DIGITAL MAPPING TECHNIQUES 2022

The following was presented at DMT'22
May 22 - 25, 2022

The contents of this document are provisional

See Presentations and Proceedings
from the DMT Meetings (1997-2022)

http://ngmdb.usgs.gov/info/dmt/

California
Department of Conservation
California Geological Survey

Conversion of legacy geodatabase to GeMS for compilation: Managing and preserving generalized map product details

Example from the Preliminary geologic map of the west half of the San Luis Obispo 30' x 60' Quadrangle, CA (Version 2.0)

Janis Hernandez, Carlos Gutierrez, Rachel Beard, and Deshawn Brown
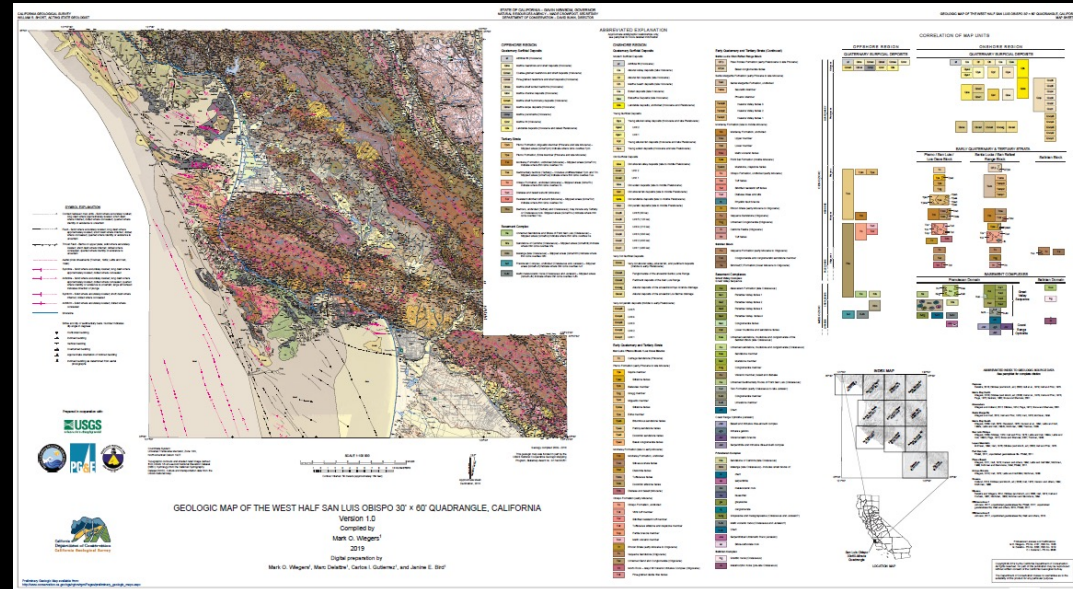California Geological Survey

West Half of the San Luis Obispo 30' x 60' Quadrangle

Project Tasks – STATEMAP FY 20-21

- Convert legacy database into a Level 3 GeMS geodatabase
- Generalize map to improve the cartographic display at 1:100,000-scale
  - Explore strategies/methodologies for retaining the 1:24,000-scale detail, while simplifying mapping to make suitable for 1:100,000-scale display
- Update map layout and pamphlet to reflect any changes

Deliverables

- GeMS-compliant (Level 3) geologic map database and updated map and pamphlet in PDF format


Wiegers, M.O., 2021, Preliminary geologic map of the west half of the San Luis Obispo 30' x 60' Quadrangle, Version 2.0: California, California Geological Survey, scale 1:100,000.

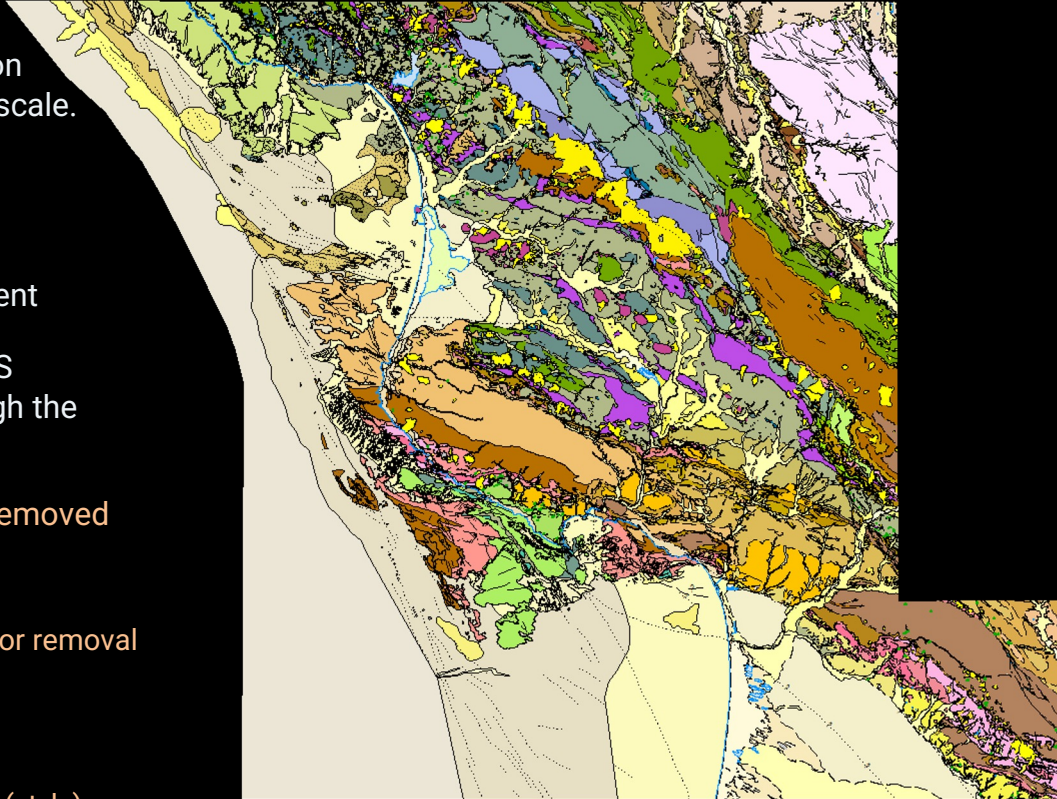# West Half San Luis Obispo 30' x 60'

GeMS Conversion

- All data from original compilation were loaded into a GeMS database
  - Small polygons and associated lines previously removed were reintegrated
- Offshore data were merged with onshore data
- Data QC
- GeMS attribution was completed
  - e.g., DataSourceID, LocationConfidenceMeters fields
- GeMS tables were populated
  - DataSources, DescriptionOfMapUnits, and Glossary tables
- GEOLEX
  - Formal geologic unit names used in the map were checked for conformance with the U.S. Geologic Names Lexicon (GEOLEX)

CGS GDB

GeMS GDB
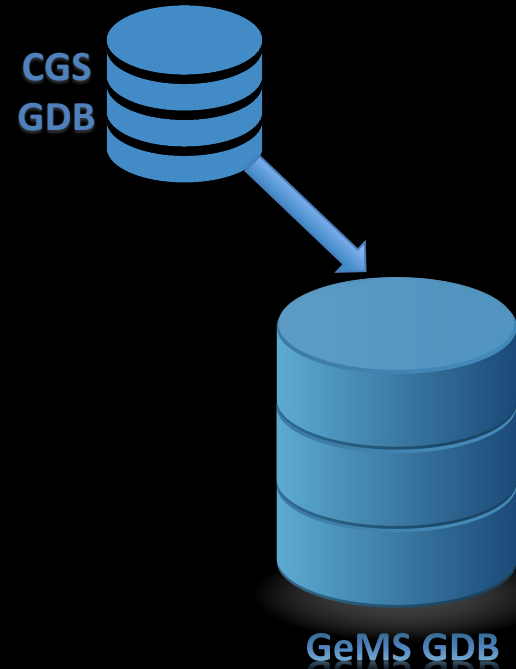
West Half San Luis Obispo 30' x 60'

Generalization – why did need to do this?

- Peer review and internal review comments noted on Version 1 map too complex for display at present scale.

- Reviewed options for retaining all 24k detail from original compilation.

- Tested smoothing and generalizing techniques – undesirable changes to line character and placement

- Decided to preserve a version of full-detailed GeMS GDB and proceed with a copy that would go through the generalization process:

  - Small polygons were filtered by size and removed
    - Geologic units less than 12,300 m^2
    - Landslides less than 50,000 m^2
  - Thin polygons were identified and evaluated for removal
  - Minimal lumping of map units
  - Thinning of structural data
  - Cartographic cleanup
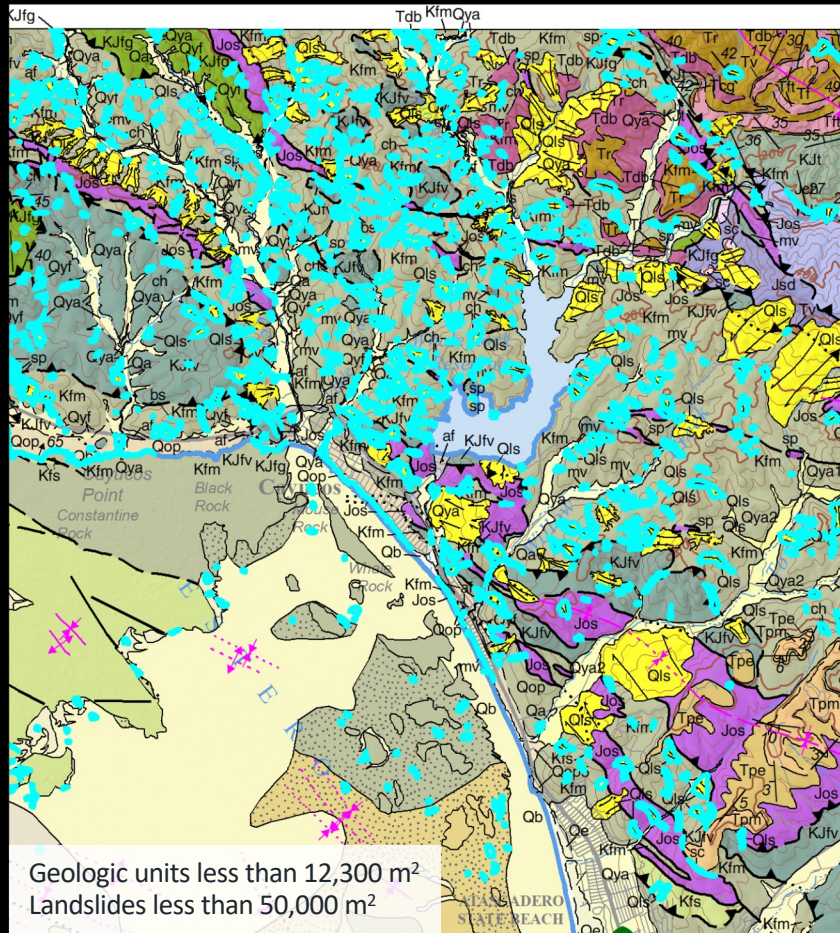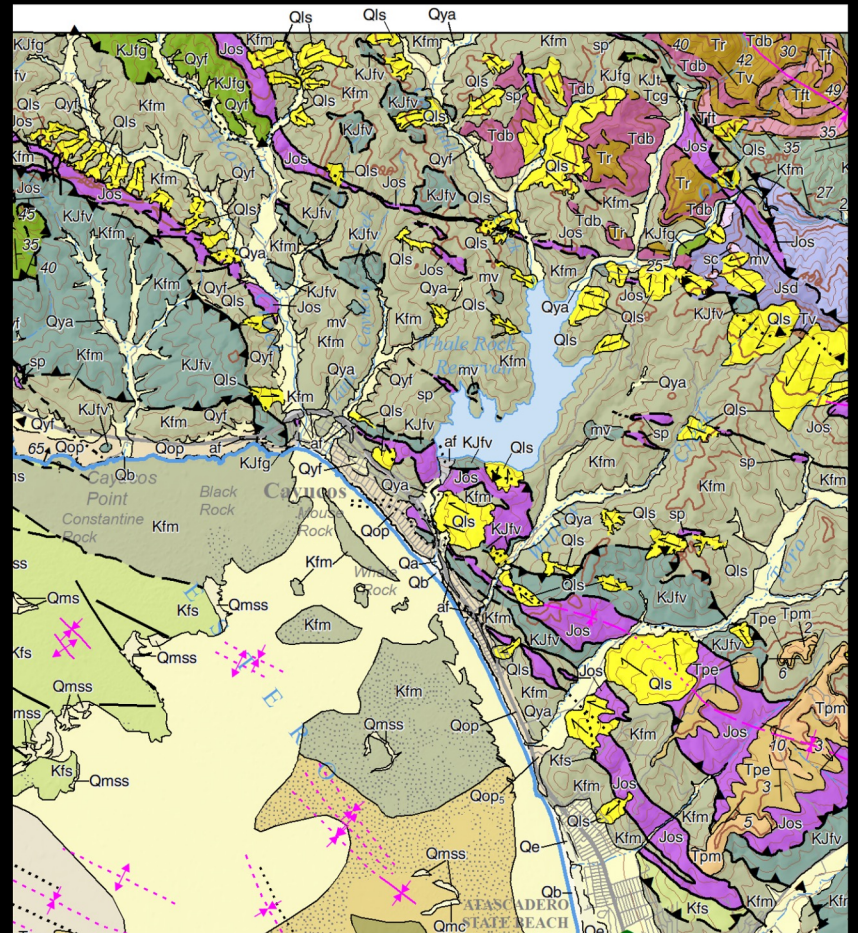   - New map unit and structure point labels (style)
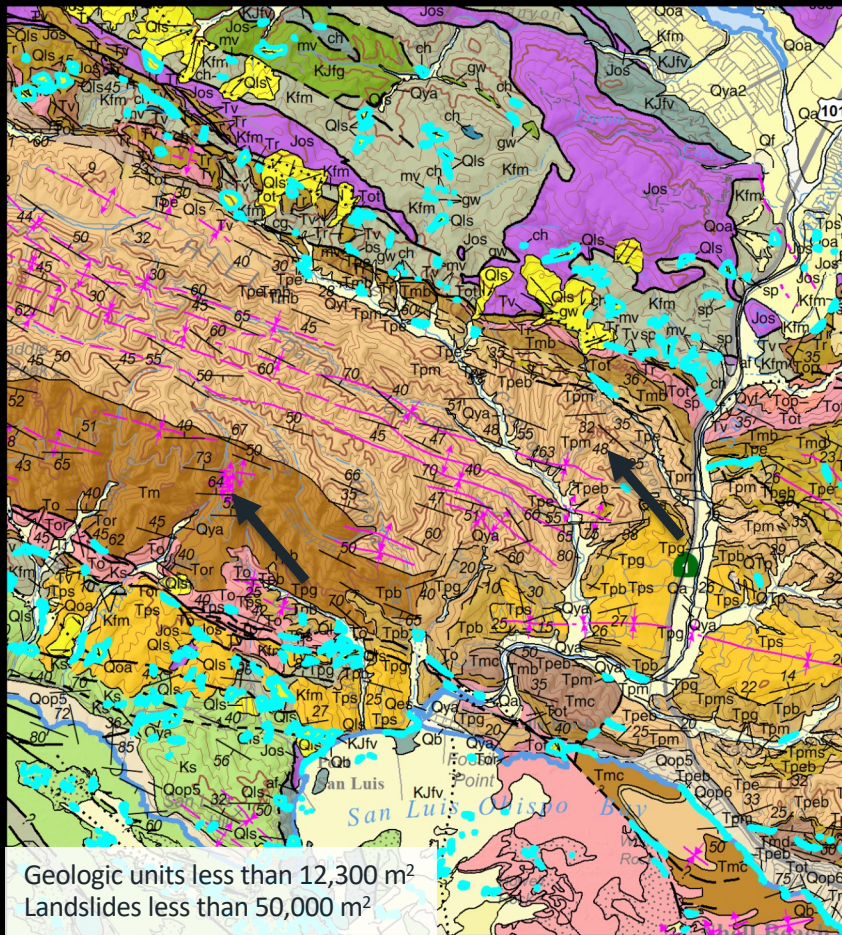
Version 1.0

Version 2.0

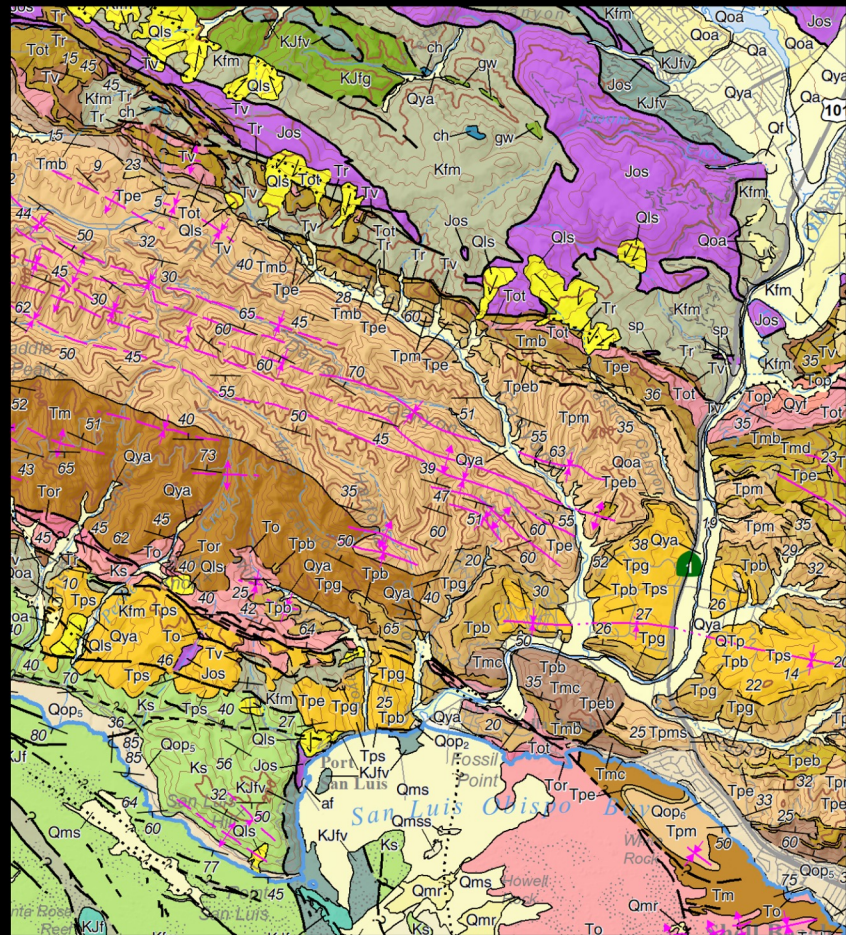Geologic units less than 12,300 m²
Landslides less than 50,000 m²
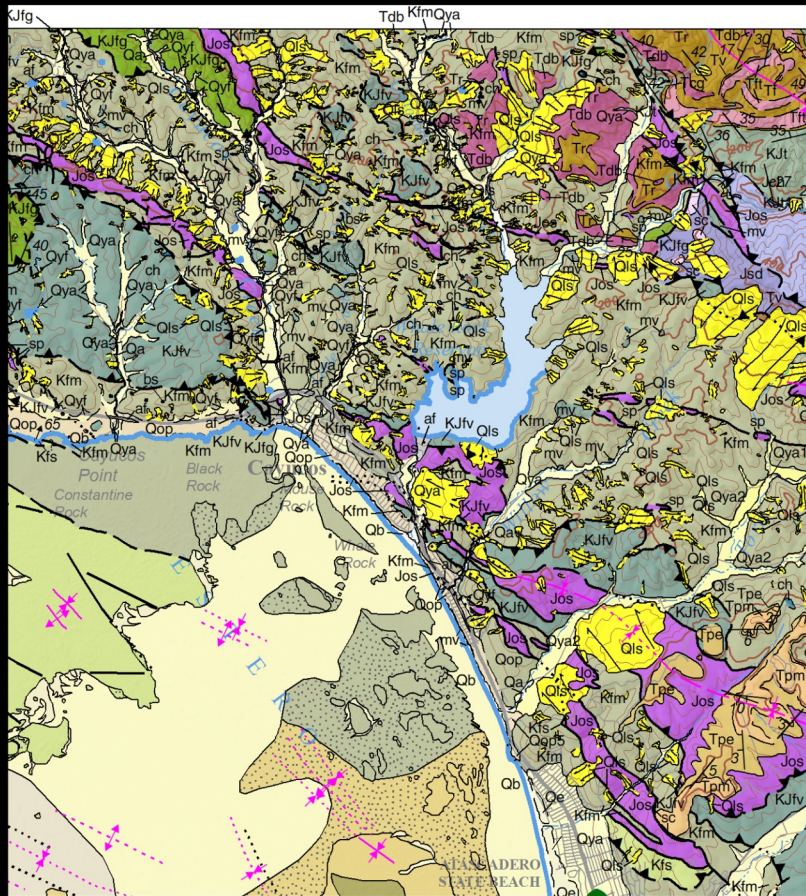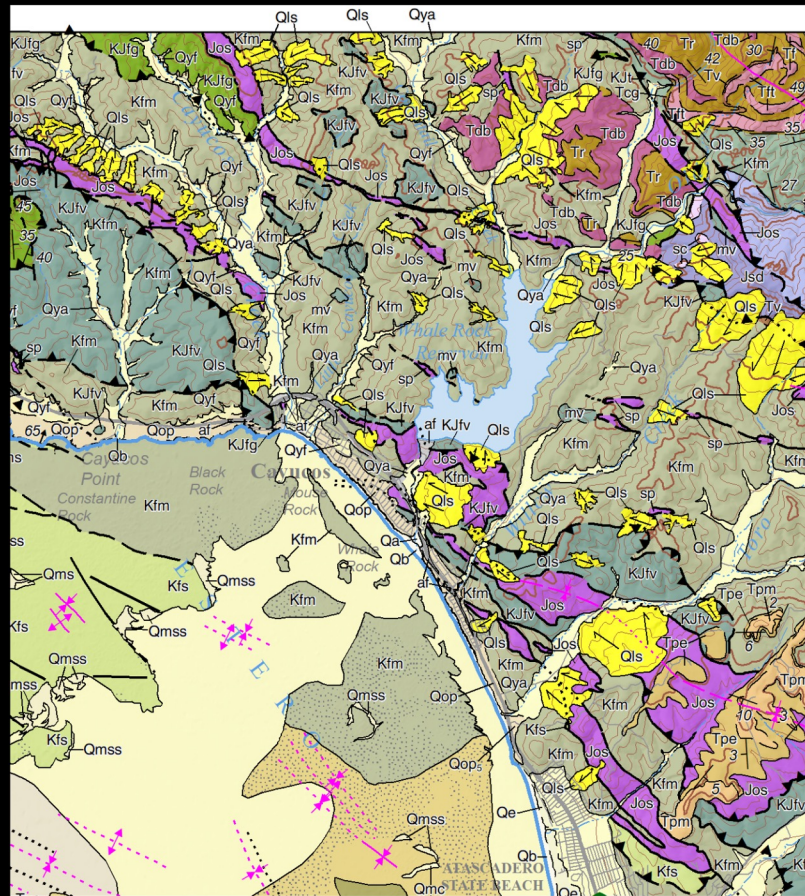
Version 1.0

Version 2.0
Added halos for visibility of map unit labels and structure points

Version 1.0

Geologic units less than 12,300 m²
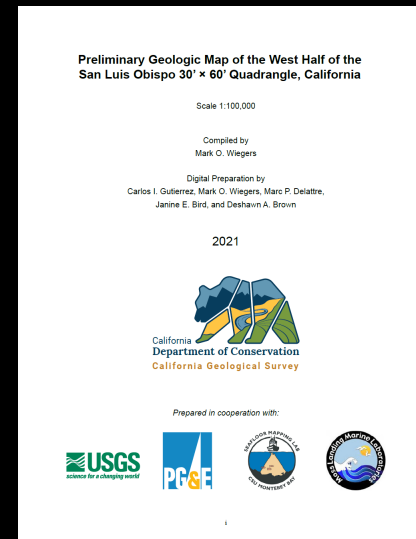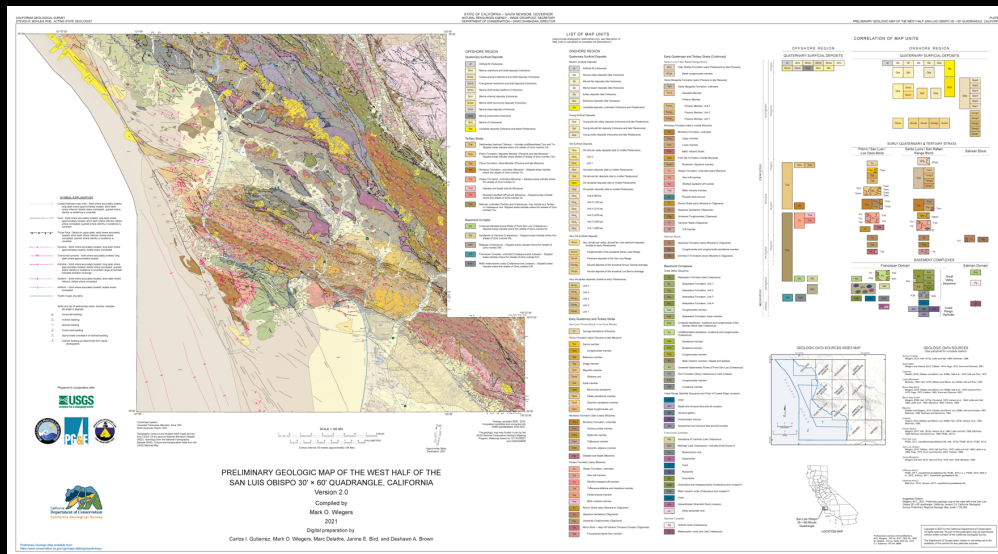Landslides less than 50,000 m²

Version 2.0

Selected structure points and structure arcs

West Half San Luis Obispo 30' x 60' Version 2.0
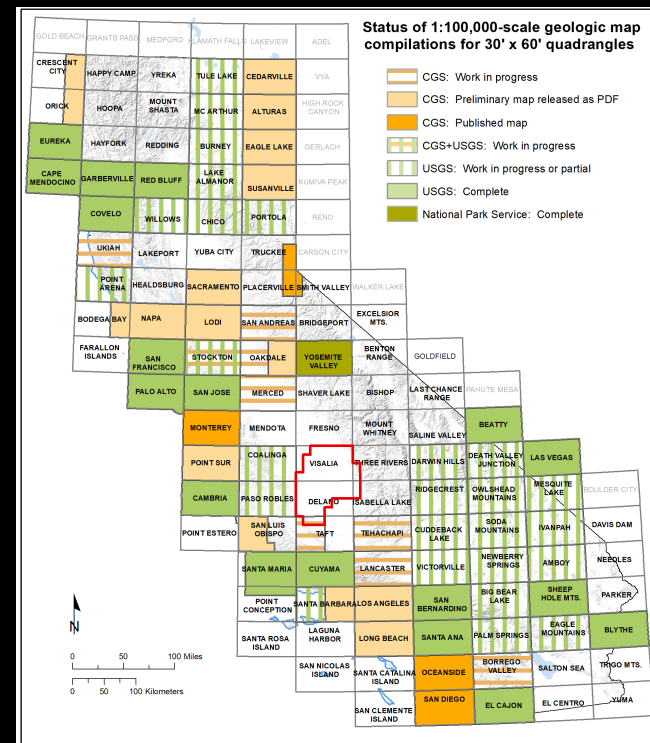
Deliverables

Summary of new detailed and generalized .gdb workflow

24k

- Preliminary 24k .pdf maps marked with superseded comment.

- Data likely to be revised (lidar) when compiled into GeMS-compliant 30'x 60' quadrangle map.

- Detailed GeMS geodatabase with all revisions available through CGS.

- Copy of detailed .gdb used for generalized 100k version.

100k

- Generalization processes performed and documented.

- External peer review of map products immediately following STATEMAP period of performance.

- Posting of preliminary map on CGS website and notification to County/City agencies for awareness.

- Comments from external review will be evaluated and incorporated.

- Within one year after the period of performance, the map will be formally published into the new CGS "Geologic Map" series and final product submitted to NCGMP.

California
Department of Conservation
California Geological Survey

Status of 1:100,000-scale geologic map compilations for 30' x 60' quadrangles

- CGS: Work in progress
- CGS: Preliminary map released as PDF
- CGS: Published map
- CGS+USGS: Work in progress
- USGS: Work in progress or partial
- USGS: Complete
- National Park Service: Complete

THANK YOU

Questions?

Janis Hernandez	Janis.Hernandez@conservation.ca.gov
Carlos Gutierrez	Carlos.Gutierrez@conservation.ca.gov
Rachel Beard	Rachel.Beard@conservation.ca.gov
Deshawn Brown	Deshawn.Brown@conservation.ca.gov

California Geological Survey