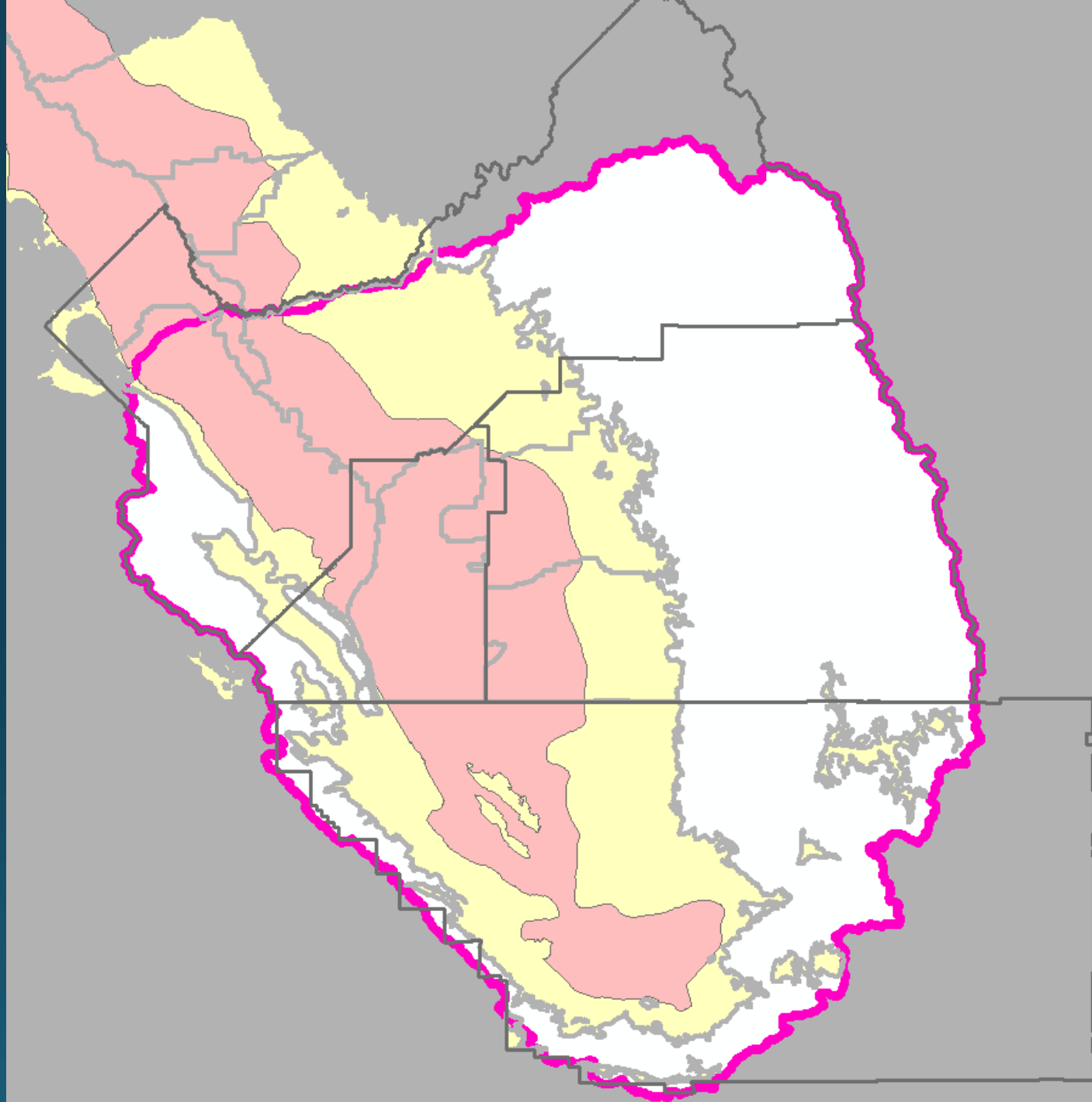
TLB05_Ground Water

TLB05a_Aquifers

The San Joaquin Valley Aquifer is divided into a number of sub basins (based on surface water sources).

The SJV Aquifer can also be divided into four regions:

- * West of Corcoran Clay
- * Above Corcoran Clay
- * Below Corcoran Clay
- * East of Corcoran Clay



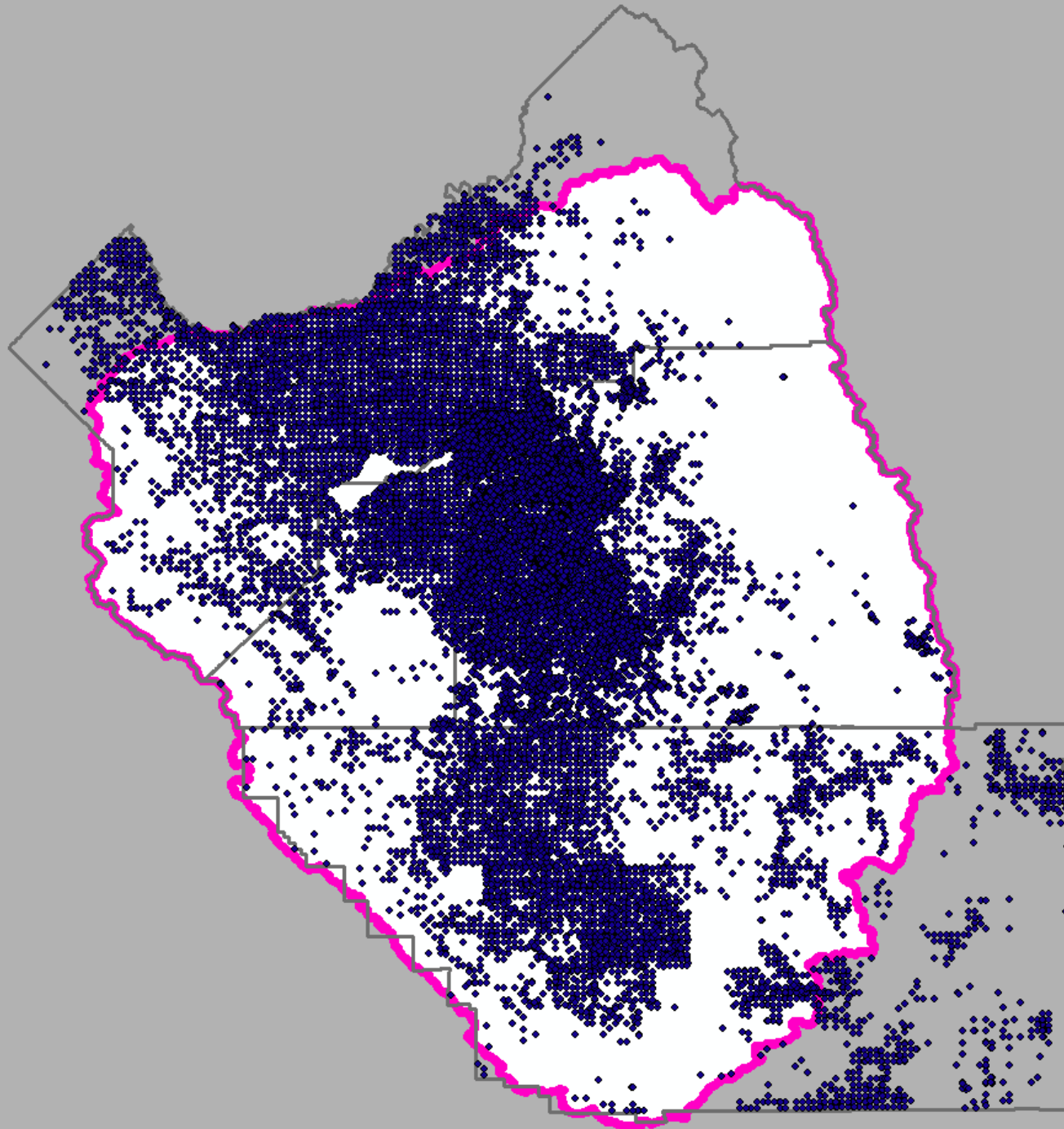
- ☒ TLB05a_Aquifers
- ☐ ☒ TLB05a_Corcoran Clay
- ☐ ☒ TLB05a_GroundWaterBasins_DWR B118SJ

TLB05_Ground Water

TLB05b_Wells

There are 78242 wells with unique WCR_ID (1970-2015), with each well linked to a single Well Log image. This is the “low hanging fruit”.

There are thousands of other wells that are more confusing, and will take effort to sort out, and include in the Master DataBase...



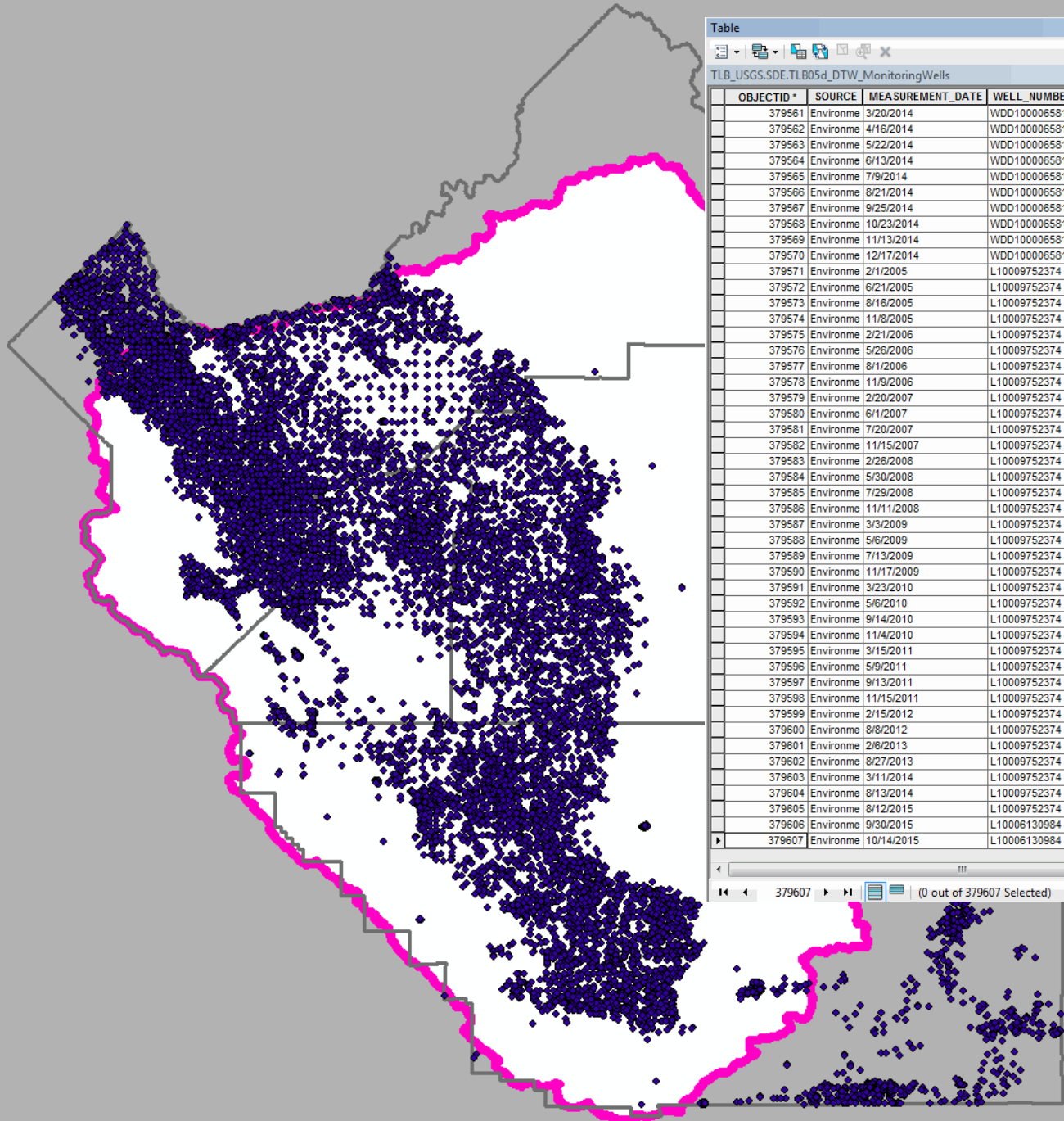
ESRI UC2019
Thur 10 am Rm 29c
Well Editing Web Tool

TLB05_Ground Water

TLB05d_Water Supply

Water Supply in the SJV Aquifer is calculated from the volume of “wet aquifer”. Knowing the “depth to groundwater” is a critical variable...

For the TLB, the “old” DWR DataBase had 15290 DTW monitoring wells with 319607 samples (1917-2015). These monitoring wells not linked to Well Logs.



| TLB_USGS.SDE.TLB05d_DTW_MonitoringWells | | | | | | | | | |
|---|-----------|------------------|----------------|----------------|--------------|----------|------------|--------|---|
| OBJECTID * | SOURCE | MEASUREMENT_DATE | WELL_NUMBER | DEPTH_TO_WATER | GW_ELEVATION | LATITUDE | LONGITUDE | County | |
| 379561 | Environme | 3/20/2014 | WDD100006581 - | 73.84 | 194.7 | 36.4783 | -119.63879 | Fresno | - |
| 379562 | Environme | 4/16/2014 | WDD100006581 - | 74.6 | 193.94 | 36.4783 | -119.63879 | Fresno | - |
| 379563 | Environme | 5/22/2014 | WDD100006581 - | 77.03 | 191.51 | 36.4783 | -119.63879 | Fresno | - |
| 379564 | Environme | 6/13/2014 | WDD100006581 - | 78.41 | 190.13 | 36.4783 | -119.63879 | Fresno | - |
| 379565 | Environme | 7/9/2014 | WDD100006581 - | 81.63 | 186.91 | 36.4783 | -119.63879 | Fresno | - |
| 379566 | Environme | 8/21/2014 | WDD100006581 - | 83.16 | 185.38 | 36.4783 | -119.63879 | Fresno | - |
| 379567 | Environme | 9/25/2014 | WDD100006581 - | 83.3 | 185.24 | 36.4783 | -119.63879 | Fresno | - |
| 379568 | Environme | 10/23/2014 | WDD100006581 - | 83.29 | 185.25 | 36.4783 | -119.63879 | Fresno | - |
| 379569 | Environme | 11/13/2014 | WDD100006581 - | 84.41 | 184.13 | 36.4783 | -119.63879 | Fresno | - |
| 379570 | Environme | 12/17/2014 | WDD100006581 - | 84.29 | 184.25 | 36.4783 | -119.63879 | Fresno | - |
| 379571 | Environme | 2/1/2005 | L10009752374 - | 31.76 | 695.2 | 35.52908 | -118.92896 | Kern | - |
| 379572 | Environme | 6/21/2005 | L10009752374 - | 32.25 | 694.71 | 35.52908 | -118.92896 | Kern | - |
| 379573 | Environme | 8/16/2005 | L10009752374 - | 32.36 | 694.6 | 35.52908 | -118.92896 | Kern | - |
| 379574 | Environme | 11/8/2005 | L10009752374 - | 32.31 | 694.65 | 35.52908 | -118.92896 | Kern | - |
| 379575 | Environme | 2/21/2006 | L10009752374 - | 32.12 | 694.84 | 35.52908 | -118.92896 | Kern | - |
| 379576 | Environme | 5/26/2006 | L10009752374 - | 31.92 | 695.04 | 35.52908 | -118.92896 | Kern | - |
| 379577 | Environme | 8/1/2006 | L10009752374 - | 32.04 | 694.92 | 35.52908 | -118.92896 | Kern | - |
| 379578 | Environme | 11/9/2006 | L10009752374 - | 32.41 | 694.55 | 35.52908 | -118.92896 | Kern | - |
| 379579 | Environme | 2/20/2007 | L10009752374 - | 32.25 | 694.71 | 35.52908 | -118.92896 | Kern | - |
| 379580 | Environme | 6/1/2007 | L10009752374 - | 32.26 | 694.7 | 35.52908 | -118.92896 | Kern | - |
| 379581 | Environme | 7/20/2007 | L10009752374 - | 32.3 | 694.66 | 35.52908 | -118.92896 | Kern | - |
| 379582 | Environme | 11/15/2007 | L10009752374 - | 32.45 | 694.51 | 35.52908 | -118.92896 | Kern | - |
| 379583 | Environme | 2/26/2008 | L10009752374 - | 31.65 | 695.31 | 35.52908 | -118.92896 | Kern | - |
| 379584 | Environme | 5/30/2008 | L10009752374 - | 32.24 | 694.72 | 35.52908 | -118.92896 | Kern | - |
| 379585 | Environme | 7/29/2008 | L10009752374 - | 32.45 | 694.51 | 35.52908 | -118.92896 | Kern | - |
| 379586 | Environme | 11/11/2008 | L10009752374 - | 32.44 | 694.52 | 35.52908 | -118.92896 | Kern | - |
| 379587 | Environme | 3/3/2009 | L10009752374 - | 32.13 | 694.83 | 35.52908 | -118.92896 | Kern | - |
| 379588 | Environme | 5/6/2009 | L10009752374 - | 32.24 | 694.72 | 35.52908 | -118.92896 | Kern | - |
| 379589 | Environme | 7/13/2009 | L10009752374 - | 32.41 | 694.55 | 35.52908 | -118.92896 | Kern | - |
| 379590 | Environme | 11/17/2009 | L10009752374 - | 32.53 | 694.43 | 35.52908 | -118.92896 | Kern | - |
| 379591 | Environme | 3/23/2010 | L10009752374 - | 32.15 | 694.81 | 35.52908 | -118.92896 | Kern | - |
| 379592 | Environme | 5/6/2010 | L10009752374 - | 31.51 | 695.45 | 35.52908 | -118.92896 | Kern | - |
| 379593 | Environme | 9/14/2010 | L10009752374 - | 32.35 | 694.61 | 35.52908 | -118.92896 | Kern | - |
| 379594 | Environme | 11/4/2010 | L10009752374 - | 32.38 | 694.58 | 35.52908 | -118.92896 | Kern | - |
| 379595 | Environme | 3/15/2011 | L10009752374 - | 31.58 | 695.38 | 35.52908 | -118.92896 | Kern | - |
| 379596 | Environme | 5/9/2011 | L10009752374 - | 32.22 | 694.74 | 35.52908 | -118.92896 | Kern | - |
| 379597 | Environme | 9/13/2011 | L10009752374 - | 32.2 | 694.76 | 35.52908 | -118.92896 | Kern | - |
| 379598 | Environme | 11/15/2011 | L10009752374 - | 32.25 | 694.71 | 35.52908 | -118.92896 | Kern | - |
| 379599 | Environme | 2/15/2012 | L10009752374 - | 32.36 | 694.6 | 35.52908 | -118.92896 | Kern | - |
| 379600 | Environme | 8/8/2012 | L10009752374 - | 32.23 | 694.73 | 35.52908 | -118.92896 | Kern | - |
| 379601 | Environme | 2/6/2013 | L10009752374 - | 32.2 | 694.76 | 35.52908 | -118.92896 | Kern | - |
| 379602 | Environme | 8/27/2013 | L10009752374 - | 32.39 | 694.57 | 35.52908 | -118.92896 | Kern | - |
| 379603 | Environme | 3/11/2014 | L10009752374 - | 32.55 | 694.41 | 35.52908 | -118.92896 | Kern | - |
| 379604 | Environme | 8/13/2014 | L10009752374 - | 32.62 | 694.34 | 35.52908 | -118.92896 | Kern | - |
| 379605 | Environme | 8/12/2015 | L10009752374 - | 32.61 | 694.35 | 35.52908 | -118.92896 | Kern | - |
| 379606 | Environme | 9/30/2015 | L10006130984 - | 68.3 | 256.293 | 36.59777 | -119.56139 | Fresno | - |
| 379607 | Environme | 10/14/2015 | L10006130984 - | 68.54 | 256.053 | 36.59777 | -119.56139 | Fresno | - |

TLB05_Ground Water

TLB05d_Water Supply

Water Supply in the SJV Aquifer is calculated from the volume of “wet aquifer”. Knowing the “depth to groundwater” is a critical variable...

Creating a continuous ‘surface’ of Ground Water Levels by Kriging monitored data. This allowed a time series (1948-2008) to be developed.



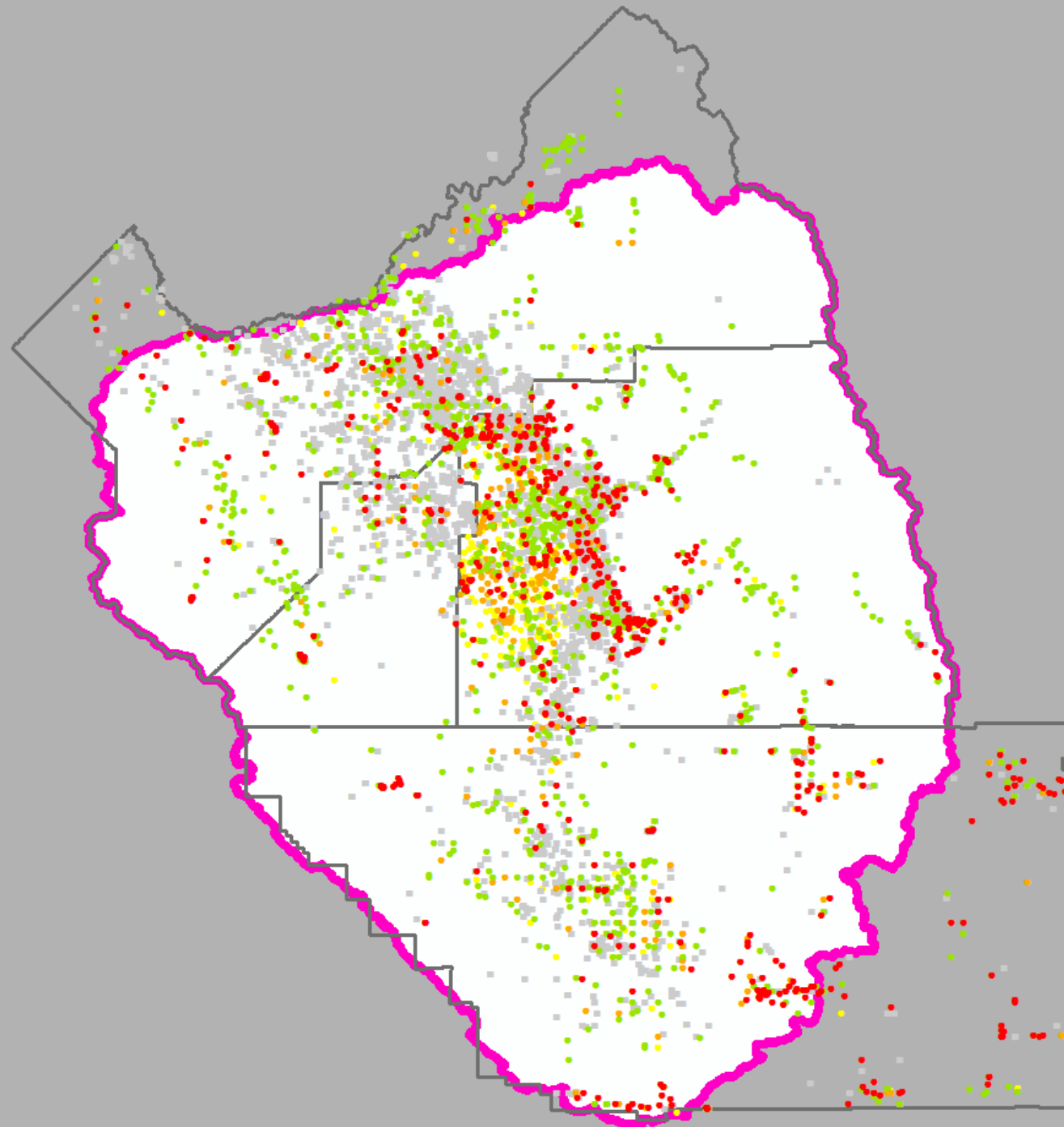
TLB05_Ground Water

TLB05e_Water Quality

The TLB Water Quality DataBase has 3.5 million samples of over 500 “analytes” (1975-2015).

There are 6122 Water Quality Systems with 12662 monitored wells.

Each well has a PWS_ID (which is NOT linked to a well log).



- ☒ TLB05e_Water Quality
 - rankMAX
 - ☐ Rank 0 - No Data
 - ☒ Rank 1 - All samples under MCL
 - ☐ Rank 2 - Sample mean under MCL
 - ☐ Rank 3 - Sample mean over MCL
 - ☐ Rank 4 - All samples over MCL

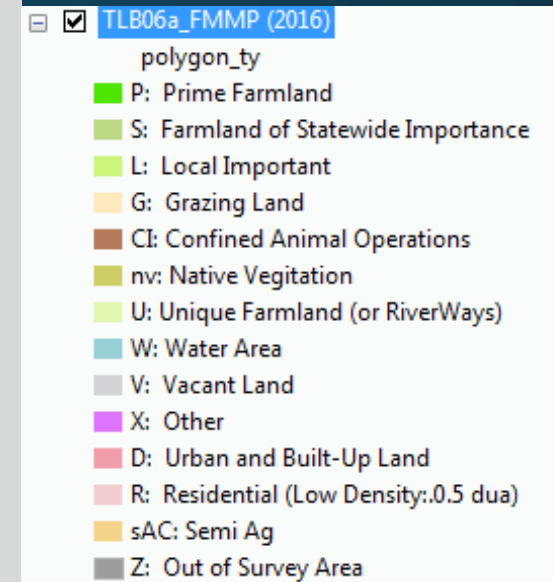
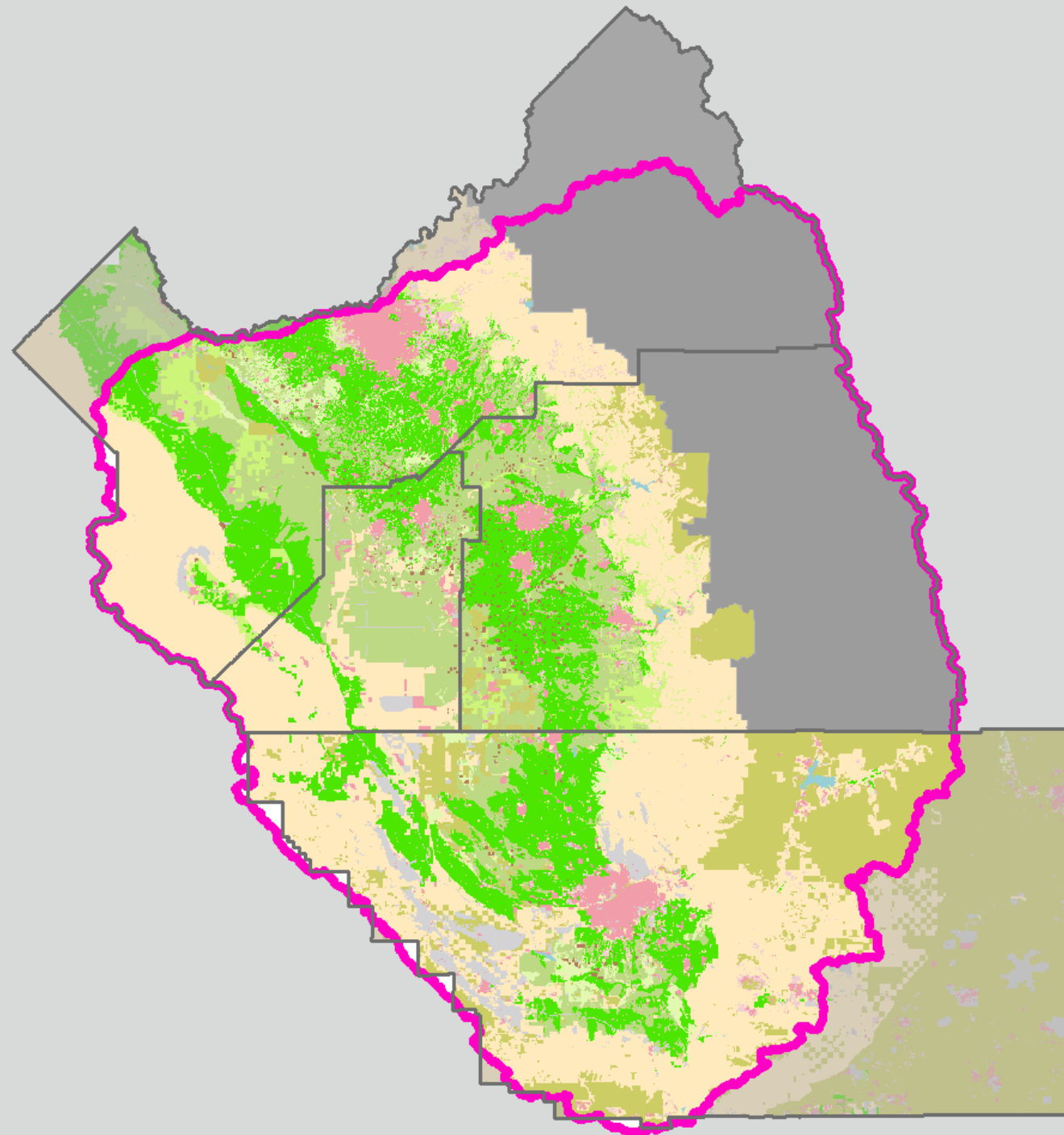
ESRI UC2019
Tue 10 am Rm 29b

TLB Water Quality
Analysis Using ArcGIS
INSIGHTS

TLB06_Land Cover

TLB06a_FMMP Maps

The “Farmland Monitoring and Mapping Program” has developed a bi-annual series of Land Cover Maps dating back to 1984.

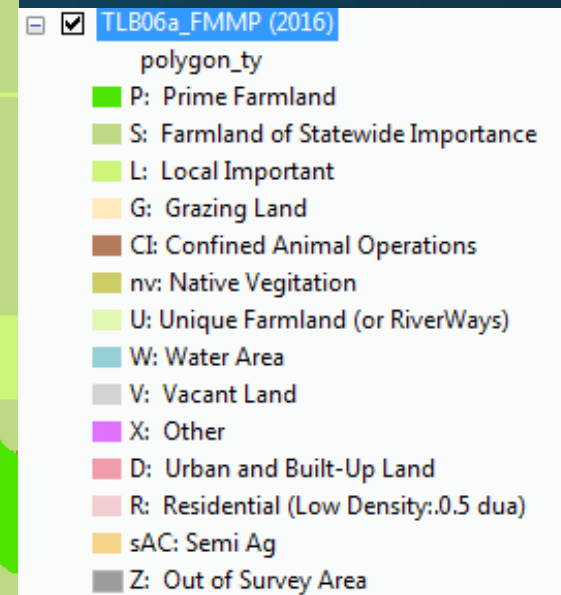
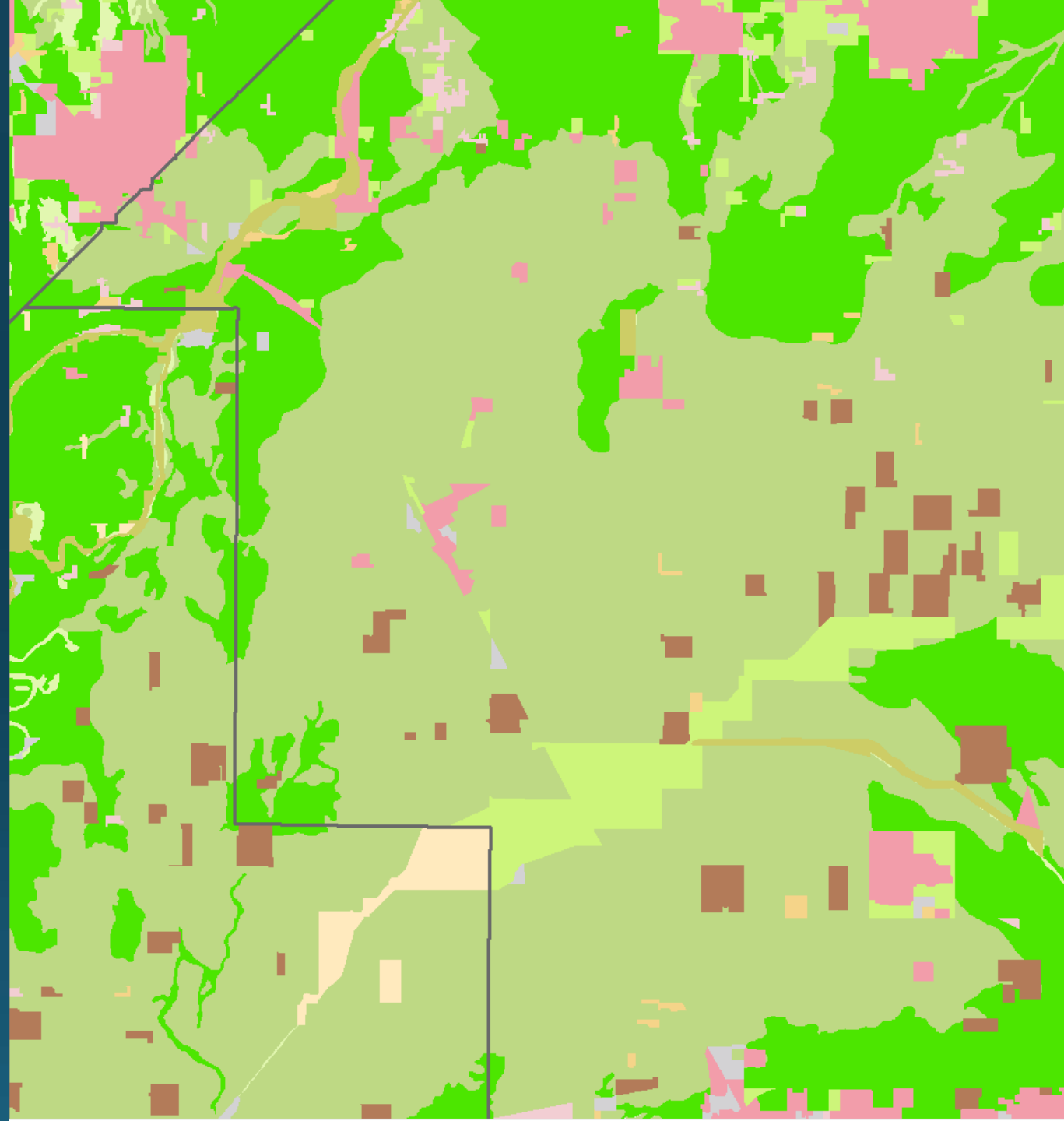


TLB06_Land Cover

TLB06a_FMMP Maps

The “Farmland Monitoring and Mapping Program” has developed a bi-annual series of Land Cover Maps dating back to 1984.

(ZOOM!)

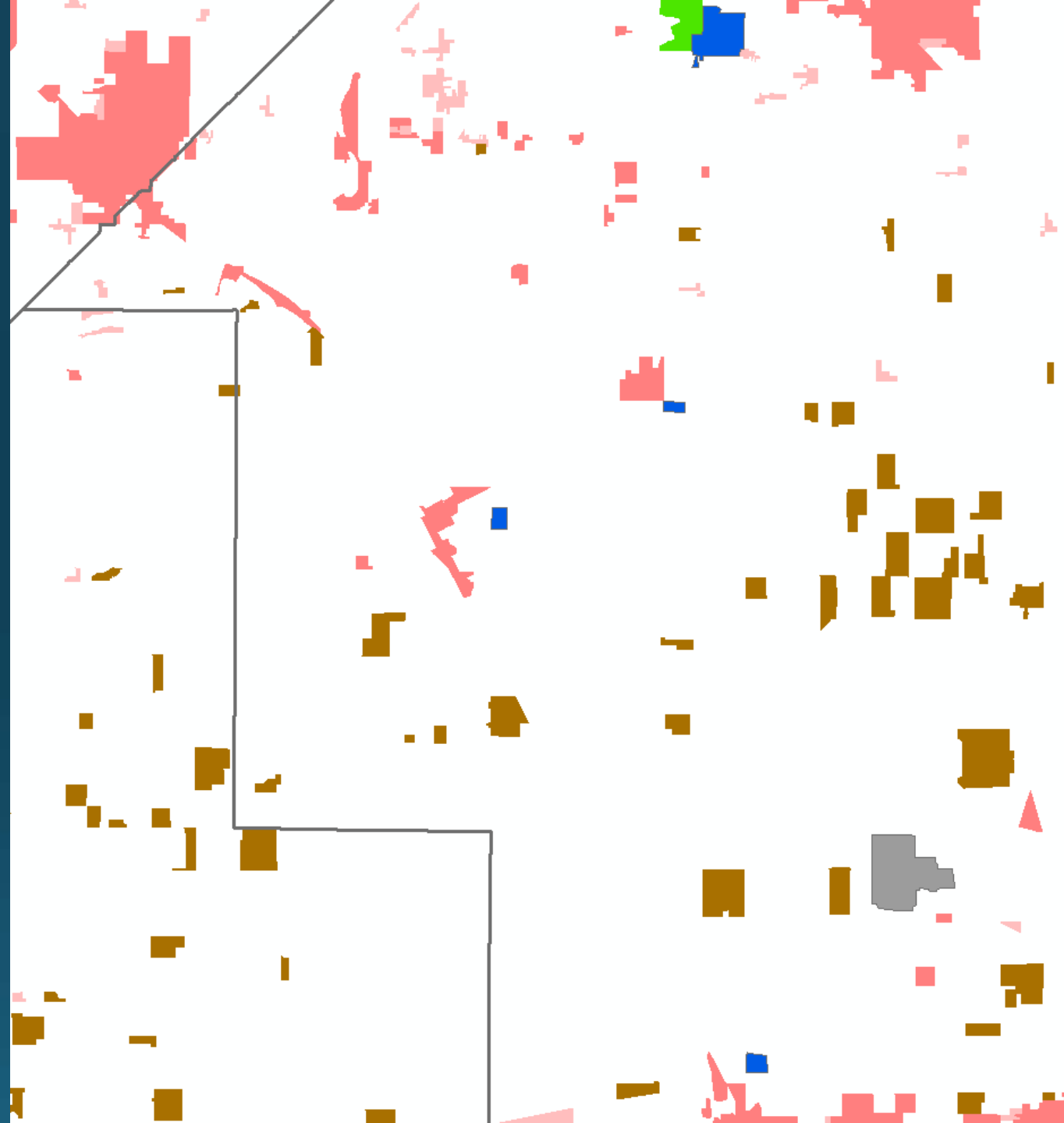


TLB06_Land Cover

TLB06a'_Development Foot Print

The FMMP Maps can be reclassified to identify changes in irrigated lands ... & ... “Development Foot Print” (Lands removed from crop production.

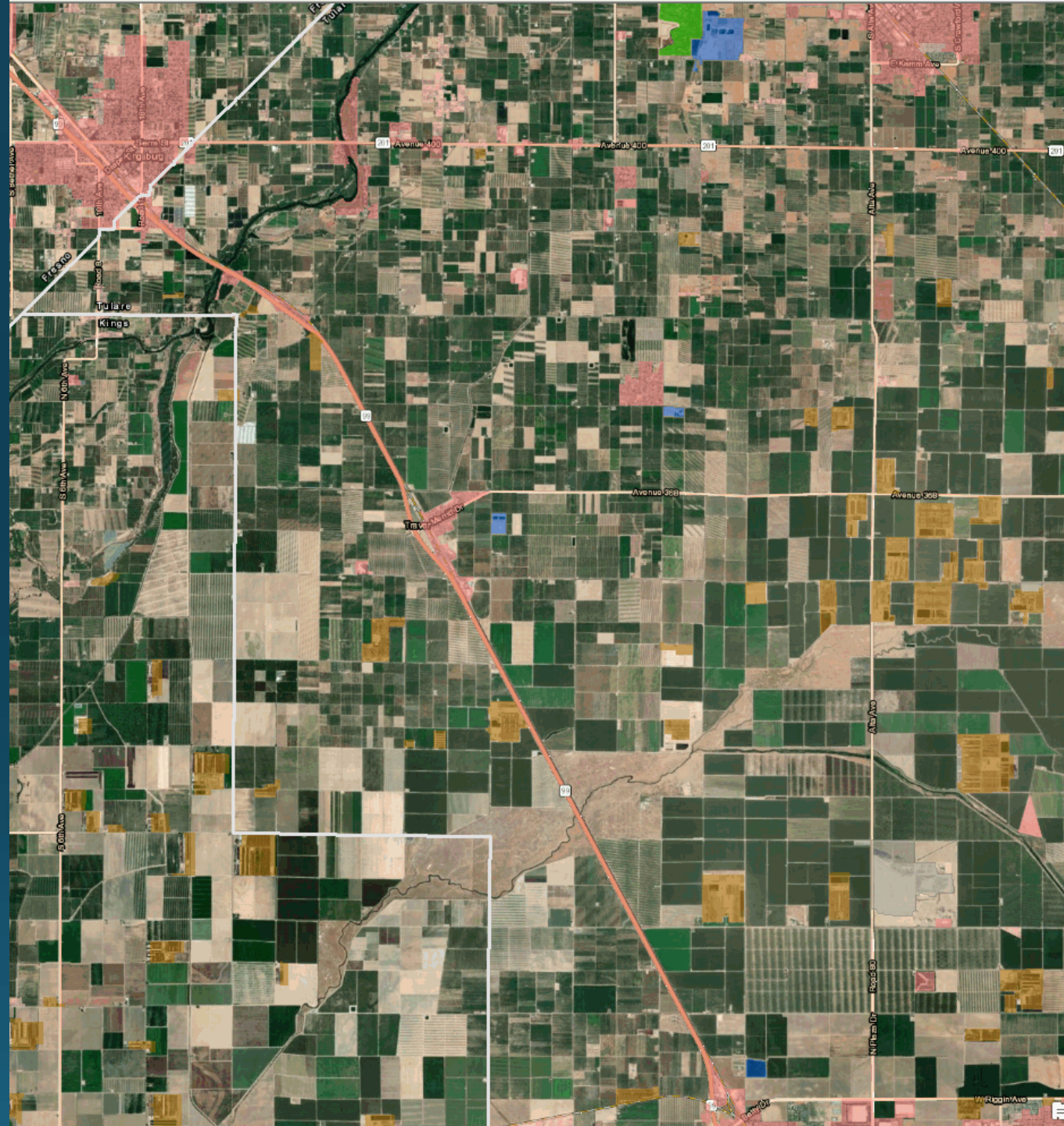
FMMP “D” needs to be reclassified into additional categories in order to not overstate urbanized areas.



TLB06_Land Cover

TLB06a'_Development Foot Print & Aerial Photos

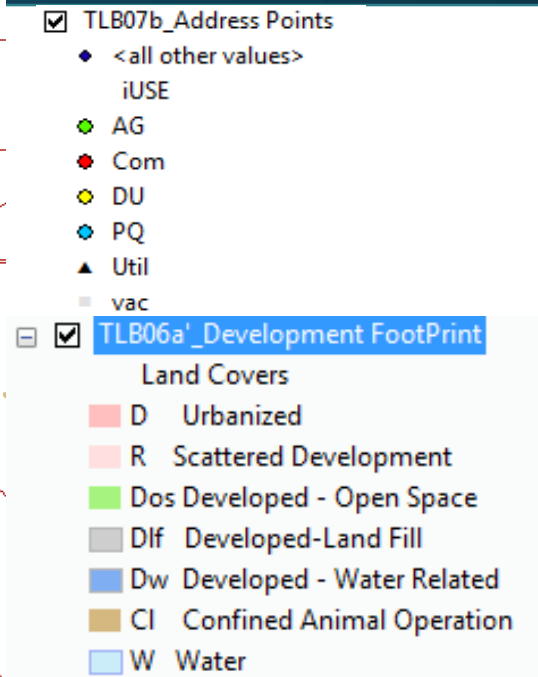
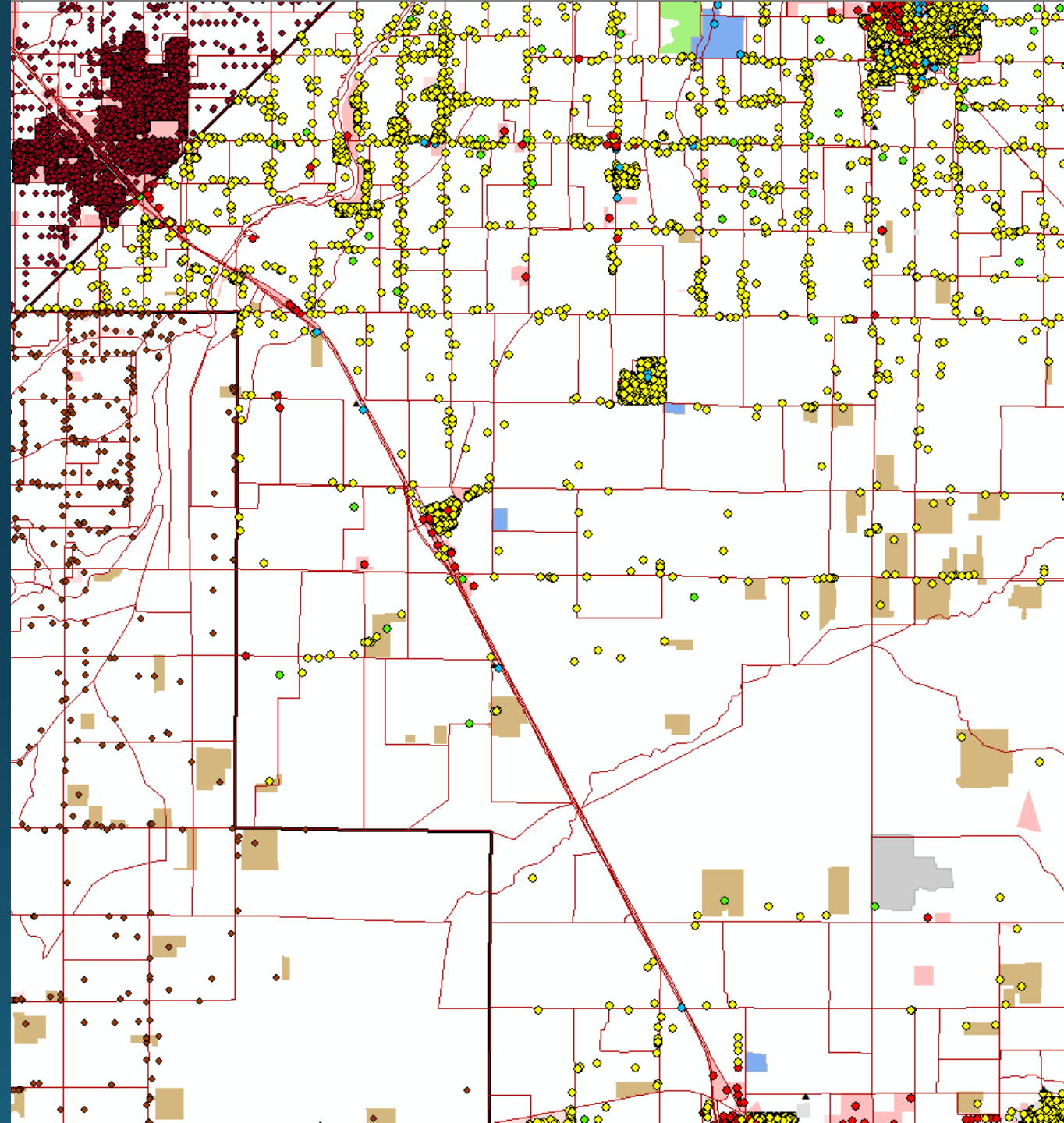
FMMP Development
Foot Print matches
Aerial Photos to an
amazing degree...



TLB06_Land Cover
TLB07_Demographics

TLB06a'_Development
Foot Print
TLB07a_Census
Geometry
TLB07b_Address Pnts

It is possible to count
the number of
residential address
points in a census
block and compare that
count to the LUCA
2017 count ... To
identify errors



What does the DATA mean?

Every dataset needs metadata (this is lacking)

Every dataset needs documentation of its source and maintenance schedule

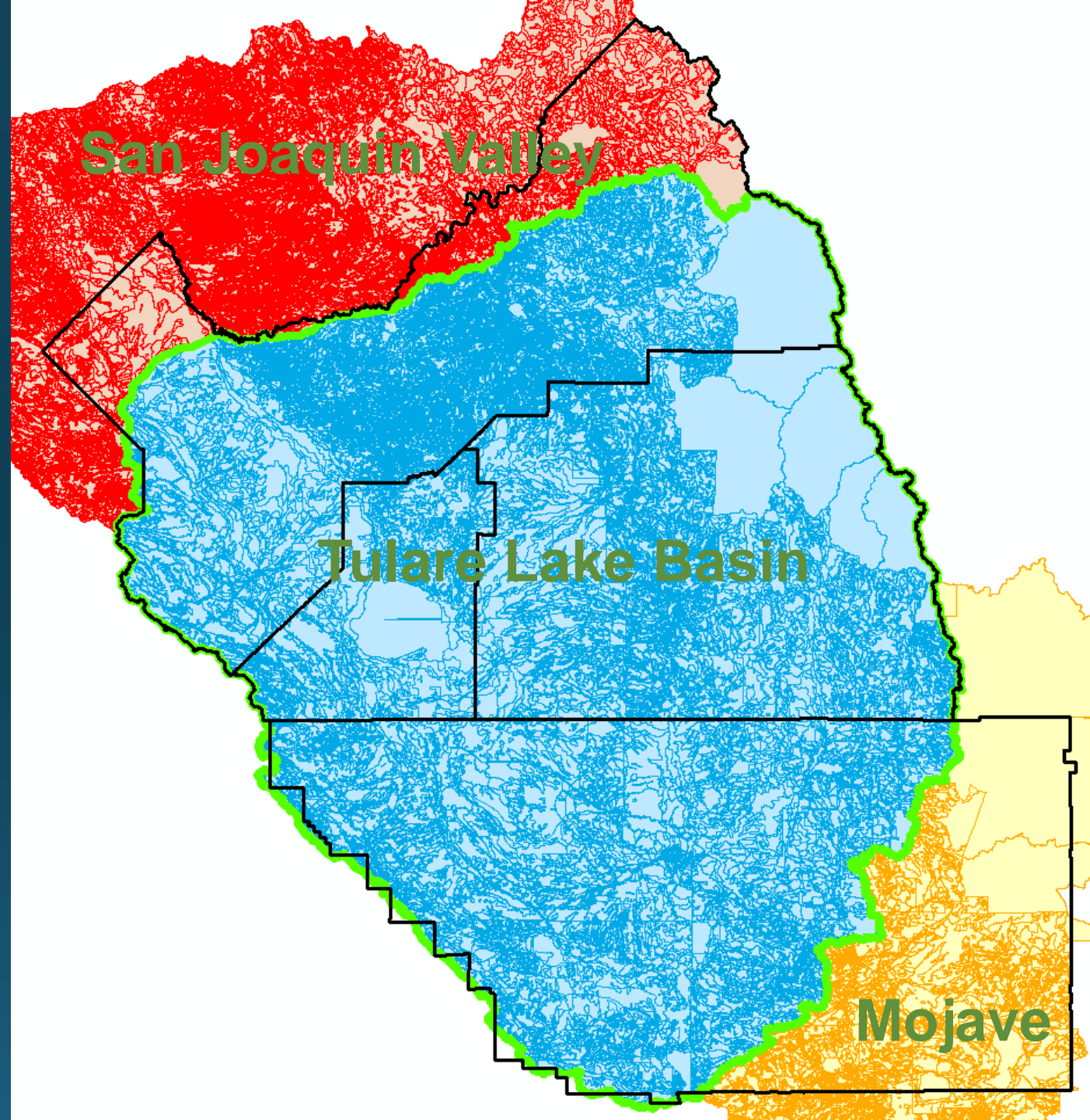
Every dataset needs appropriate symbology (in ONE or MORE ways)

What does the DATA mean?

TLB03b_SSURGO Soils

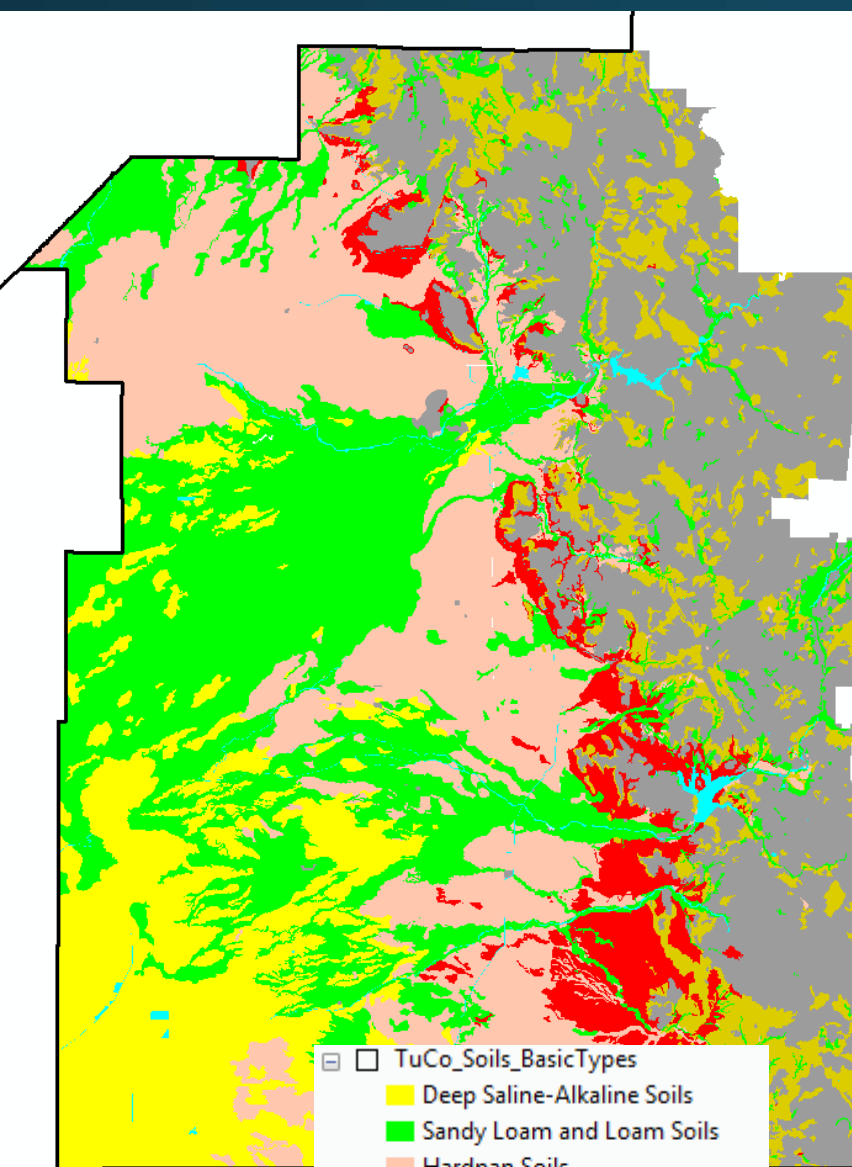
There are 159 data fields in the SSURGO database(s). Such a complex dataset can be viewed MANY ways.

Users ought to be provided with a few alternative ways of seeing the data & the ability to create new ways of seeing the data.

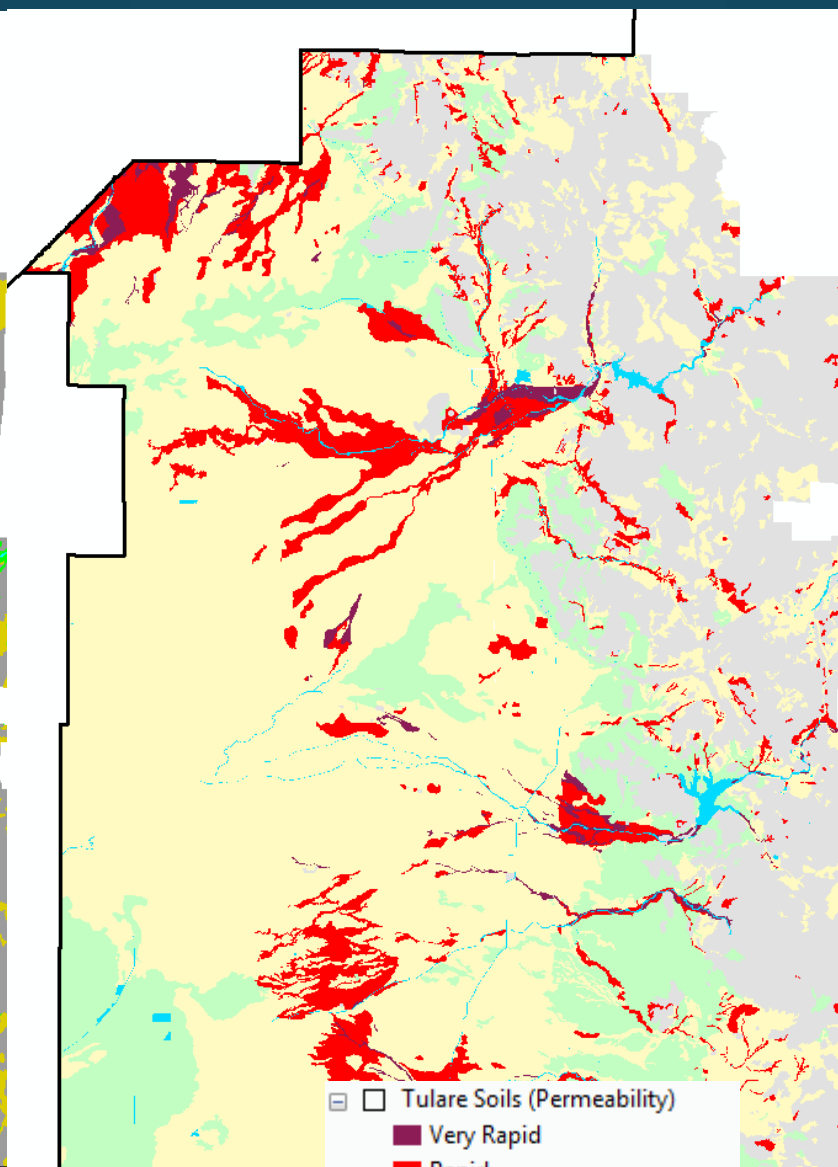


The current SSURGO Data is released using HUC08 boundaries.

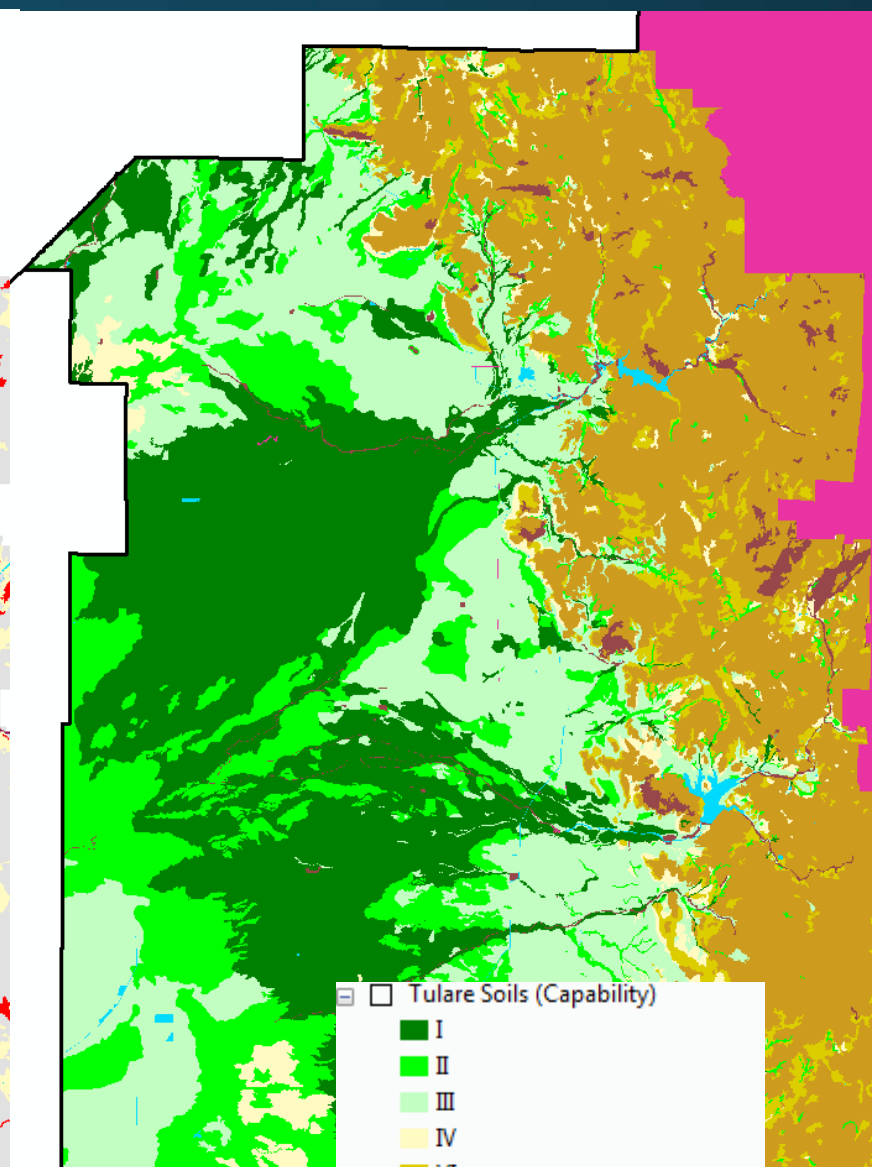
This data uses the same classification system, nation-wide.



- TuCo_Soils_BasicTypes
- Deep Saline-Alkaline Soils
 - Sandy Loam and Loam Soils
 - Hardpan Soils
 - Clay Soils
 - Rock
 - Water
 - Steep Upland Soils



- Tulare Soils (Permeability)
- Very Rapid
 - Rapid
 - Moderate
 - Slow
 - Rock
 - Under Water



- Tulare Soils (Capability)
- I
 - II
 - III
 - IV
 - VI
 - VII
 - VIII
 - Water
 - Missing Info

Is the data current?


Each dataset should have one or more “data stewards”

LOAD data from “data steward” and transform it to TLB standards
-or-

CONNECT “data stewards” to a Web Service (Well Points / Address Points)

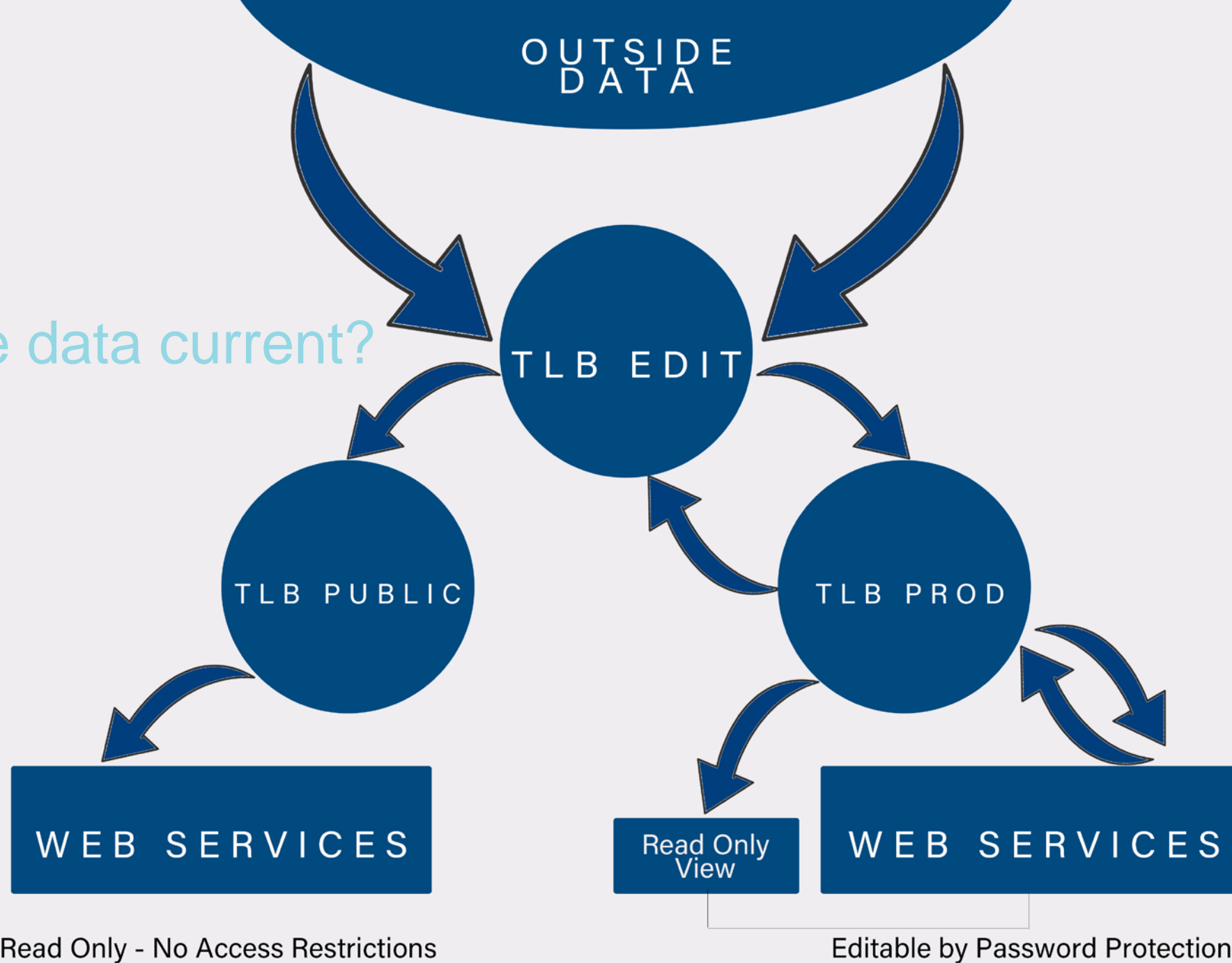
Provide the General Public with the ability to “mark-up” / comment on the data

Update National Hydrography with the Markup App



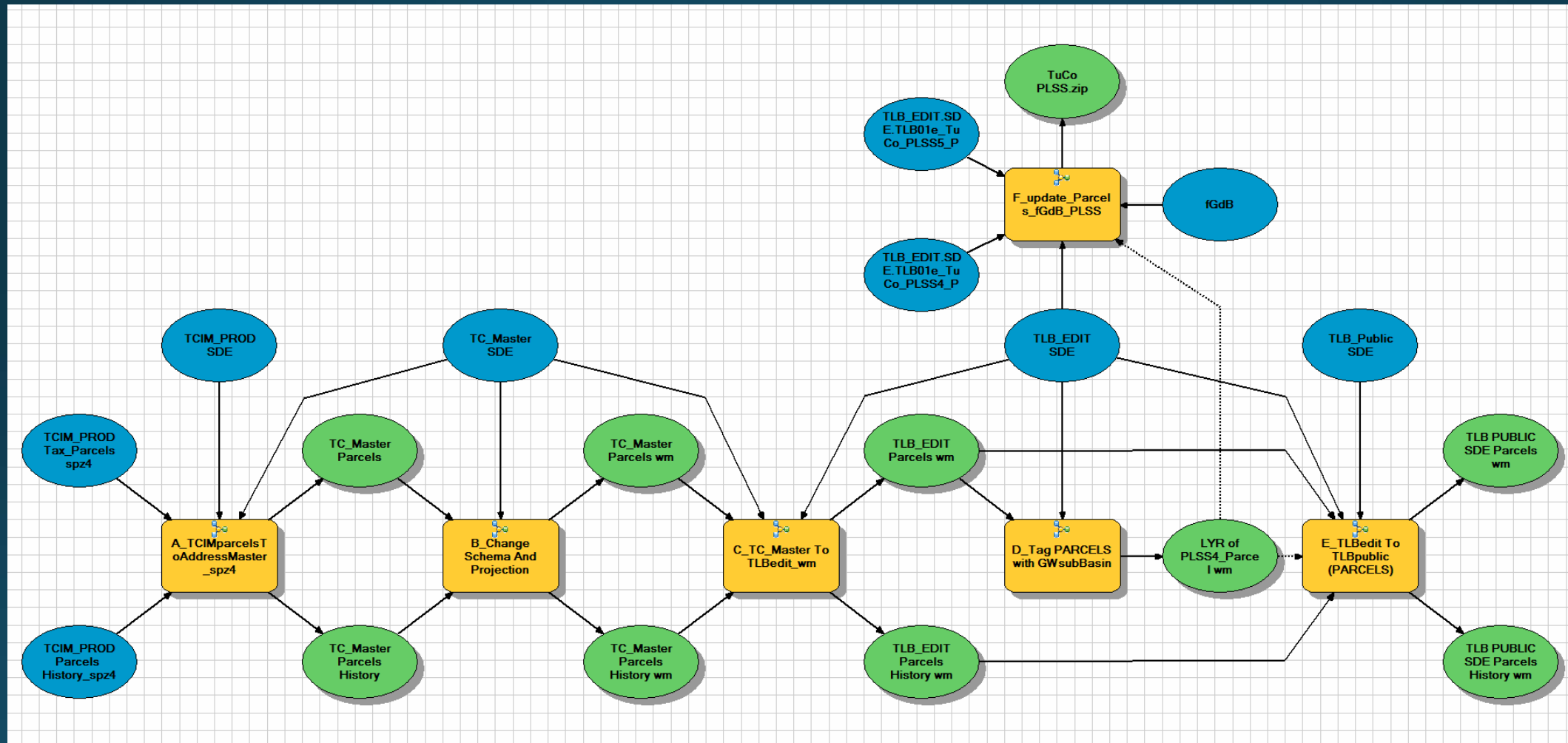
Have a correction or update for the NHD, WBD, or NHDPlus High Resolution? Visit the Markup App!

Is the data current?



Is the data current?

Tulare County PARCELS is modified to conform to TLB schema weekly, using a geoprocessing model (It runs for 4 hours at 3 AM Saturday morning)



How is the data shared?

For the General Public - .LYR files (drag/drop into ArcMap or ArcPro)

| | | | |
|---------------------|---|--------------|--------|
| 5/12/2017 9:22 AM | TLBp00a_BaseMAP Options.lyr | ArcGIS Layer | 60 KB |
| 12/10/2018 11:39 AM | TLBp01a_PLSS_TulareLakeBasin.lyr | ArcGIS Layer | 68 KB |
| 11/19/2018 2:52 PM | TLBp02a_LAFCO Settlements.lyr | ArcGIS Layer | 26 KB |
| 12/5/2018 4:04 PM | TLBp02c_IrrigationAgencies.lyr | ArcGIS Layer | 44 KB |
| 11/19/2018 2:55 PM | TLBp02d_CommunityWaterSystems.lyr | ArcGIS Layer | 42 KB |
| 11/19/2018 2:57 PM | TLBp02j_GroundWaterSustainabilityAgencies.lyr | ArcGIS Layer | 75 KB |
| 2/19/2019 5:47 PM | TLBp03a_WorldElevations_NED30m_LogIn.lyr | ArcGIS Layer | 21 KB |
| 11/29/2018 5:22 PM | TLBp04a_WaterSheds.lyr | ArcGIS Layer | 46 KB |
| 11/29/2018 5:12 PM | TLBp04b_SurfaceWater_NHD.lyr | ArcGIS Layer | 80 KB |
| 11/19/2018 2:59 PM | TLBp05b_WellPoints.lyr | ArcGIS Layer | 49 KB |
| 11/19/2018 3:57 PM | TLBp05e_WaterQuality_Systems.lyr | ArcGIS Layer | 113 KB |
| 11/19/2018 9:47 AM | TLBp07a_CensusGeometry_2000.lyr | ArcGIS Layer | 97 KB |
| 11/19/2018 9:52 AM | TLBp07a_CensusGeometry_2017LUCA.lyr | ArcGIS Layer | 30 KB |

These .LYR files allow access to the tabular data and provide standardized symbology.

These .LYR files are building blocks to permit the creation of detailed maps easily.

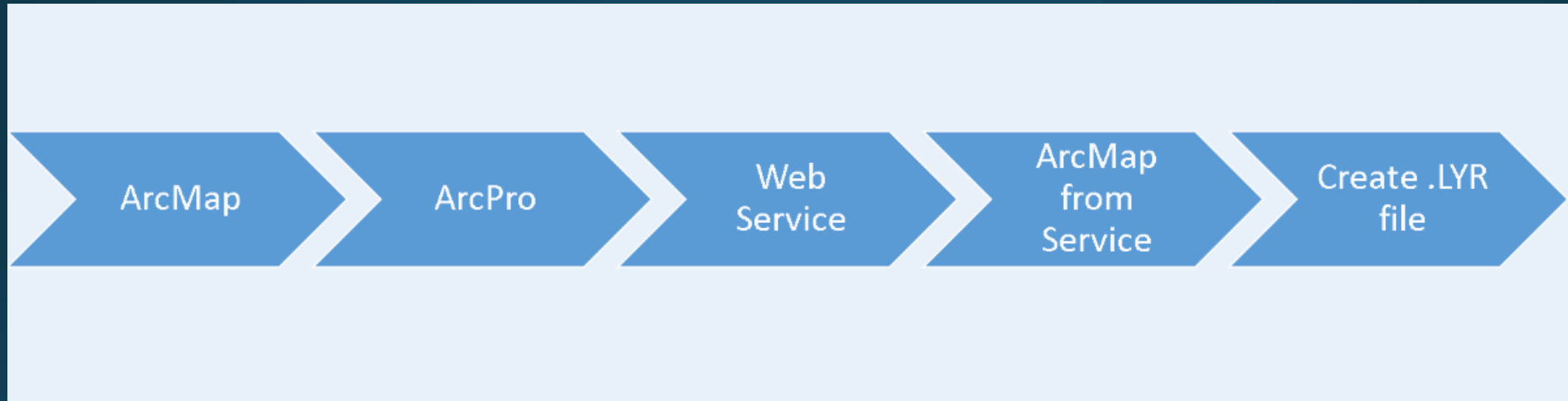
For Public Agencies - .LYR files (drag/drop into ArcMap or ArcPro)

- This version of LAYER FILES is un-redacted data
- This version requires an MOU and a named-user LOG-IN

For Data Stewards – a WEB APP designed to allow the editing of data

- Requires an MOU and a named-user LOG-IN

ArcMap .LYR files are compatible with ArcMap & ArcPro



These ArcMap .LYR files encapsulate the Web Service & Symbology
Into a SMALL file that is easy to distribute

Looking for Collaborators



For More Info

Contact Mike Hickey
(559) 622-7241

mhickey@co.tulare.ca.us