USGS
science for a changing world

National Geospatial Program Office

Historical Topographic Map Collection

Scanning, georeferencing and distribution of USGS Maps – Old and New

Library of Congress FGDC Working Group: Users/Historical Data

WebEx discussion
January 26, 2012

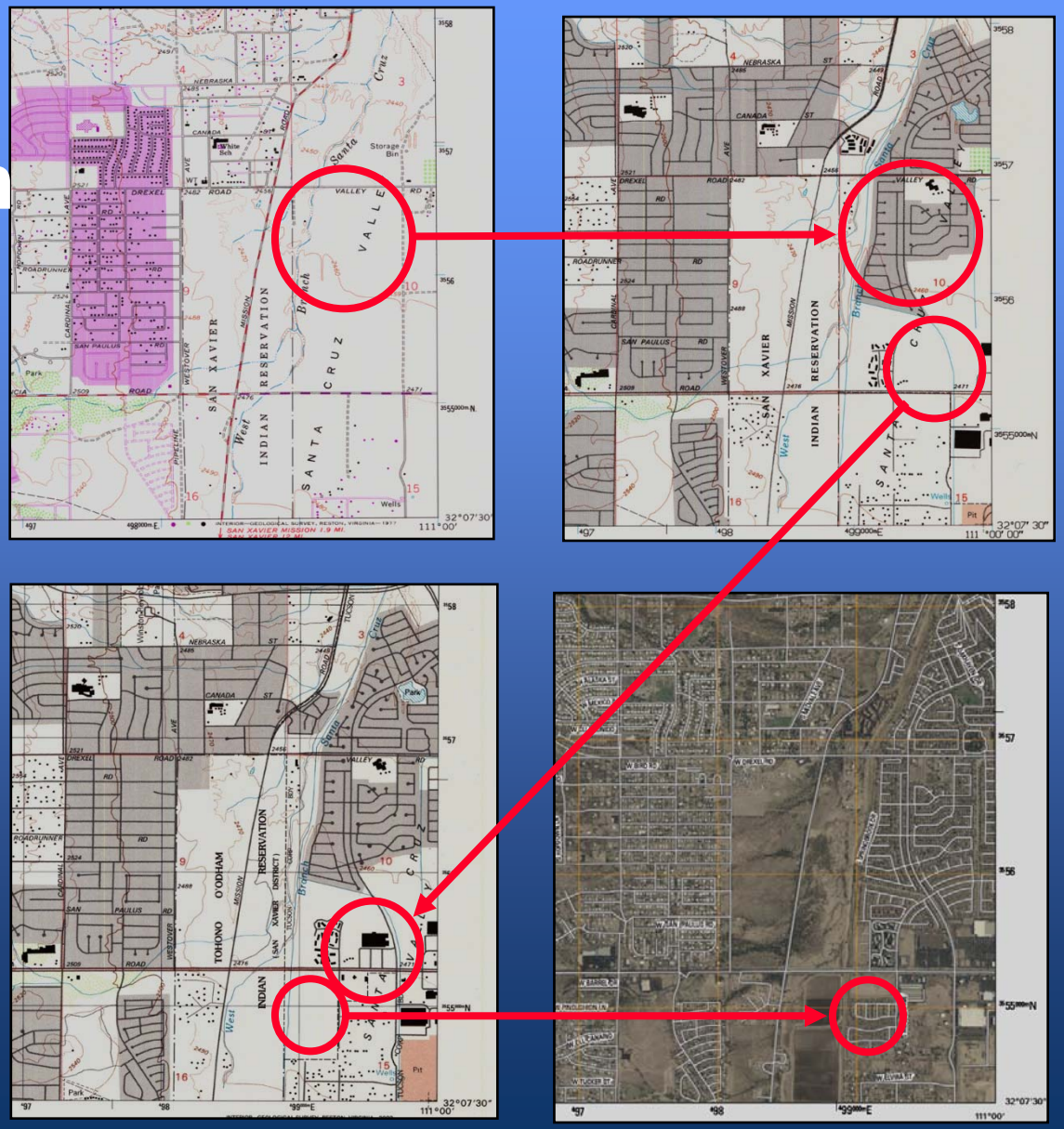
Greg Allord
Cartographer
U.S. Geological Survey

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

Original reasons for converting this Collection

A national resource with stewardship provided by USGS

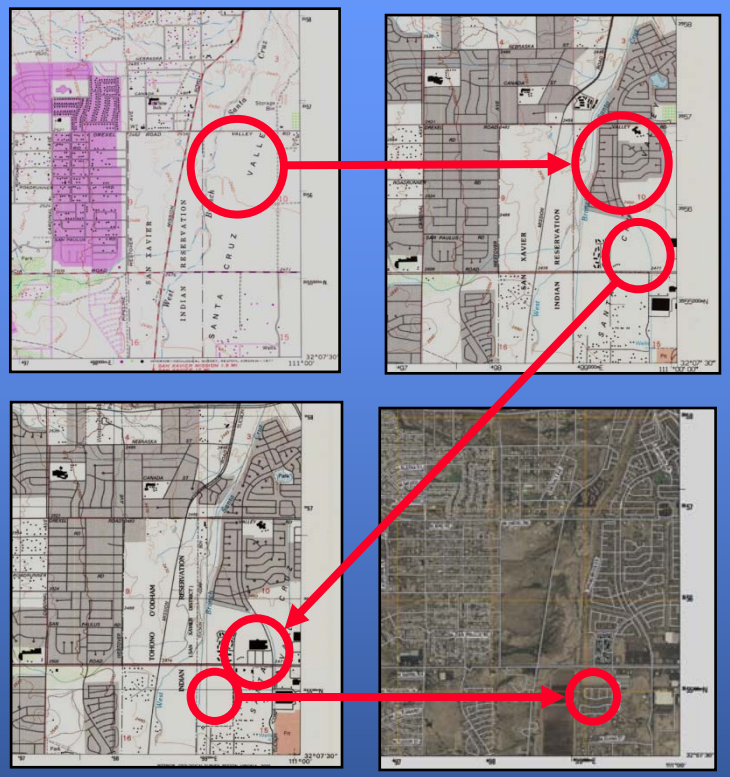
Supports new US Topo



Original reasons for converting this Collection

- Long-term record and documentation of the natural, physical and cultural landscape.

- The potential for analysis of distribution and spatial patterns is invaluable throughout the sciences and non-science disciplines



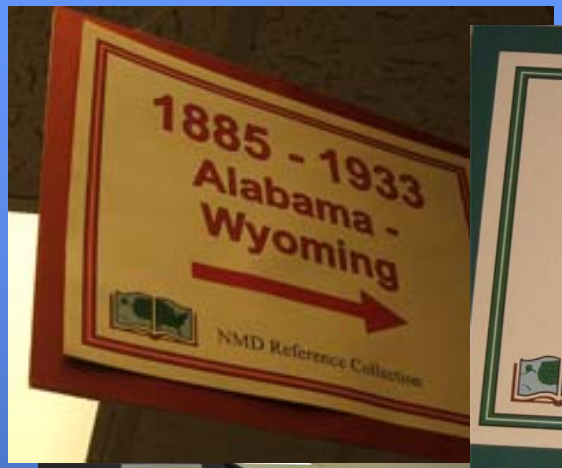
- For more than 130 years, the USGS topographic mapping program has accurately portrayed the complex geography of our nation

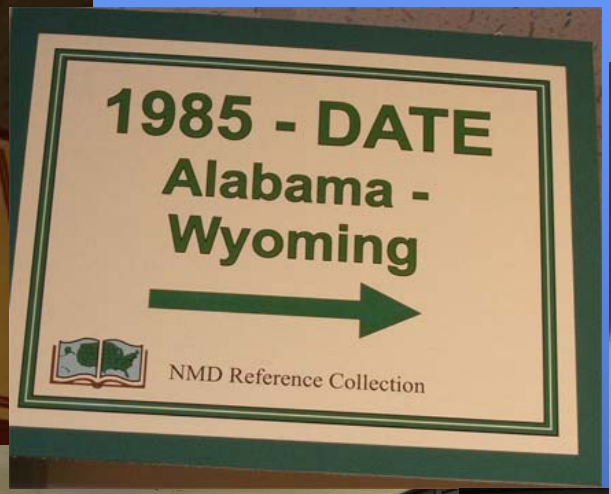
Creating a comprehensive catalog

- These maps are either long forgotten or are not known to have existed.
- Most are no longer available for distribution in print.
- No single complete set is known to exist – anywhere.

USGS

USGS Reston collection



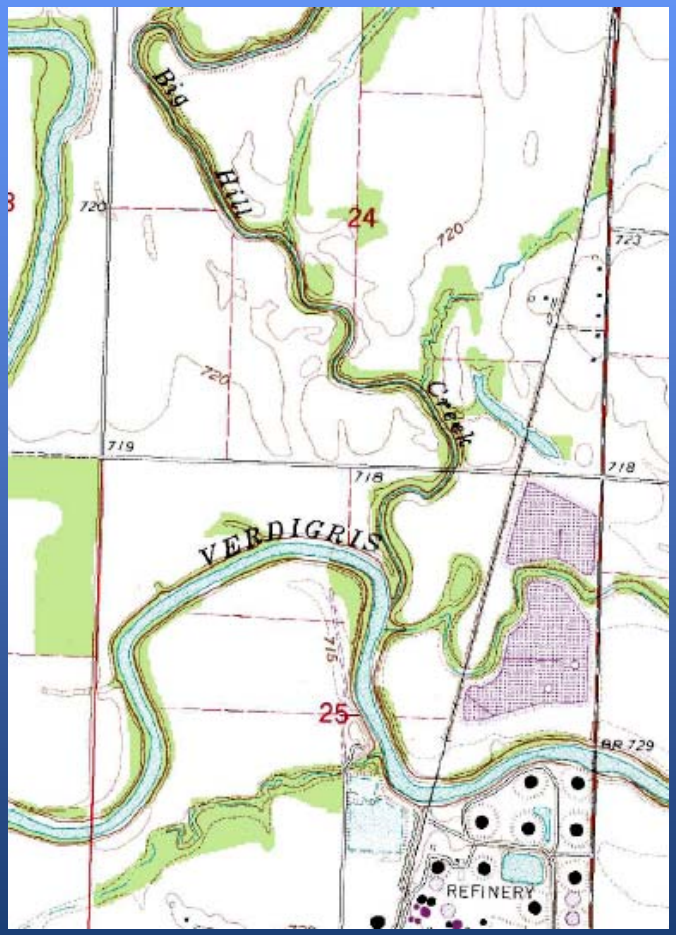


About 200,000 topographic maps in collection

USGS

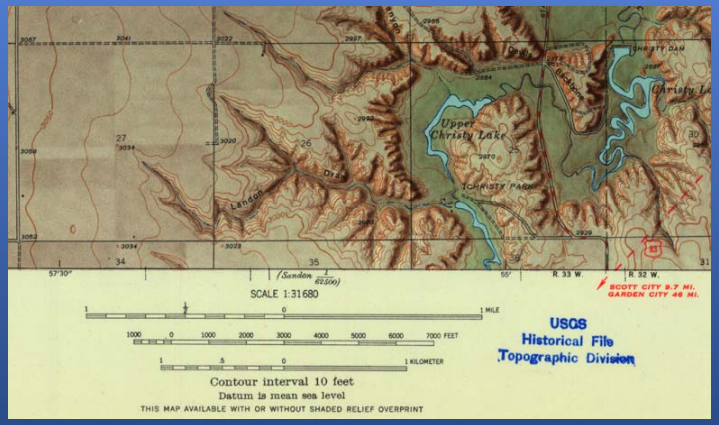
Goals for historical USGS quadrangle scanning

- ✓ Scan approximately 200,000 printed quadrangles – all maps, all scales. Historical quads are all printed maps prior to US TOPO.
- ✓ Use consistent, high quality specifications
- ✓ Provide all editions, all scales
- ✓ Georeference the maps
- ✓ Release through the USGS Store and *The National Map* Viewer



Goals for historical USGS quadrangle scanning

- ✓ A complete copy of all metadata and digital files will be available from USGS
- ✓ Copies will be housed at the national Archives and Records Administration as well as the Library of Congress, Geography and Maps Division
- ✓ Copies of pertinent segments of the collection may be housed in local map libraries, research institutes and other government offices
- ✓ All files will be in the public domain



User need

General public and map users requiring reference maps

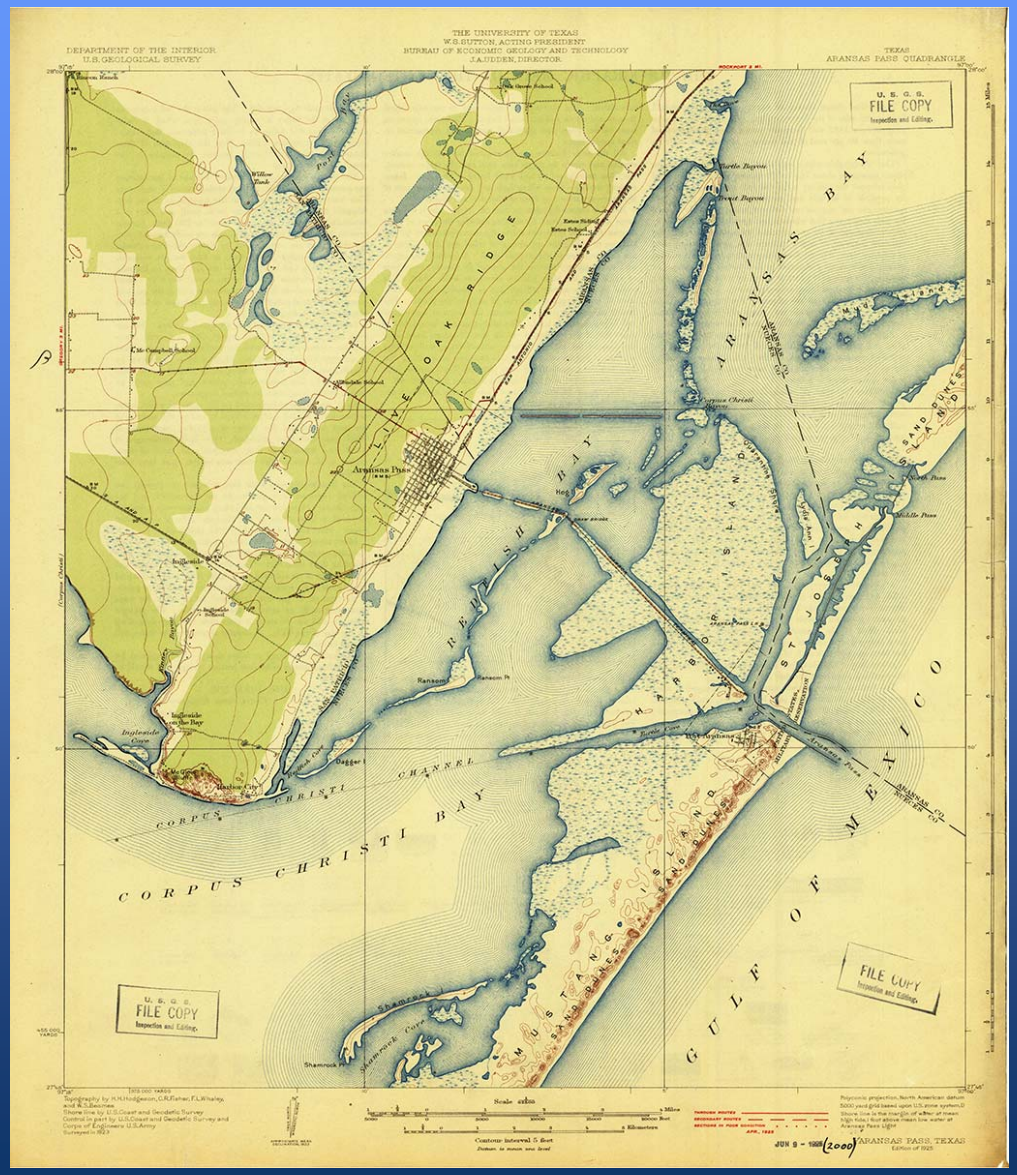
Product: GeoPDF single-sheet maps with full metadata available through the USGS Store

USGS

First release for this Collection – GeoPDF files

Reference

Download and print



USGS

First release for this Collection – GeoPDF files

TerraGo Toolbar:

- GeoTool – Locks/unlocks coordinates, Google™ Map It, and launches other GeoPDF tools.
- GeoLocator – Shows and finds coordinates and provides the ability to modify coordinate system displays.
- GeoMeasure – Measures either length or area.
- GeoTrack – Displays the current position of an attached GPS device.

USGS

Metadata

GJALLORD

Unverified Staging Data

Cancel

* Hqsp Verified Seq 101195

Scan Id	122696	Scan File Name		Contributor File Name	Smith Center_KS_1922_125000-2.tif

Load Version KS_ideal_box69_30nov09

Map Name	Smith Center	Map Scale	125000	Aerial Photo Year	%
Primary State	Kansas			Field Check Year	%
Date On Map	1893	Datum	Unstated		
Imprint Year	1922	Projection	Unstated	Survey Year	1891
Photo Inspection Year	%			Edit Year	%
Photo Revision Year	%				

PUBLISHERS

USGS	☑ Y	Army Corps	☐ Y	AMS	☐ Y
War Dept	☐ Y	Other Military Map	☐ Y	USFS	☐ Y
BIA	☐ Y	USBR	☐ Y	NPS	☐ Y
BLM	☐ Y	EPA	☐ Y	TVA	☐ Y
Commerce	☐ Y				

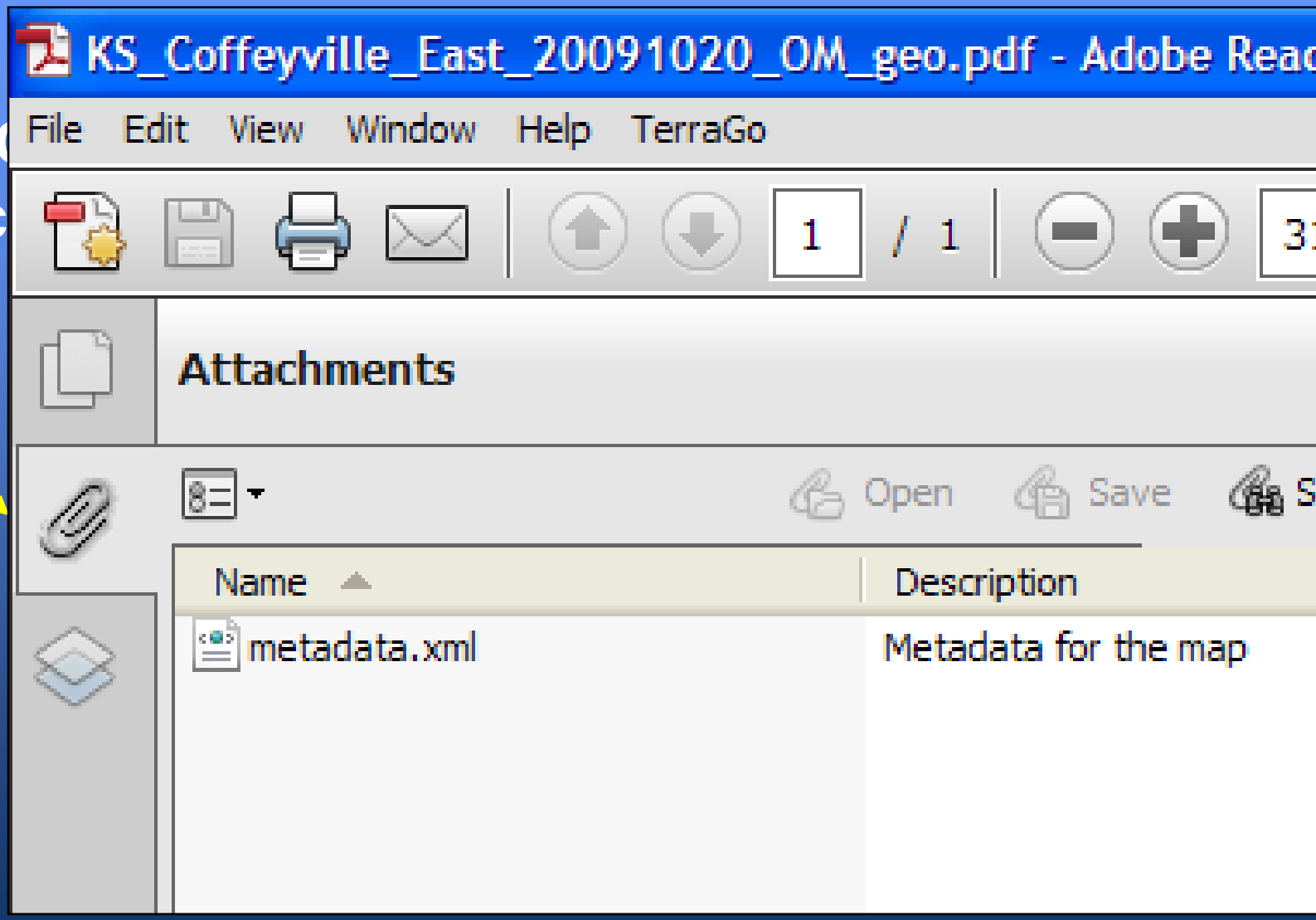
Advance	☐ Y	Special Map	☐ Y	Planimetric	☐ Y
Preliminary	☐ Y	Shaded Relief	☐ Y	No Woodland Tint	☐ Y
Provisional	☐ Y	Orthophoto	%	Special Printing	☐ Y
Interim	☐ Y				

		Source Project	HQSP
		Map Language	English
Scan Comments	scale and data missing at bottom		
Keywords		Scan Quality	Duplicate

USGS

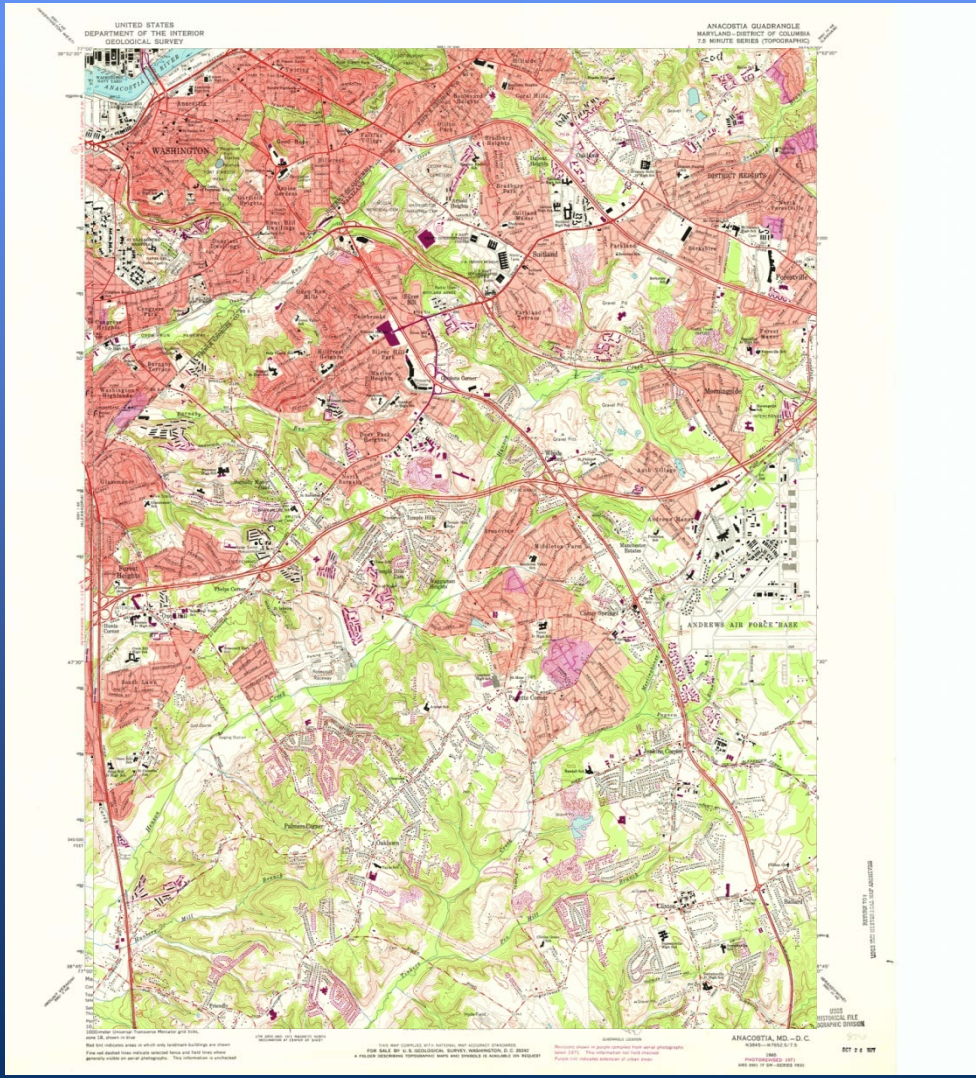
Metadata Availability

FGD
attac



First release for this Collection – GeoPDF files

Future needs



USGS

User need

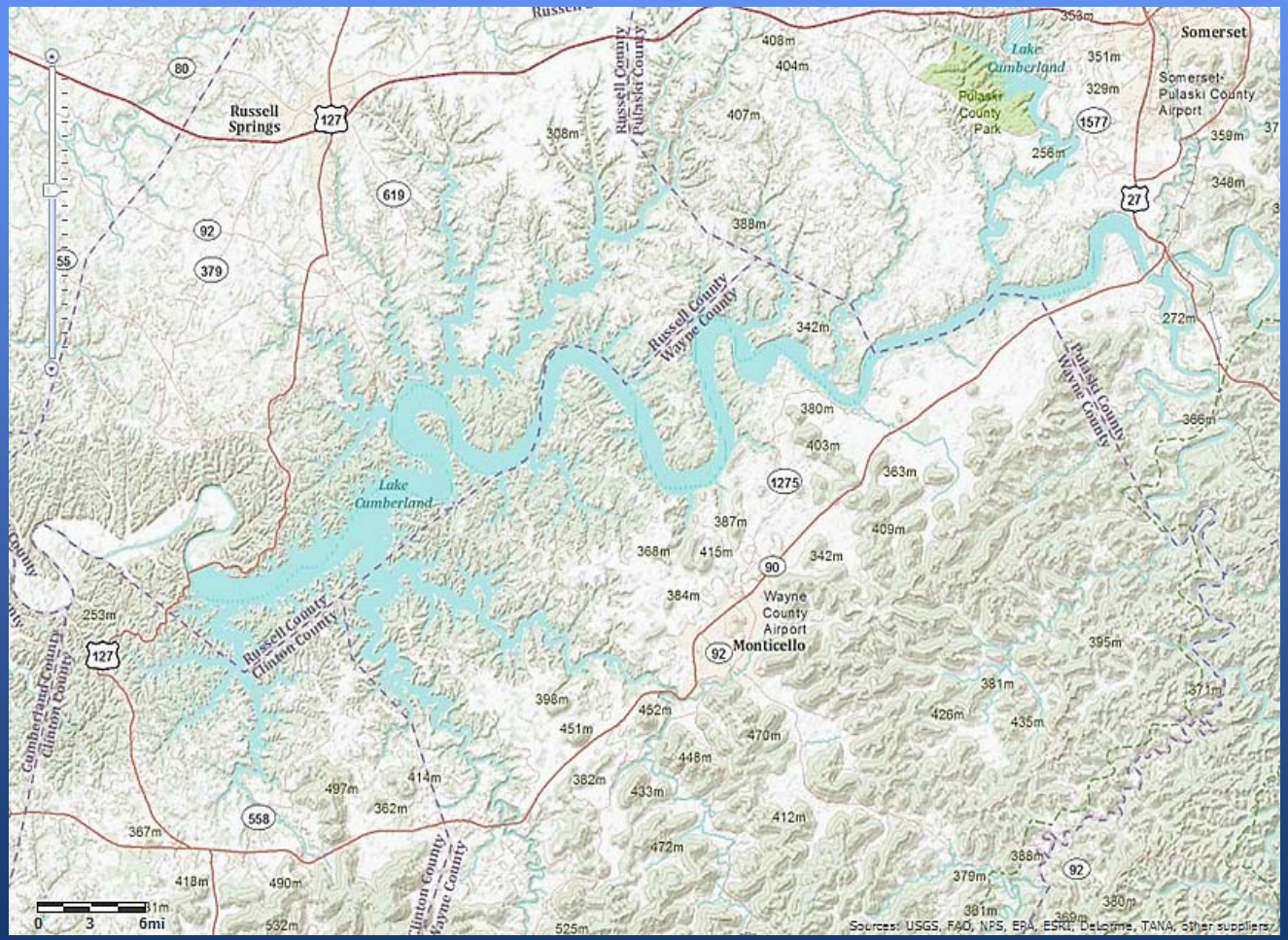
Original files with full collar information for Geographers, Spatial Analysts or Core Professionals

Product: Full resolution, full sheet TIFF images with full metadata and georeference transformation file

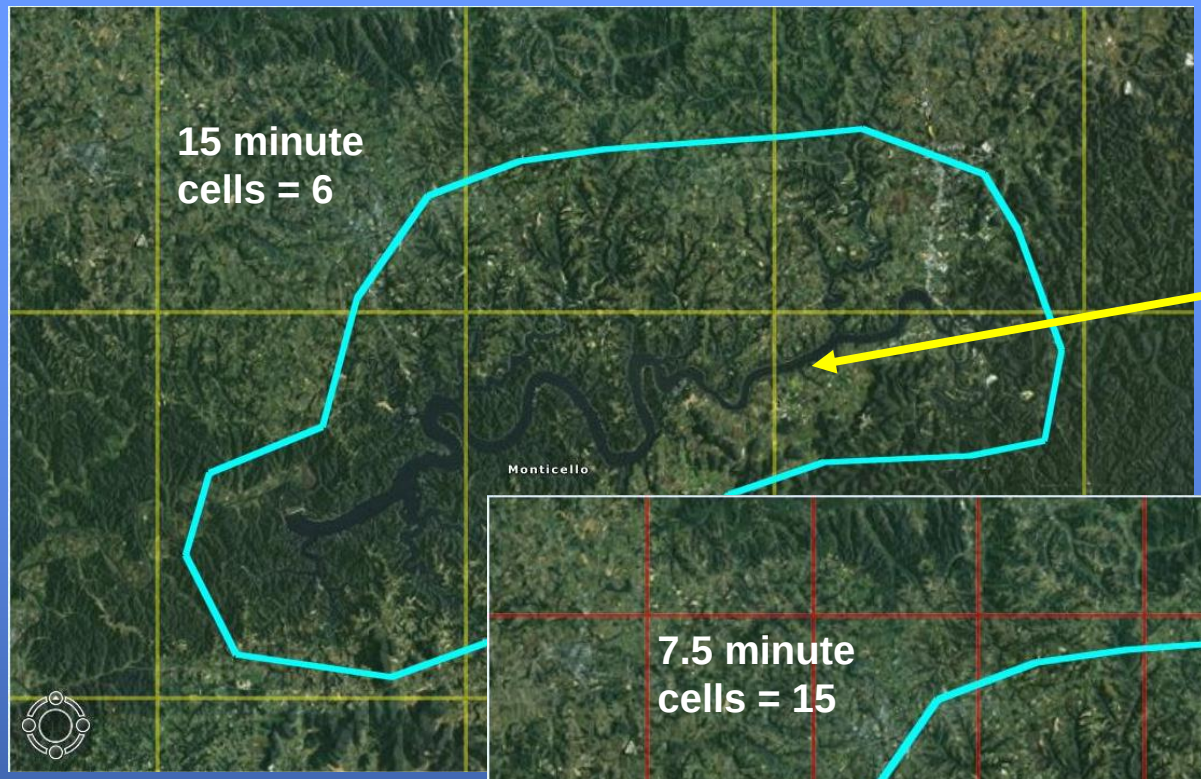
USGS

Historical Quads Example Use:
Change Over Time - River Impoundments

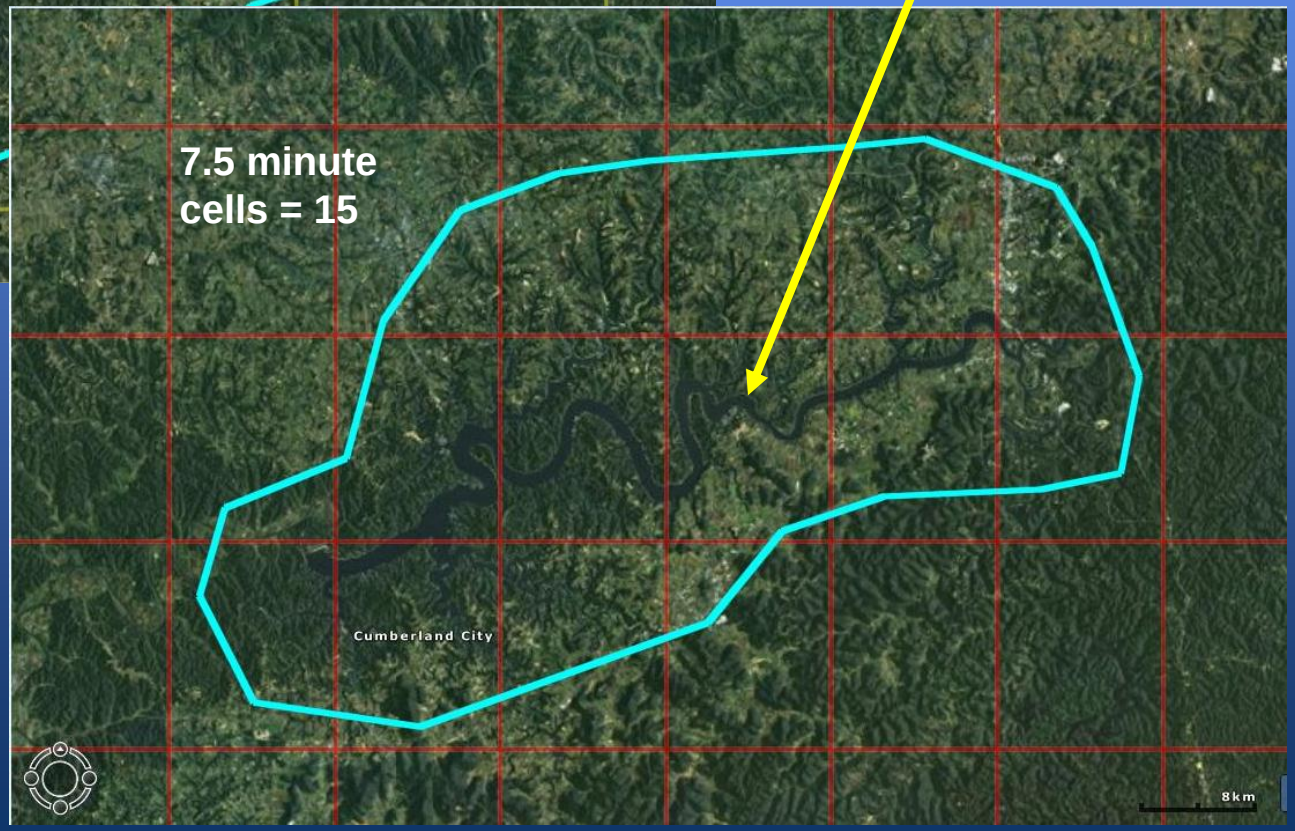
Lake Cumberland, Kentucky



USGS



Lake Cumberland, KY area



First one must find which quad cells cover the area...

USGS

Select the maps for analysis

Circa 1914
1:62500 scale
pre-inundation

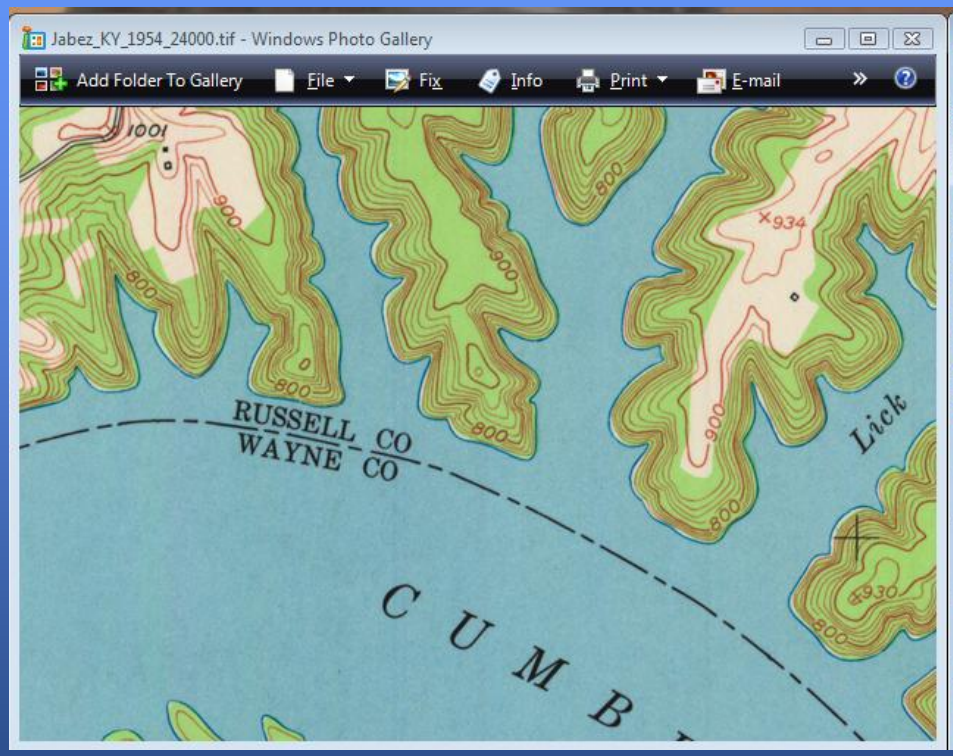
Circa
1954

Circa
1978

1:24,000
scale

USGS

Lake Cumberland, KY



1954 edition – shoreline only

1978 edition – with contours

USGS

User need

Users wanting access to all maps, including special editions and special project maps

Product: Browse images, GeoTIFF and GeoPDF

USGS

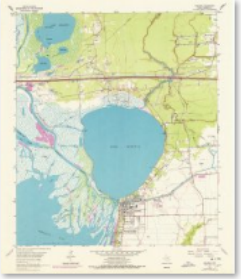
TEXAS_24k

Search TEXAS_24k

File Edit View Tools Help

Organize Include in library Share with Slide show Burn New folder

Anahuac_TX_1961_24000-1.tif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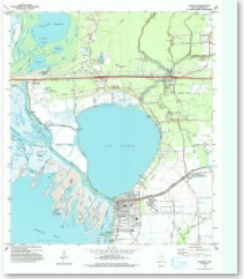
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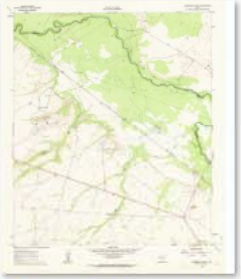
Anaton NE_TX_1976_24000.tif

Anaton NW_TX_1976_24000.tif

Ander_TX_1963_24000.tif

Ander_TX_1987_24000.tif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Anderson Ranch_TX_1961_24000_1986.tif

Anderson_TX_1961_24000.tif

Anderson_TX_1961_24000-1.tif

Andrea Ranch_TX_1956_24000.tif

Andrea Ranch_TX_1982_24000.tif

Andrews_TX_1970_24000.tif

Angleton_TX_1943_24000.tif

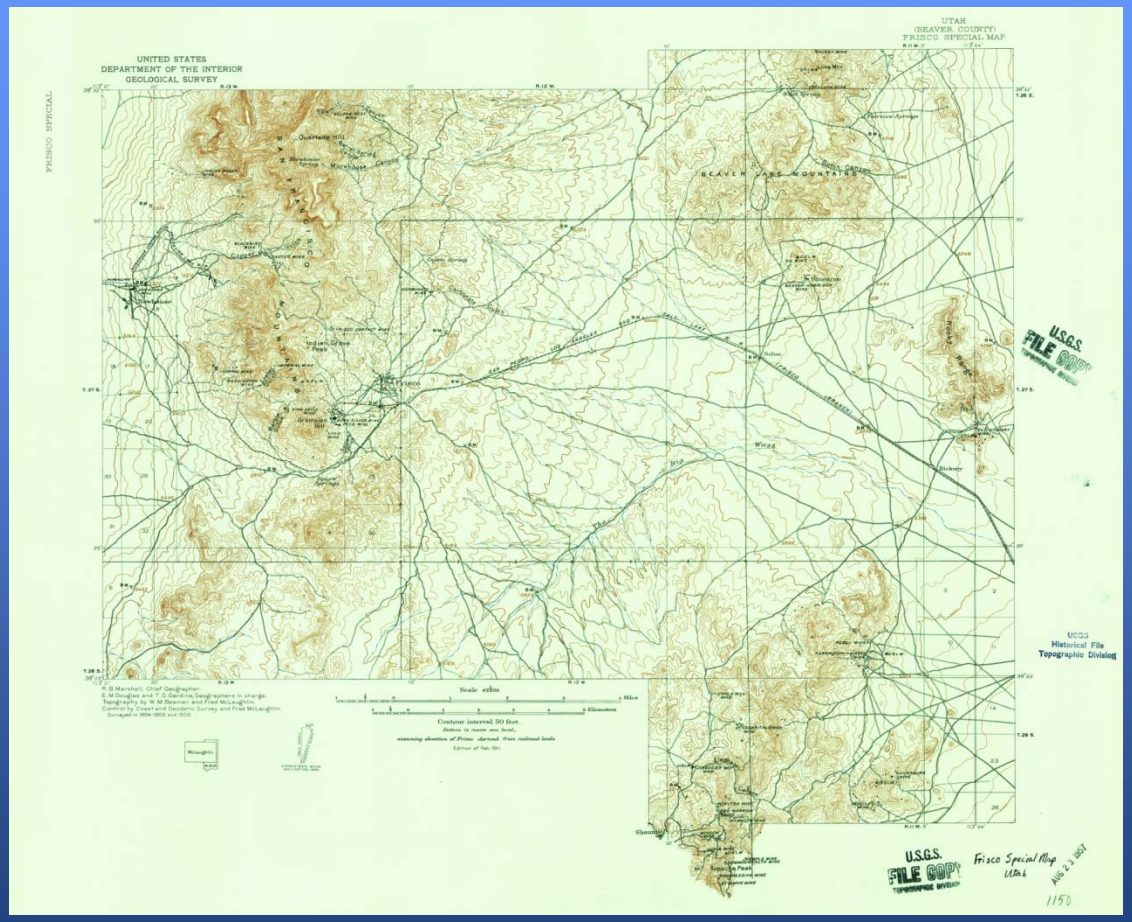
Angleton_TX_1963_24000_1975.tif

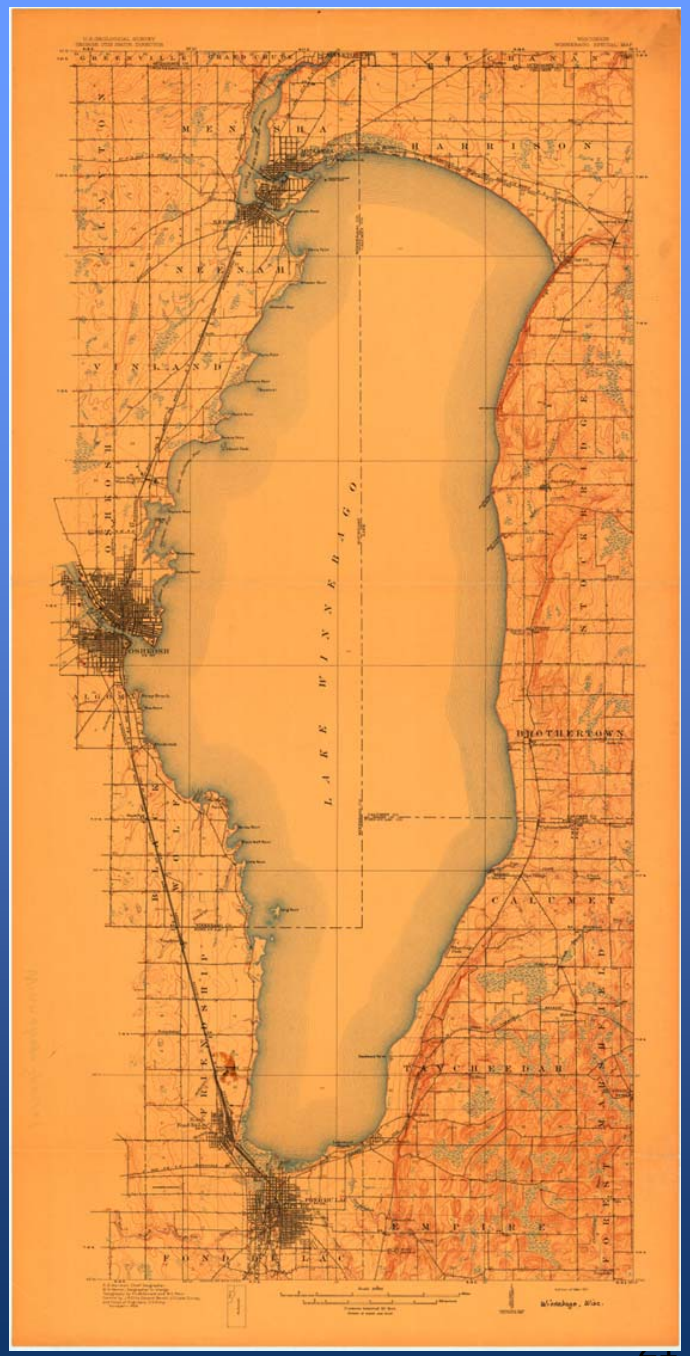
Angleton_TX_1963_24000-1.tif

Angleton_TX_1974_24000.tif

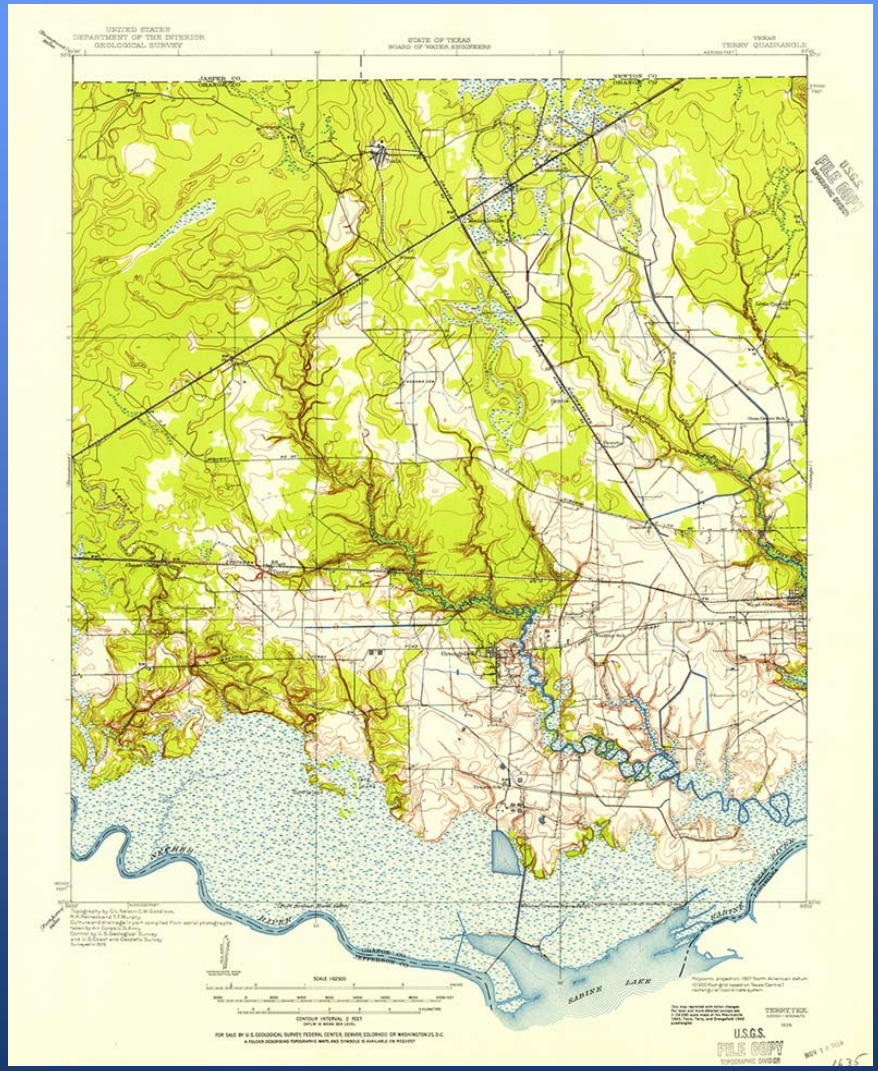
7,882 items

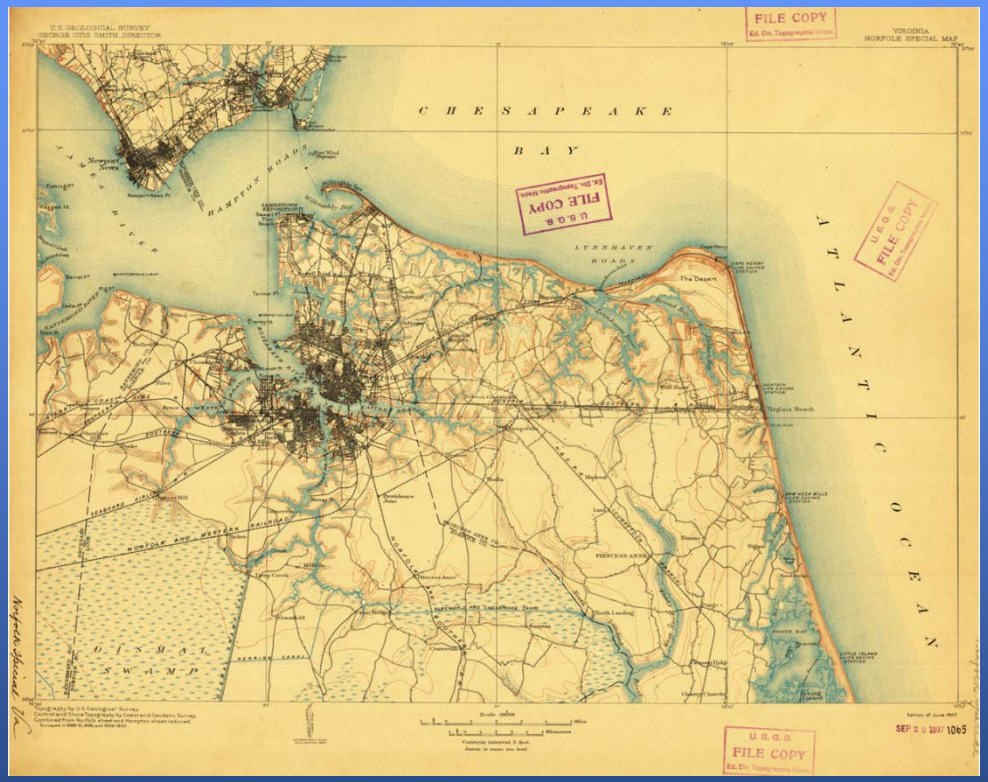
USGS


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UTAH
(BEAVER COUNTY)
FRISCO SPECIAL MAP
FRISCO SPECIAL
BEAVER LAKE MOUNTAINS
Frisco
Indian Grave Peak
Grampian Hill
Bickery
Shamrock
Scale 1:62500
Contour interval 50 feet.
Datum is mean sea level,
assuming elevation of Frisco derived from railroad levels.
Edition of Feb. 1951.
R. B. Marshall, Chief Geographer.
E. M. Douglas and T. G. Gerdine, Geographers in charge.
Topography by W. M. Beaman and Fred McLaughlin.
Control by Coast and Geodetic Survey and Fred McLaughlin.
Surveyed in 1904-1905 and 1910.
McLaughlin
U.S.G.S.
FILE COPY
TOPOGRAPHIC DIVISION
USGS
Historical File
Topographic Division
Frisco Special Map
Utah
AUG 2 3 1957
1150


MENASHA
HARRISON
NEENAH
VINLAND
LAKE WINNEBAGO
BROTHERTOWN
CALUMET
TAYCHEEDAH
EMPIRE
FOND DU LAC
Winnebago, Wis.

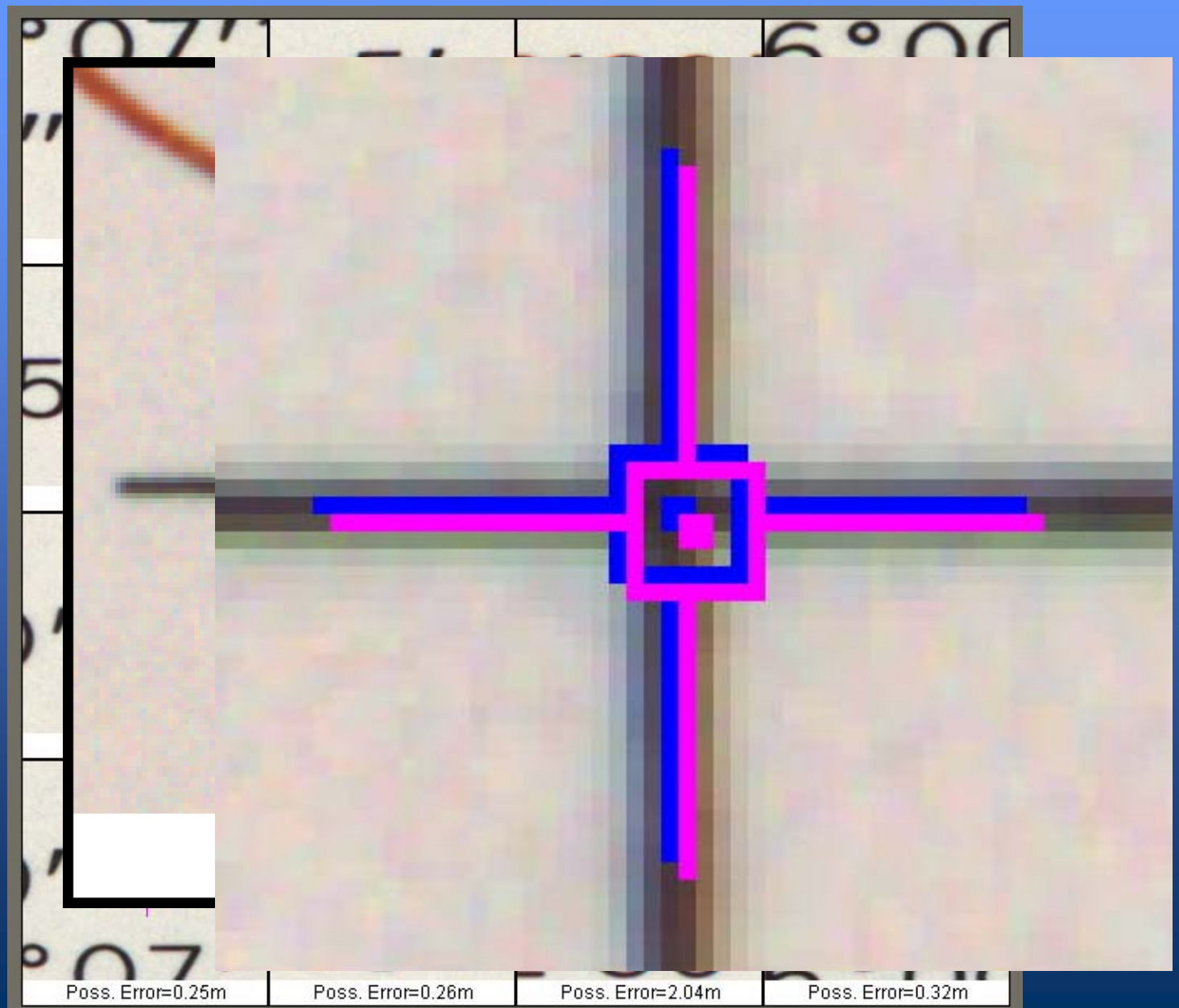
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
SEA ISLE CITY QUADRANGLE
NEW JERSEY—CAPE MAY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
OCEAN CITY
Strathmere
LUDLAM BAY
ATLANTIC OCEAN
Sea Isle City
Townsend Inlet
U.S.G.S.
FILE COPY
TOPOGRAPHIC DIVISION
SEA ISLE CITY, N.J.
1952


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF TEXAS
BOARD OF WATER ENGINEERS
TEXAS
TENNY QUADRANGLE
JASPER CO.
NEWTON CO.
SABINE LAKE
TENNY TEX.
U.S.G.S.
FILE COPY
TOPOGRAPHIC DIVISION


U.S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR
VIRGINIA
NORFOLK SPECIAL MAP
FILE COPY
CHESAPEAKE
BAY
ATLANTIC OCEAN
DISMAL SWAMP
HAMPTON ROADS
LYNNHAVEN ROADS
The Desert
Virginia Beach
PRINCESS ANNE
North Landing
SEP 20 1907 1065

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF MINNESOTA
DEPARTMENT OF ADMINISTRATION
PONEMAH QUADRANGLE
MINNESOTA-BELTRAMI CO.
UPPER RED LAKE
RED LAKE
INDIAN RESERVATION
LOWER RED LAKE
PONEMAH, MINN.

Georeferencing



Availability

USGS science for a changing world — The National Map

***The National Map:* Historical Topographic Map Collection**

- Map Collection Home
- Collection Status
- Collection Downloads
- About the Collection
- Contact Us
- *The National Map* Home

Historical Topographic Maps - Preserving the Past

For more than 125 years, the U.S. Geological Survey (USGS) topographic maps have accurately portrayed the complex geography of the Nation. The USGS is the largest producer of printed topographic maps, and, prior to 2009, USGS topographic maps were created using traditional cartographic methods and printed using the lithographic printing process.

Because historical maps are stored in a limited number of collections and are not readily available, the USGS National Geospatial Program (NGP) is converting these historical printed topographic quadrangles to an electronic format (GeoPDF). This scanning and processing effort serves the dual purpose of creating a master catalog and digital archive copies of the irreplaceable collection of topographic maps in the USGS Reston Map Library, as well as making the maps available for viewing and download from the USGS Store.

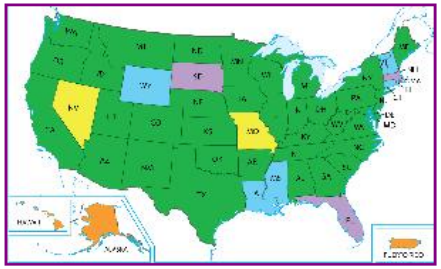
The processing of this invaluable collection is well underway, with more than 141,000 GeoPDF maps of the approximate total 180,000 currently available for download. Over the next months the number of files available, in a variety of published scales, will continue to expand until all of the topographic maps created throughout the Survey's history are once again available to the public.

* ***Find My Map !!***
  - **Historical Topographic Map Collection** search
    Locate and view metadata and historical maps through a *map name* search
  - **USGS Store: Map Locator and Downloader**
    Locate, view, download and purchase historical maps through a *map-based* search
* **Availability:**

  Completed

  (*Click graphic for larger version*)

  Scheduled

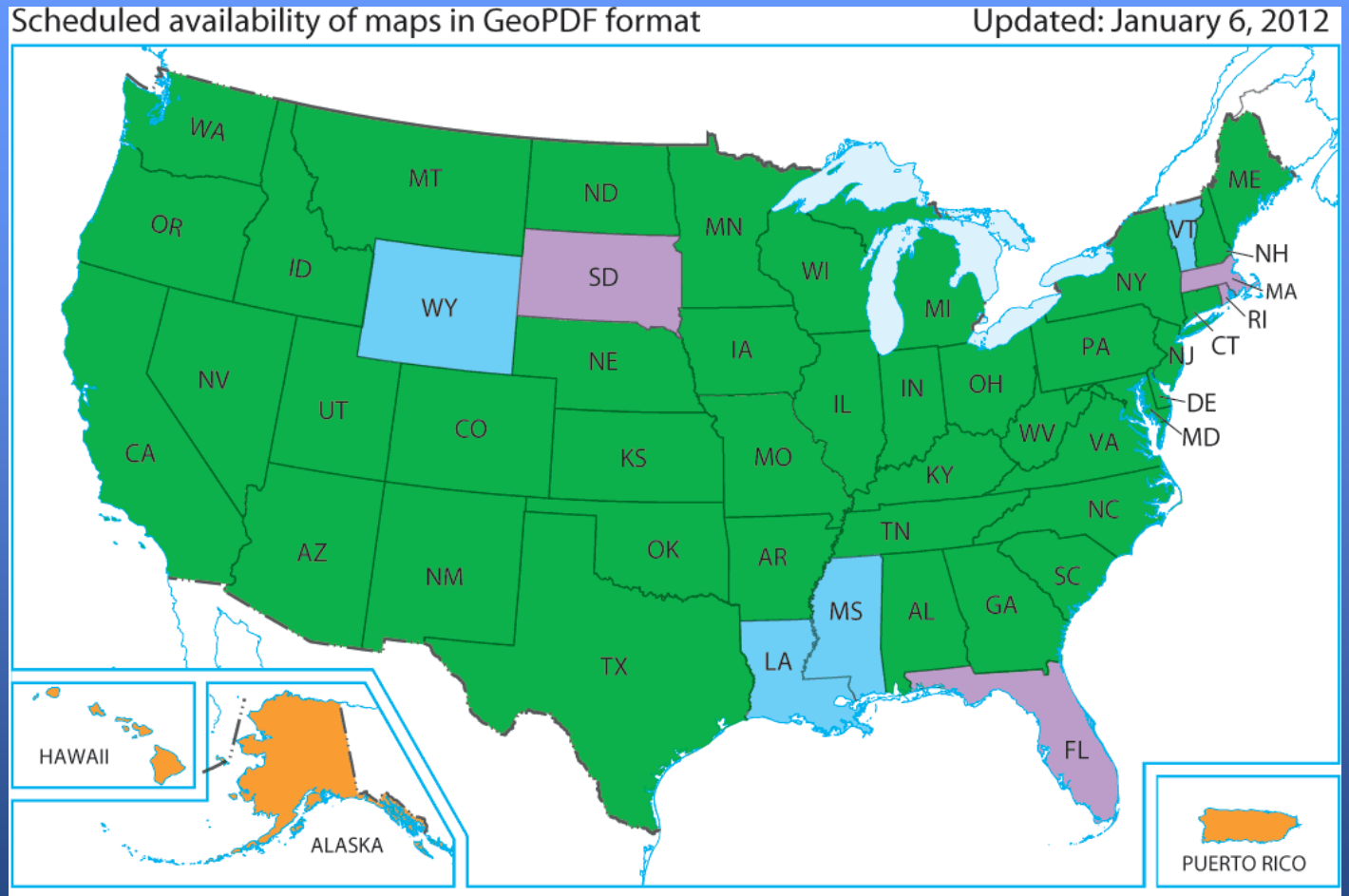


* **Download Instructions**
* **Historical Maps Users Guide**
* **Frequently Asked Questions**

USGS

http://nationalmap.usgs.gov/historical

What has been accomplished



Standard cells released

January - March 2012

April - June 2012

July - September 2012

The above image represents the status of standard quadrangle cells only; nonstandard maps will be available in the summer of 2012.
The quadrangle maps normally cover a standard unit of latitude and longitude.
For example, the 1:24,000 scale maps span 7.5 x 7.5 minutes.
Occasionally maps were prepared and printed with a slightly different geographic area to make the map more useful to the reader, such as extending coverage to include a state border or island.
These nonstandard cells require additional processing and are being prepared separately.

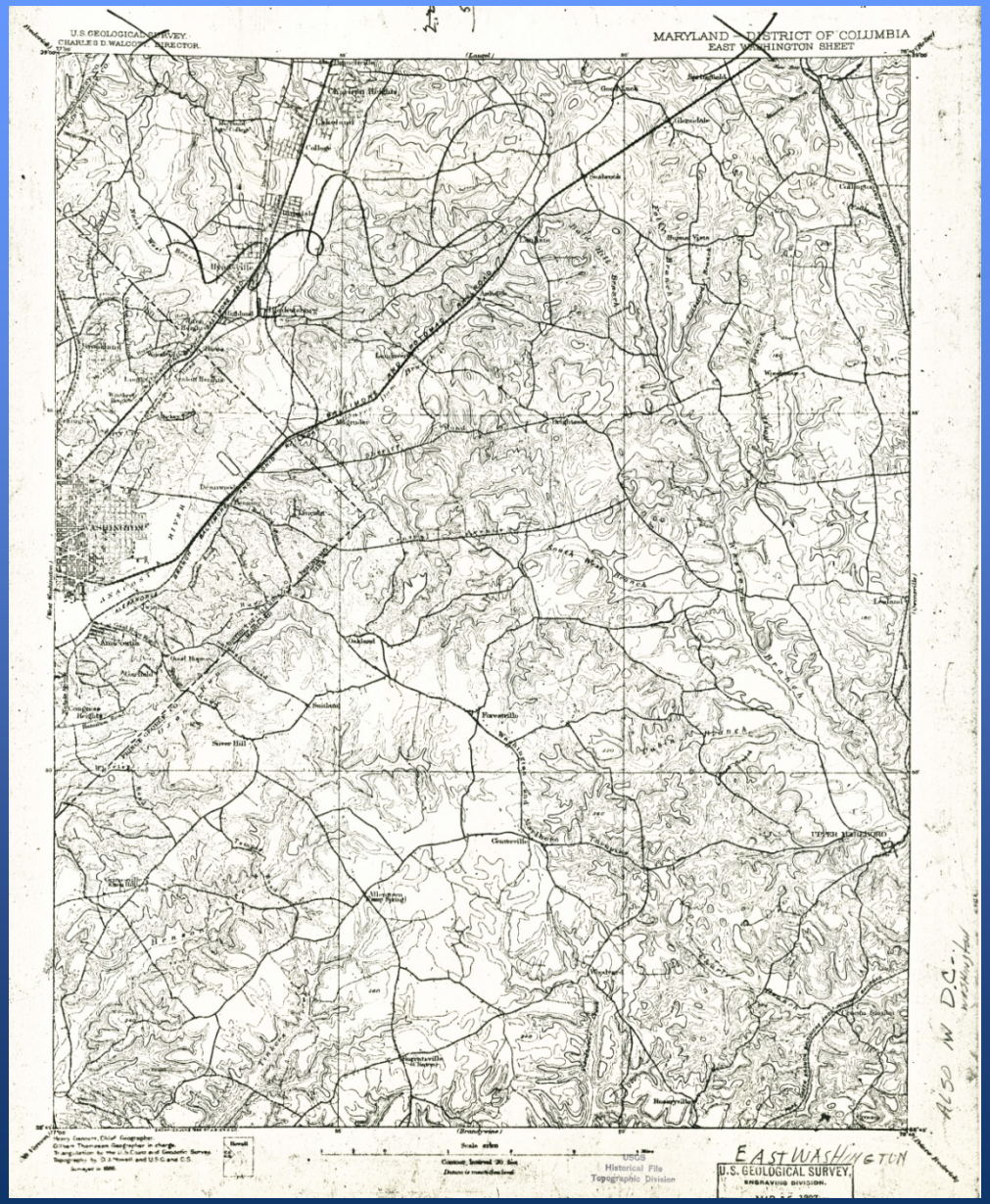
USGS

Virginia's Oldest Map

Grundy
1886 1:125,000

USGS

Maryland's Oldest Map

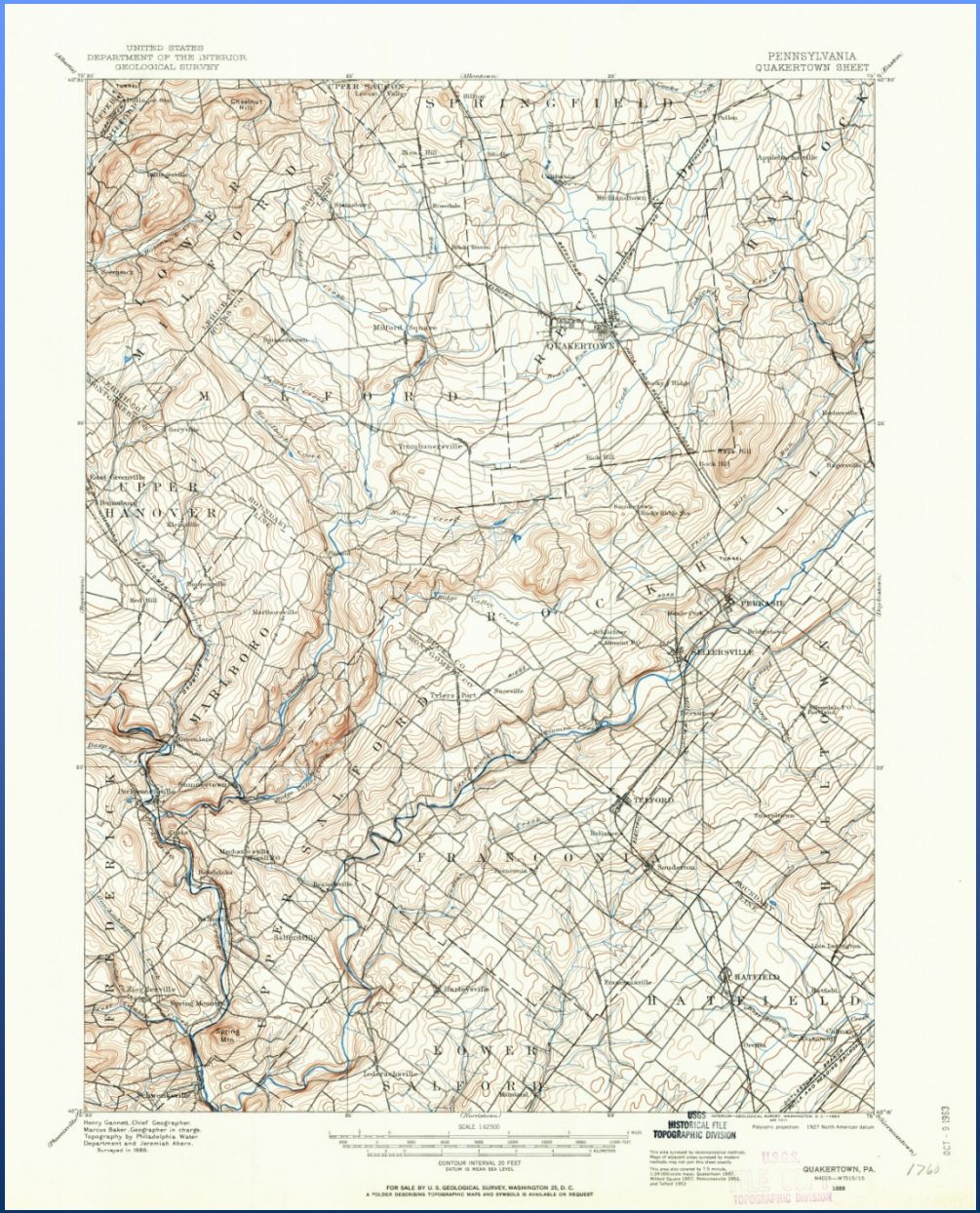


East Washington
1886 1:62500

USGS

Pennsylvania's Oldest Map

Quakertown
1888 1:62500



USGS

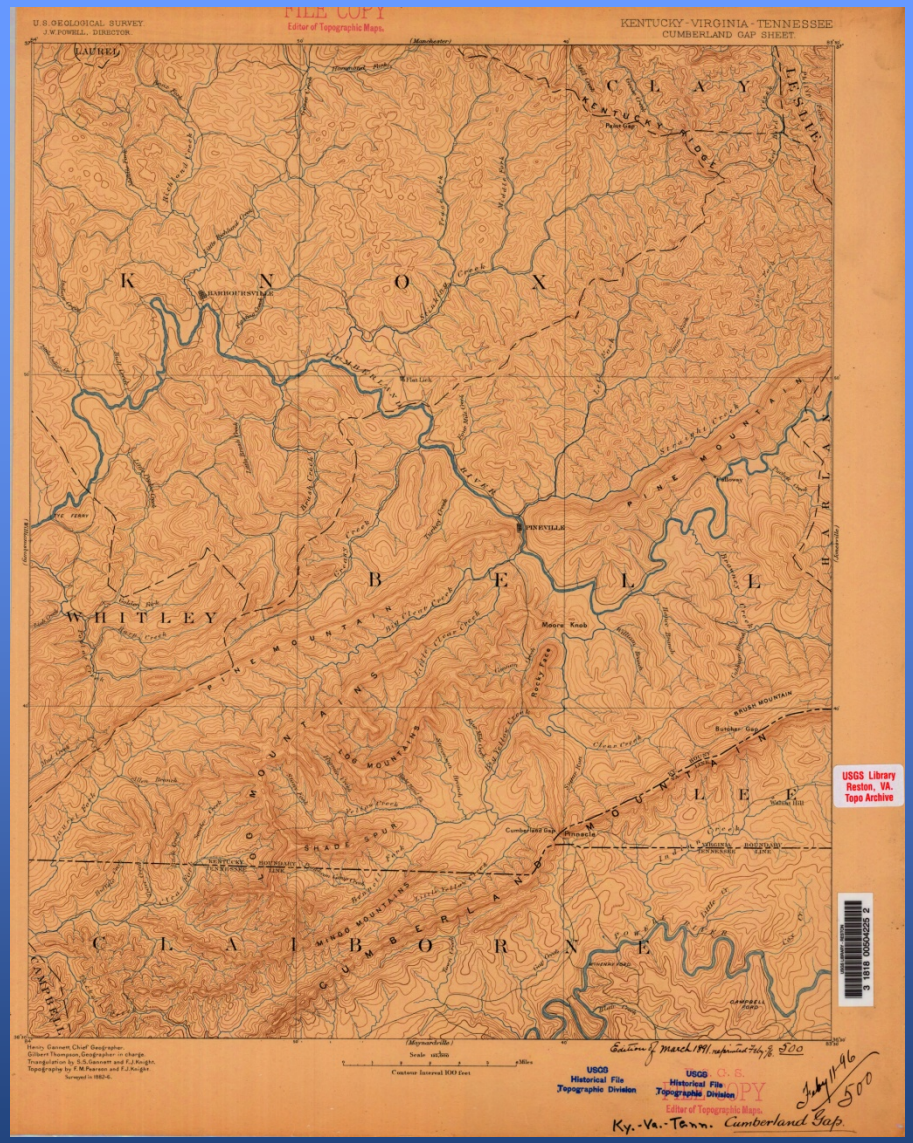
North Carolina's Oldest Map

Cowee
1886 1:125000

USGS

Kentucky's Oldest Maps

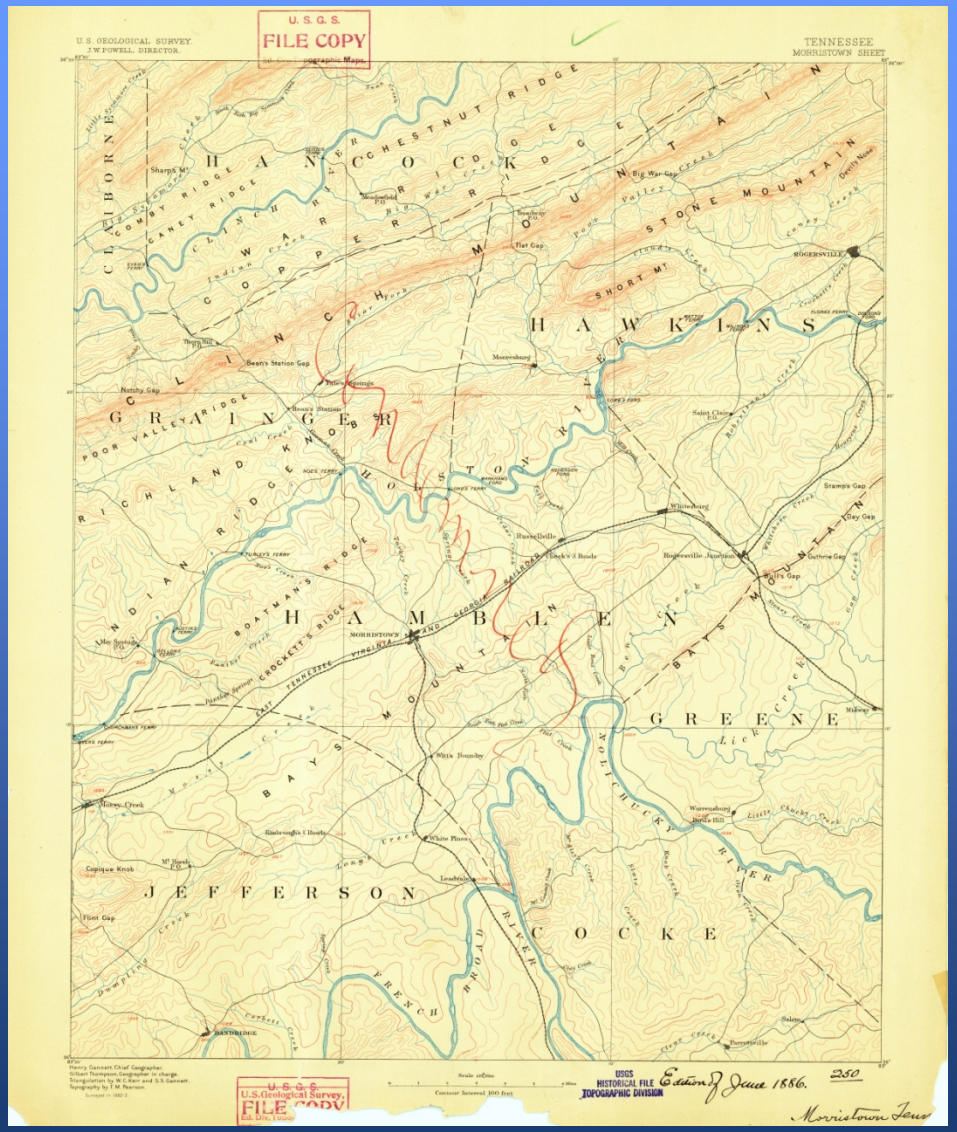
Prestonburg
1886 1:125000



Cumberland Gap
1886 1:125000

USGS

Tennessee's Oldest Maps



Maynardville
1883 1:125000

Morristown
1883 1:125000

Indiana's Oldest Maps

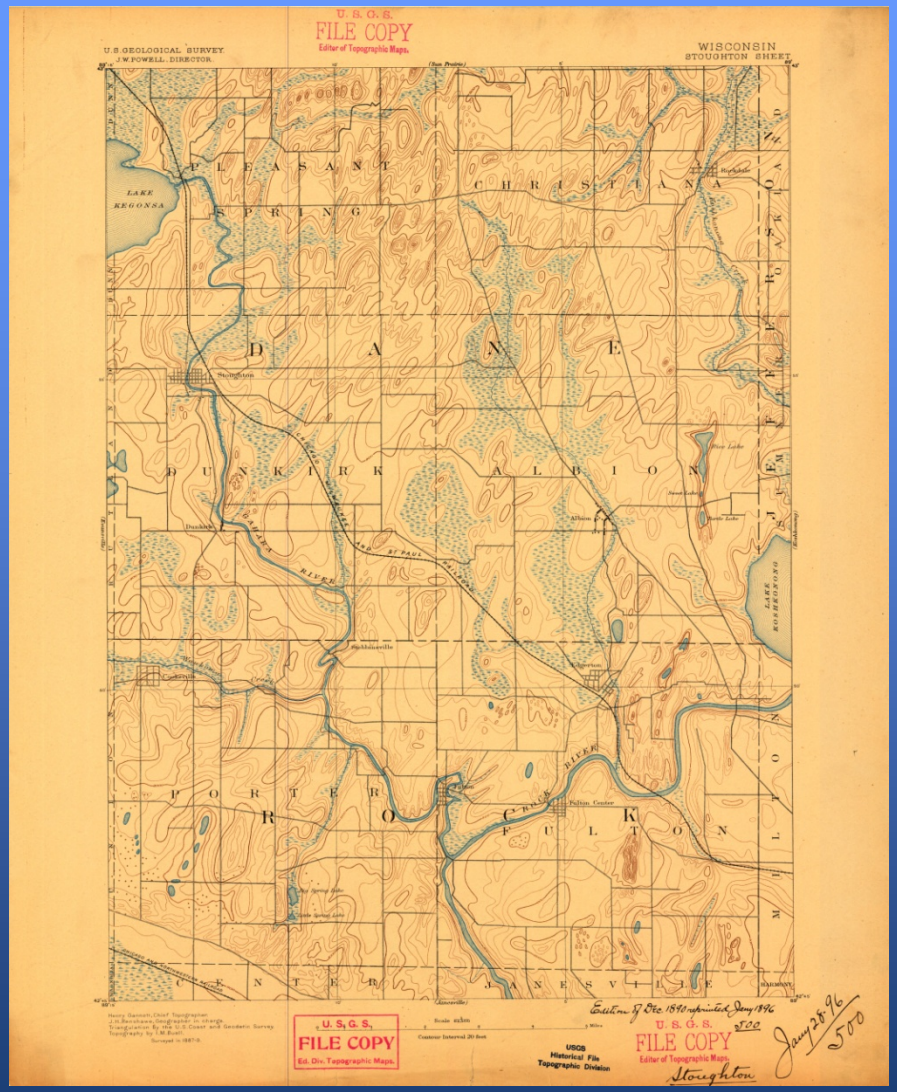
De Gonia Springs
1900 1:62500

Tolleston
1900 1:62500

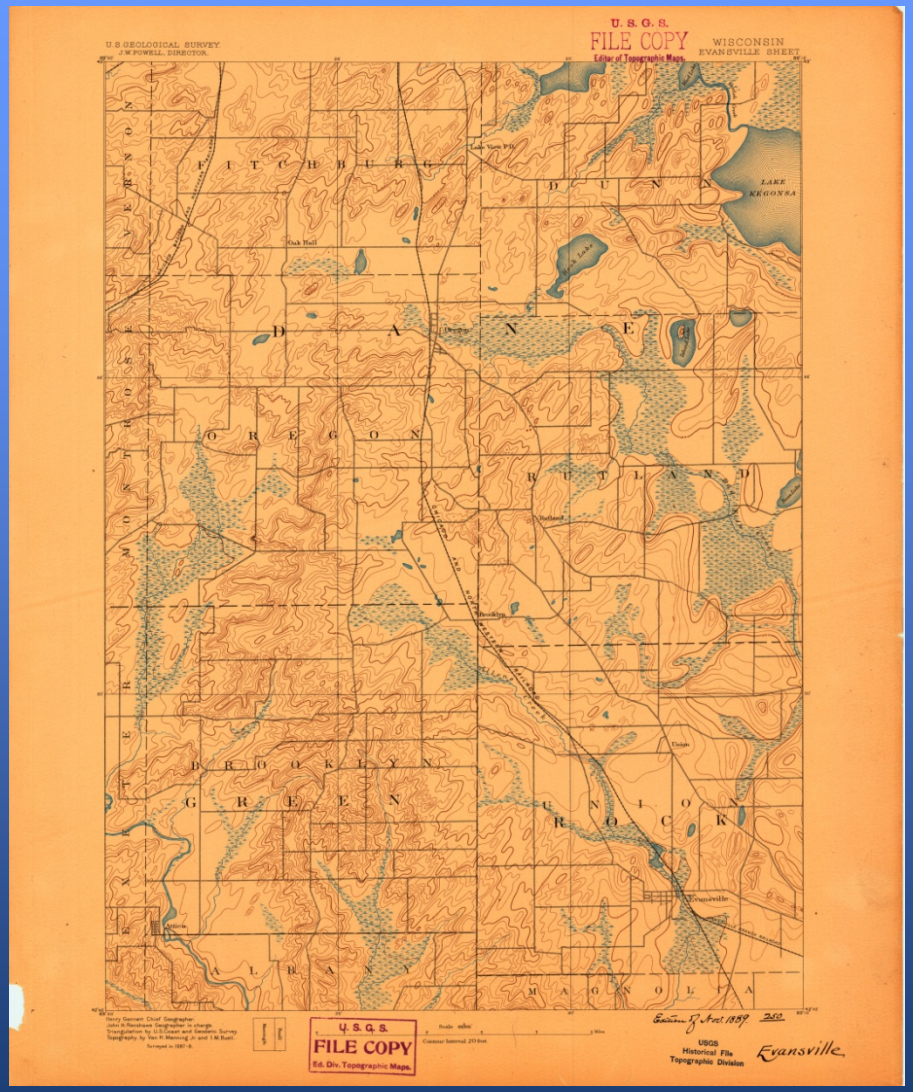
St. Meinrad
1900 1:62500

USGS

Wisconsin's Oldest Maps



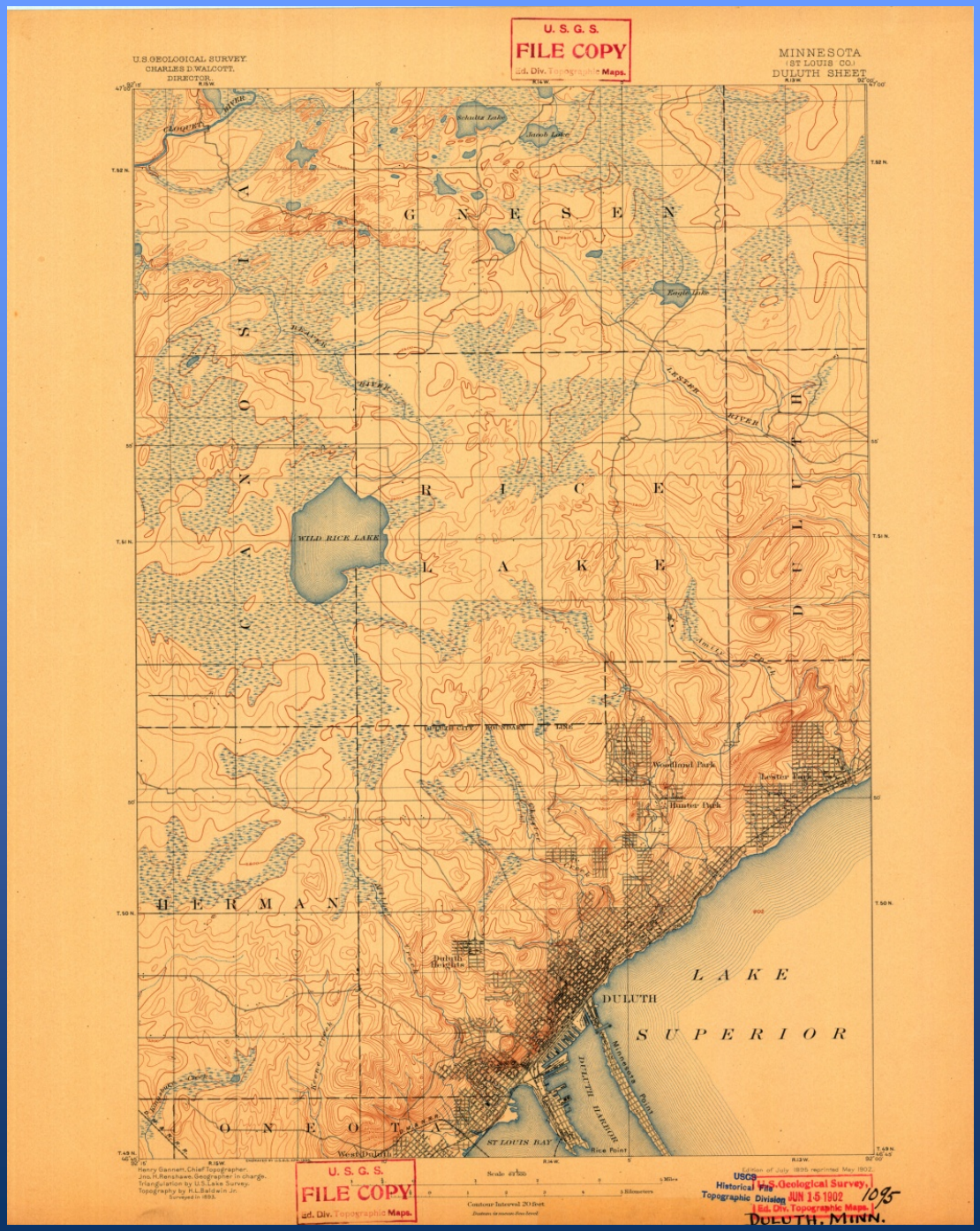
Stoughton
1889 1:125000



Evansville
1889 1:125000

Minnesota's Oldest Map

Duluth
1895 1:62500

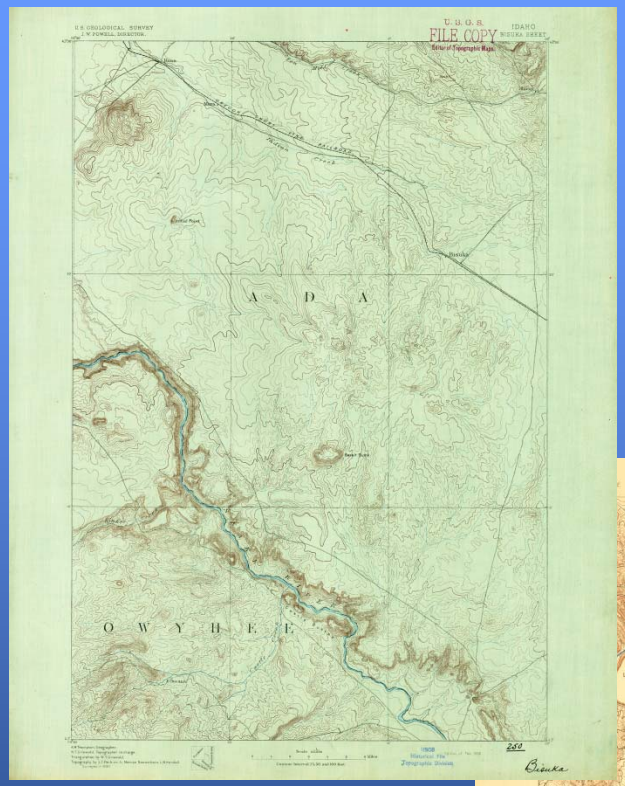


Colorado's Oldest Map

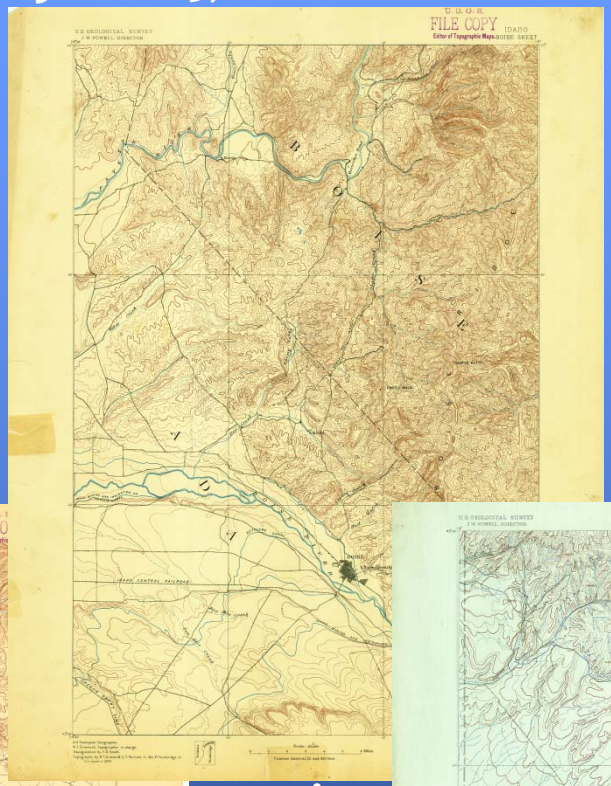
Mosquito Range
1886 1:63360

USGS

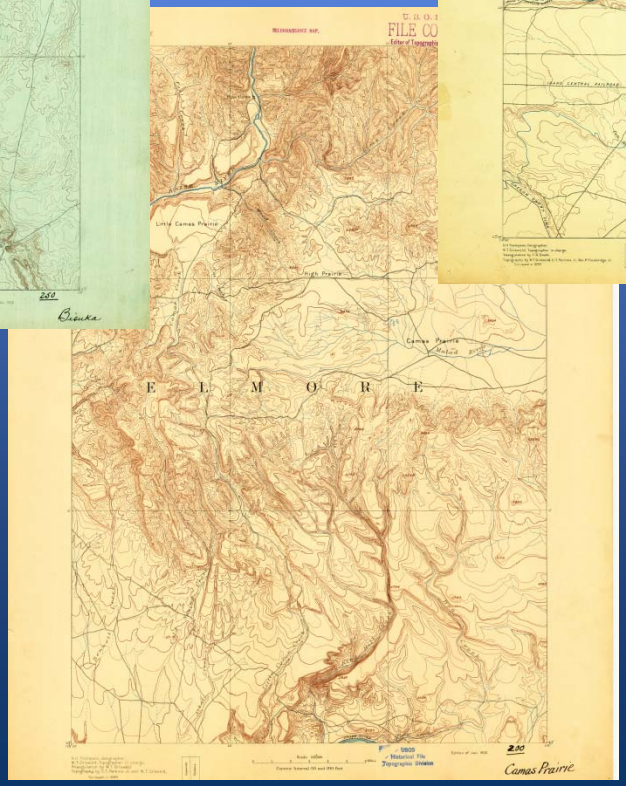
Idaho's Oldest Maps Published 1892 1:125,000



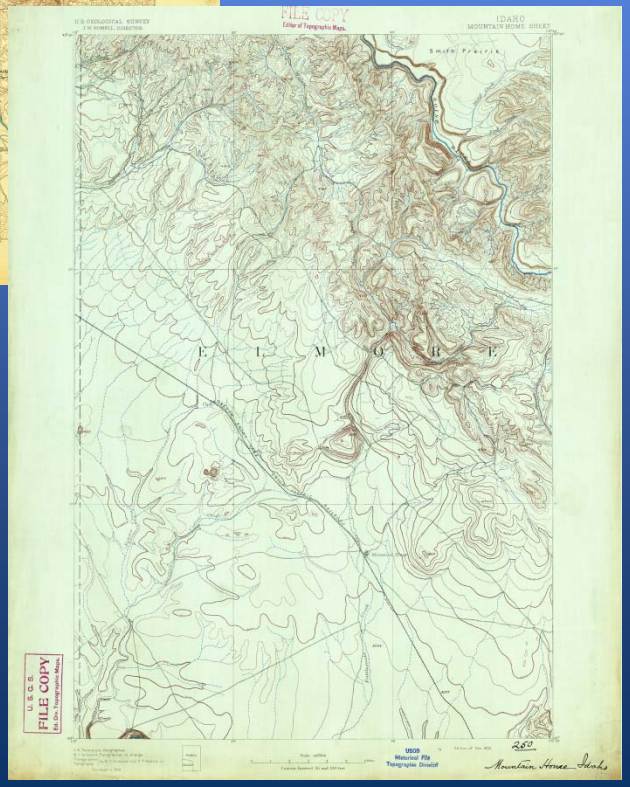
Bisuka



Boise



Camas Prairie

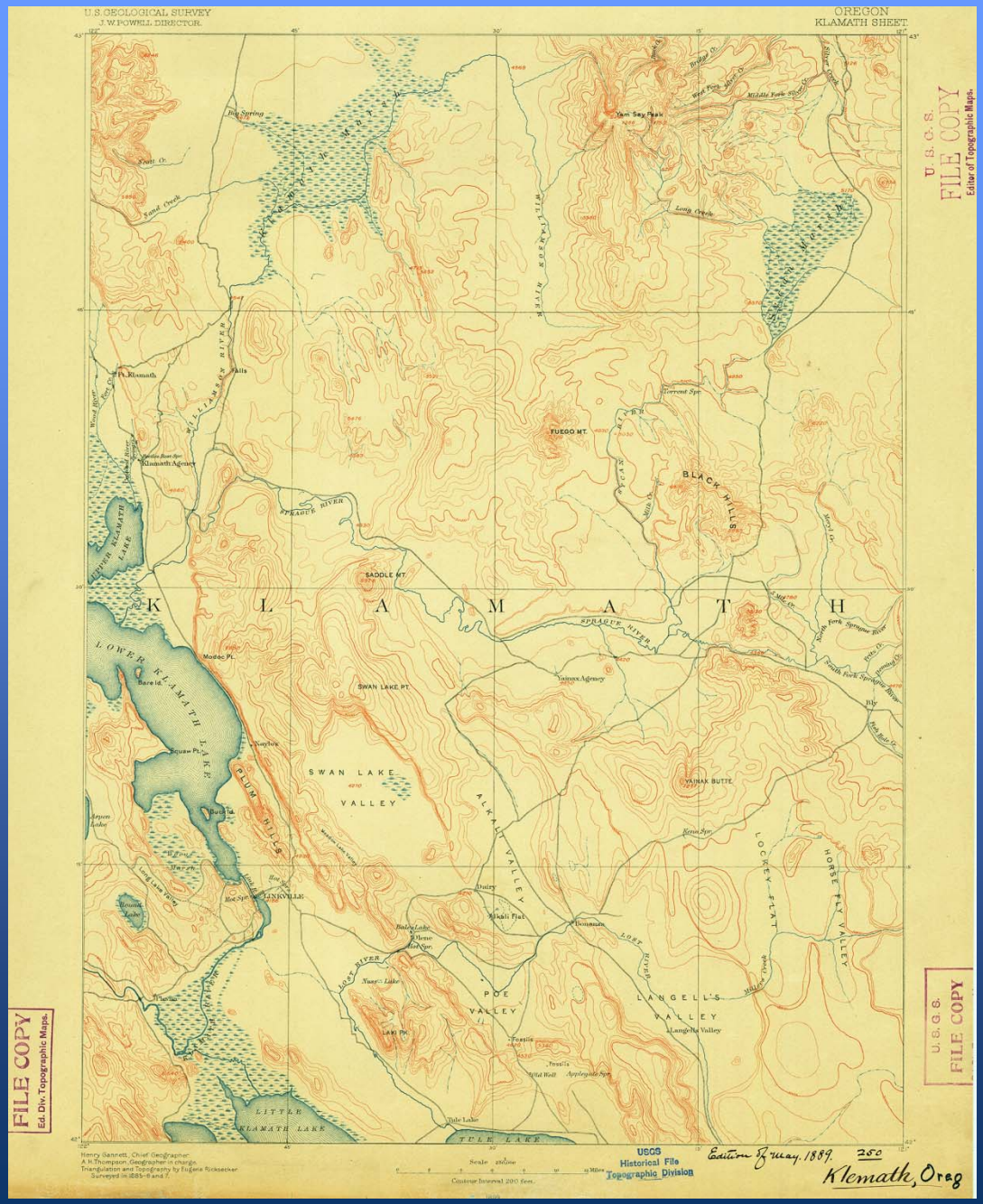


Mountain Home

USGS

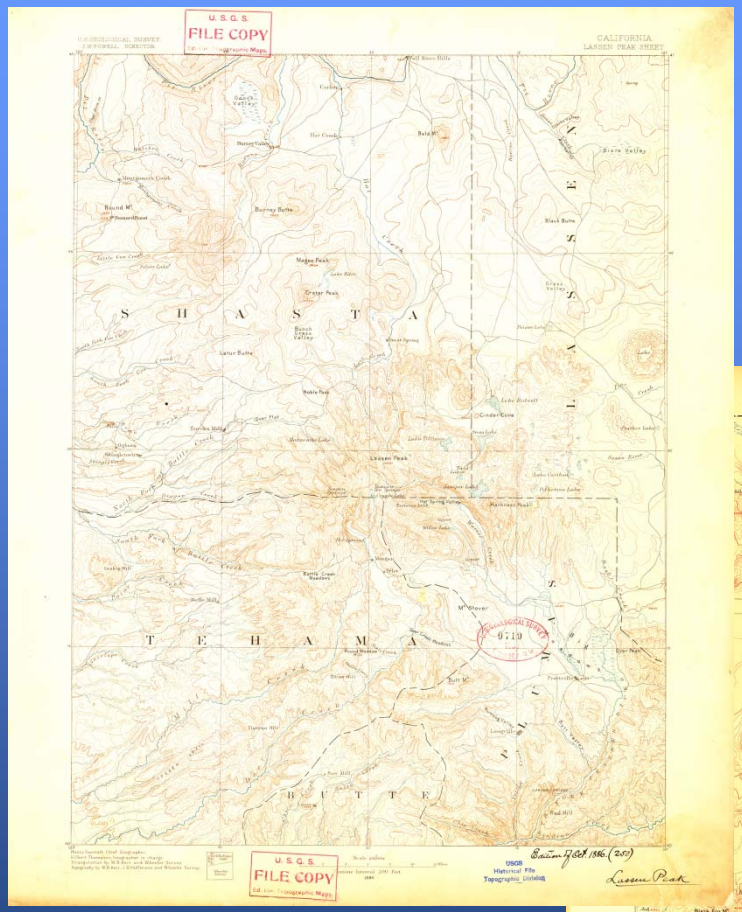
Oregon's Oldest Map

Klamath
1889 1:250,000



California's Oldest Maps

Published 1886 1:250,000

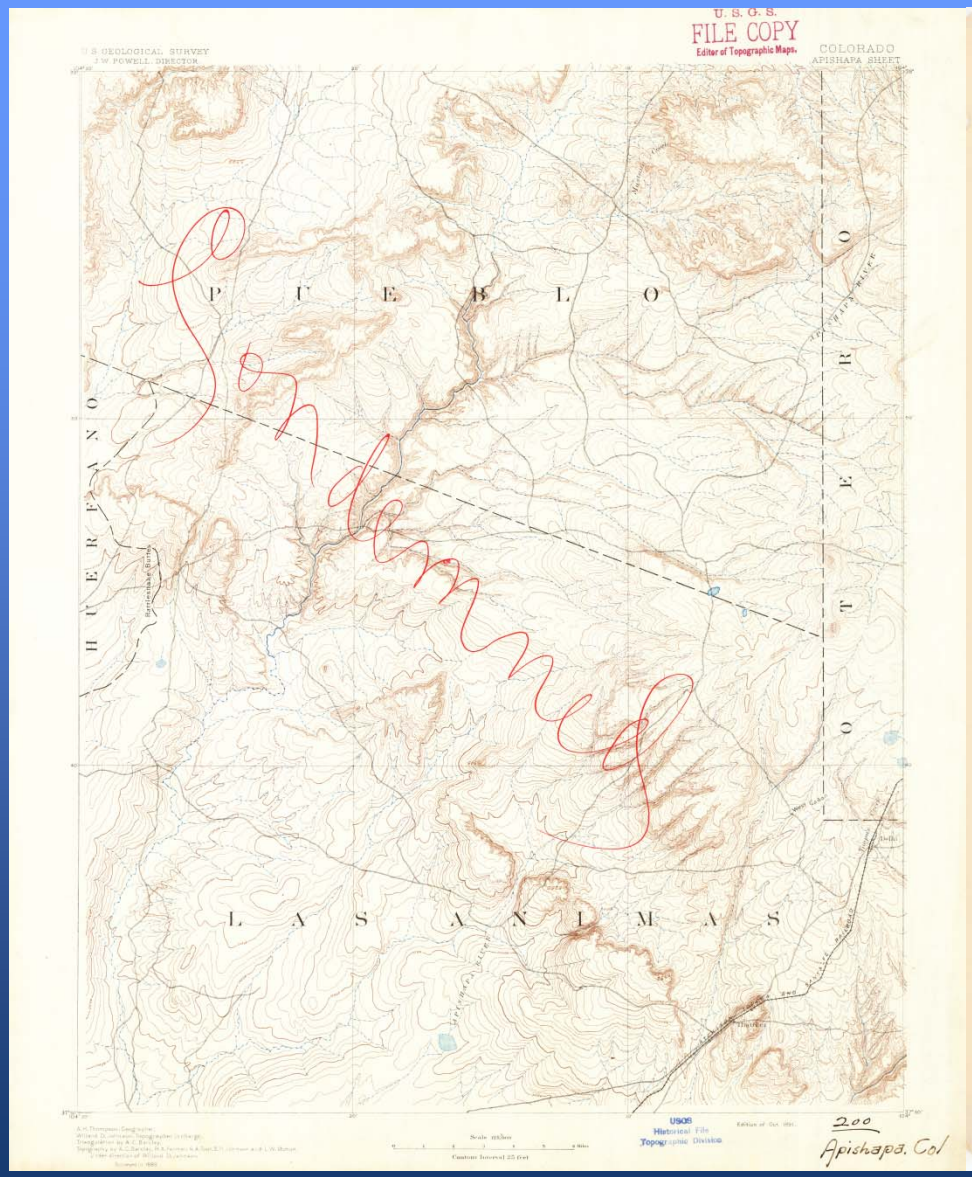


Lassen Peak

Modoc Lava Bed

Shasta

USGS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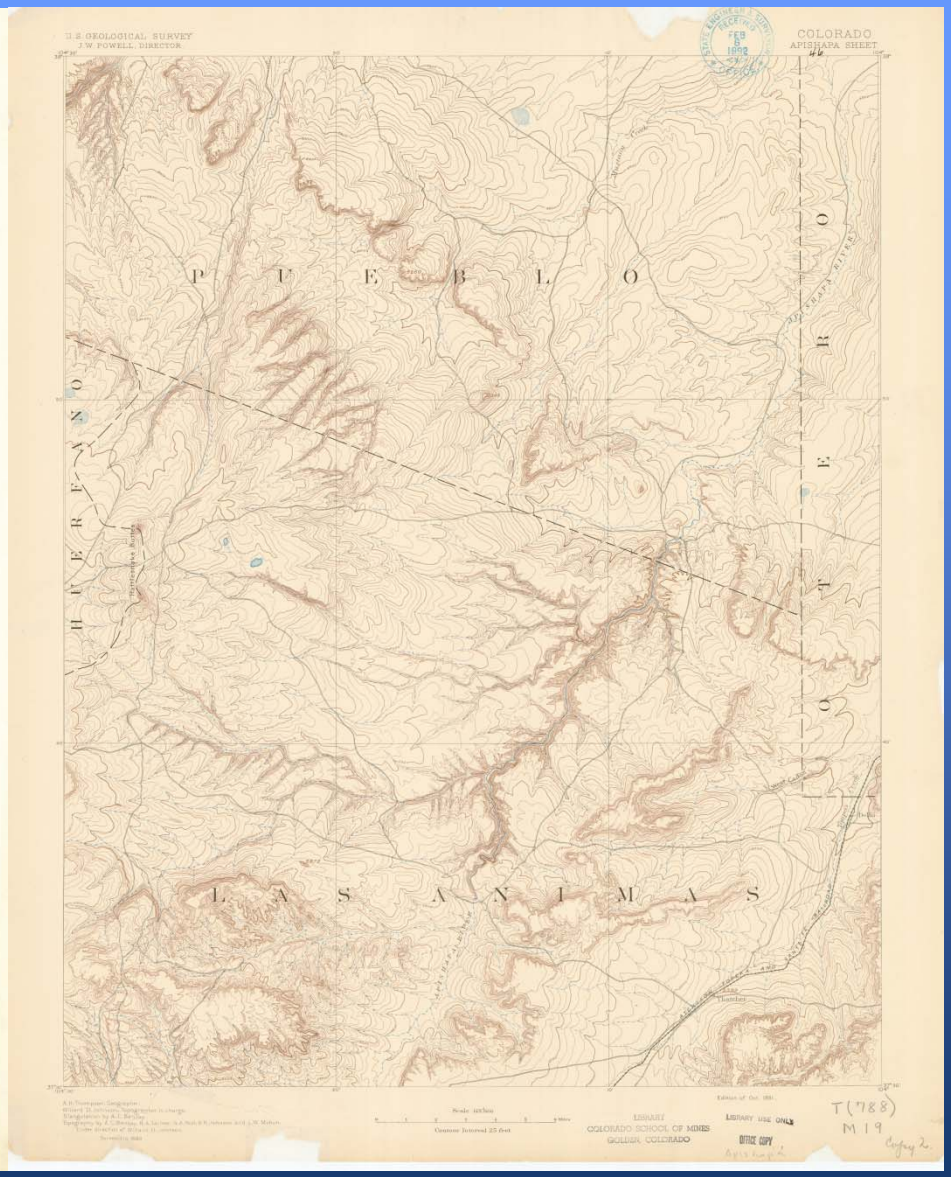
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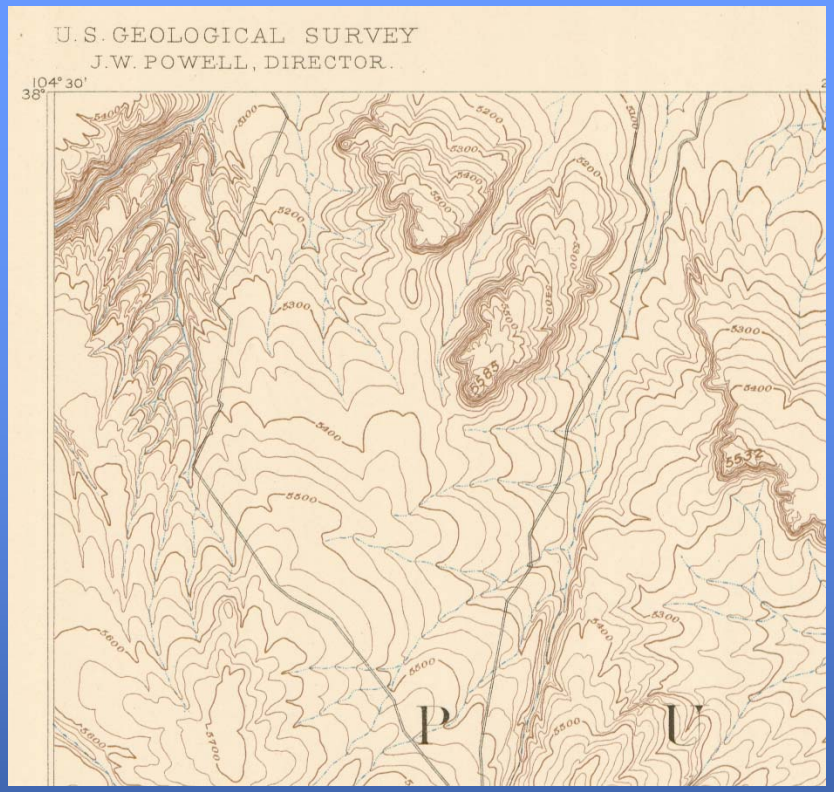
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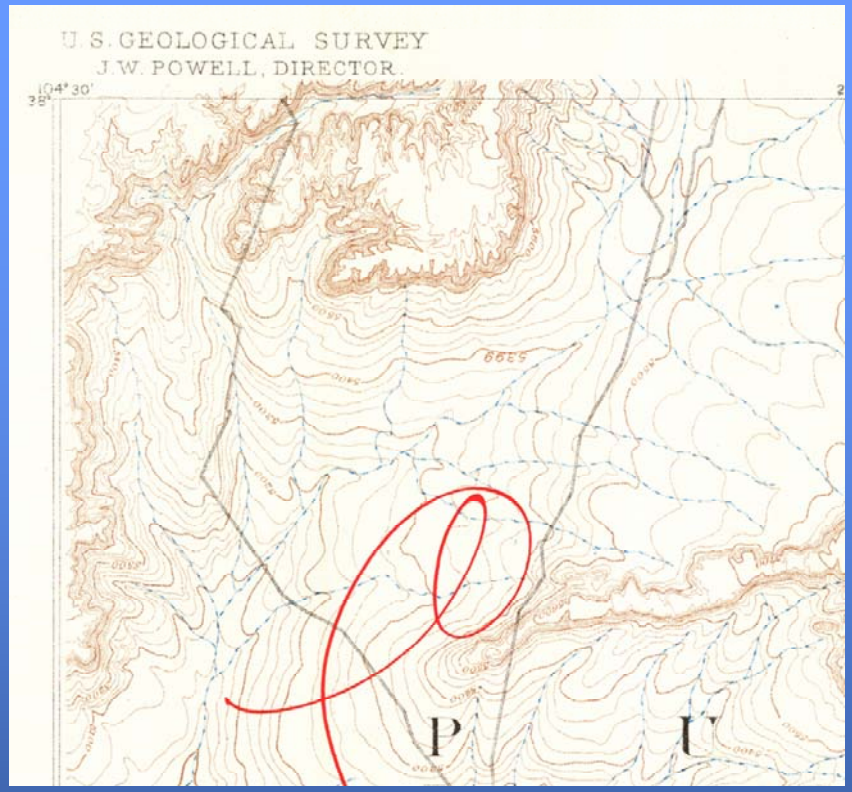
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Edition of Oct. 1891.
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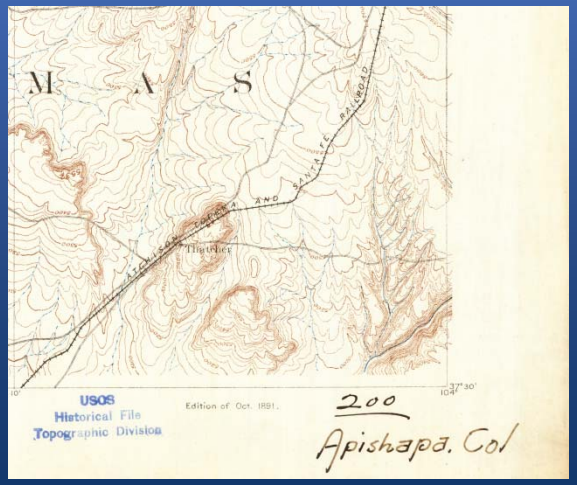
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What is needed

Discovery/Viewing

Search:
- Text
- TNM Viewer
- Historical Topographic Map Collection website
  - Viewer
  - Gallery Image*
  - Status
  - Collateral publications and information
  - Newly found maps and volunteer information

Metadata download

Use

Geographers, Spatial Analysts and Core Professionals
- Viewer/Image Server
  - Download
  - Export
- Full Resolution files
  - Original TIFF*
  - Local GIS use ("GIS ready")
    - Arc (Aux.xml* & original TIFF)
    - GDAL Public Domain (GCP.xml* & original TIFF)
  - Readme instructions*

General public and map users
- GeoPDF* & attached metadata.xml

Documentation

Metadata.xml*
Readme with links
Project documentation
Precision.xml*

* Archived in Baglt

USGS

Archive Using BagIt

An open standard for file exchange, used by the Library of Congress

Included Files	Format
• Browse Image	JPEG
• Original Scan	TIFF
• GeoPDF	PDF
• Aux for ESRI georeference	XML
• Ground control point	XML
• Readme Instructions	TXT
• Metadata	XML
• Georeference Precision	XML
• Project description	TXT

Checksums allow recipient to validate the bag contents

New Mexico's Oldest Map

USGS

Northwestern New Mexico 1881 1:250000

Newly found quadrangles to add to collection

Stub records

We think the following fields are all we would need:

- Scan ID (we will input from number range provided)
- Scan File Name
- Contributor File Name
- Map Name
- Map Scale
- Aerial Photo Year
- Primary State
- Datum
- Field Check Year
- Date On Map
- Projection
- Imprint Year
- Survey Year
- Photo Inspection Year
- Edit Year
- LC Physical Condition (include drop down list)
- Photo Revision Year
- Woodland Tint

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