The following was presented at DMT'13
(June 2-5, 2013, Golden, CO).

The contents are provisional and will be
superseded by a paper in the
DMT'13 Proceedings.

See also earlier Proceedings (1997-2012)
http://ngmdb.usgs.gov/info/dmt/

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Scanning and Digital Cleanup Of Out-of-print Maps

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Digital Mapping Techniques
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Association of American State Geologists
United States Geological Survey

Background

- KGS has a large archive of out-of-print maps dating to the late 1800's;
- Demand for digital and printed map versions for purposes ranging from GIS data conversion to hanging on a wall. Examples:
  - Interest in old oil-themed maps to aid in new exploration;
  - Governmental units looking for historical data related to current projects or issues;
  - Individuals wanting a copy of an old map that they've discovered in some other context;
  - Our own data-archiving and GIS needs.

Essential hardware

Our acquisition of a 42” sheetfeed scanner allowed us to take on projects that we couldn’t consider in the past

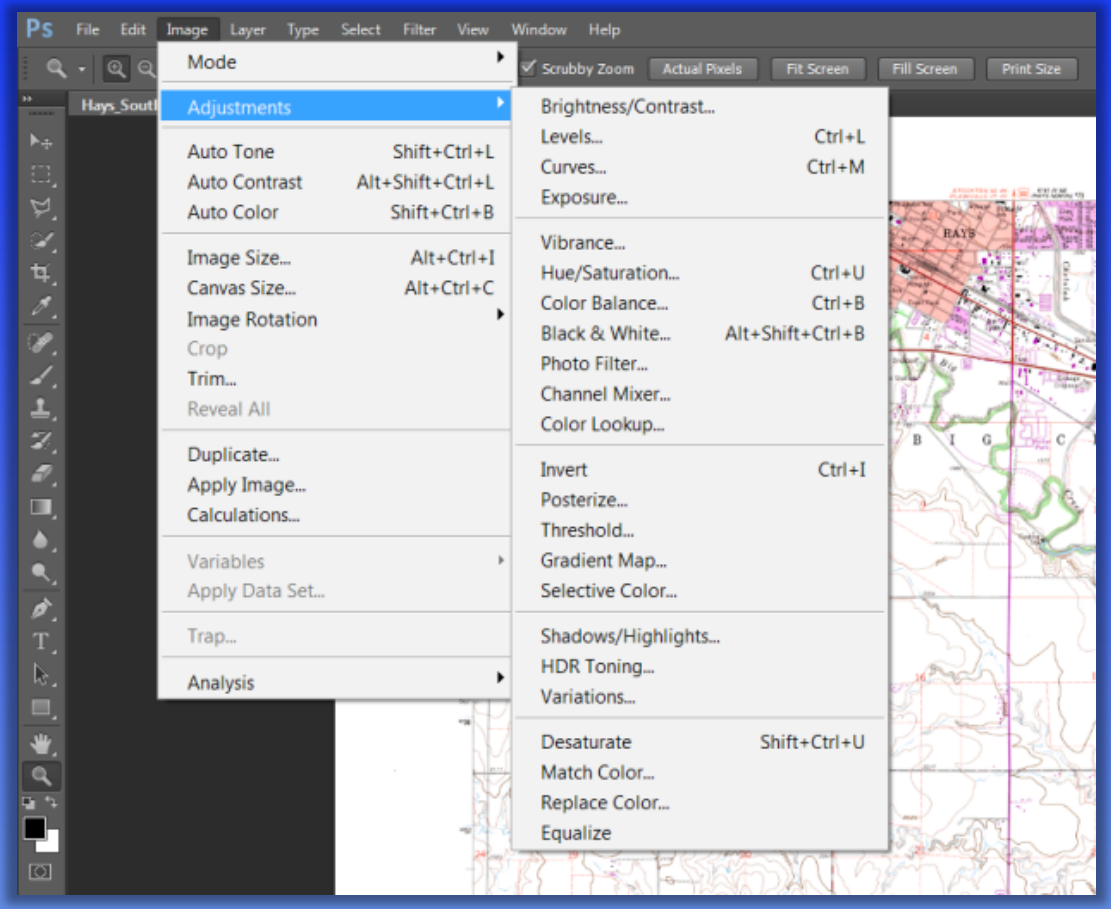
No. (HP Scanjet desktop scanner)

YES. (Colortrac SmartLF Gx+ T42)

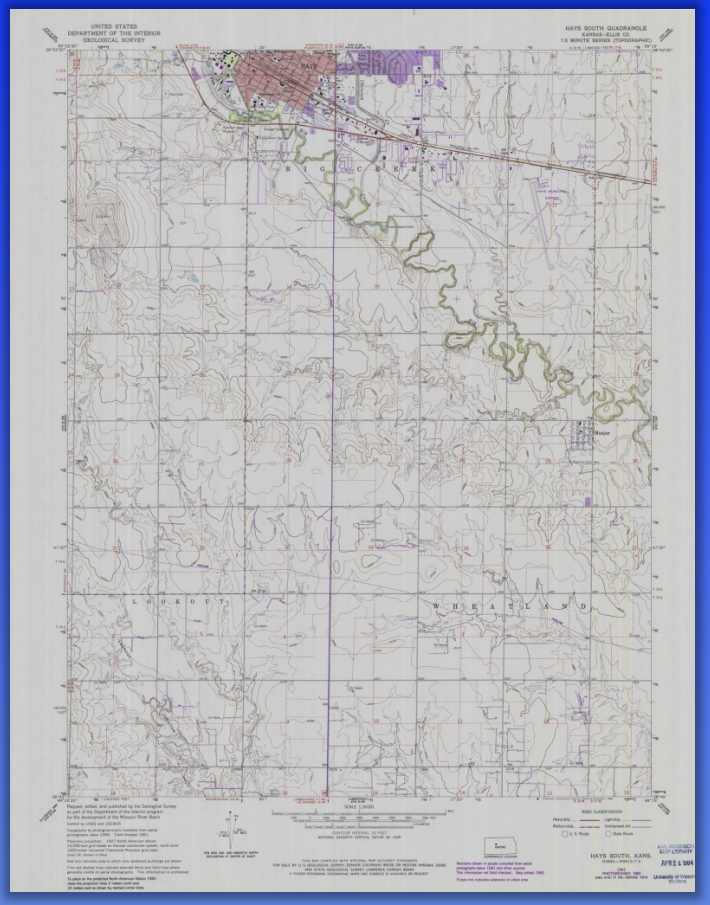
Steps

- Map is scanned at 300 dpi, 24-bit color, to an output .tif image;
- Digital cleanup in Adobe Photoshop CS6, though other photo-editing software will also likely work;
  - Crop any excess in scan beyond map edges;
  - Use Rotate tool to remove skew if map scan is not quite square;
  - Use tools found under the Photoshop IMAGE tab to make quick changes:
    - Auto Tone – sharpens and enhances color;
    - Replace Color – useful for eliminating crease marks and changing a yellowed background to white;
    - Eraser – changes one color, such as handwriting, smudges, or a library stamp, to that of the surrounding background.

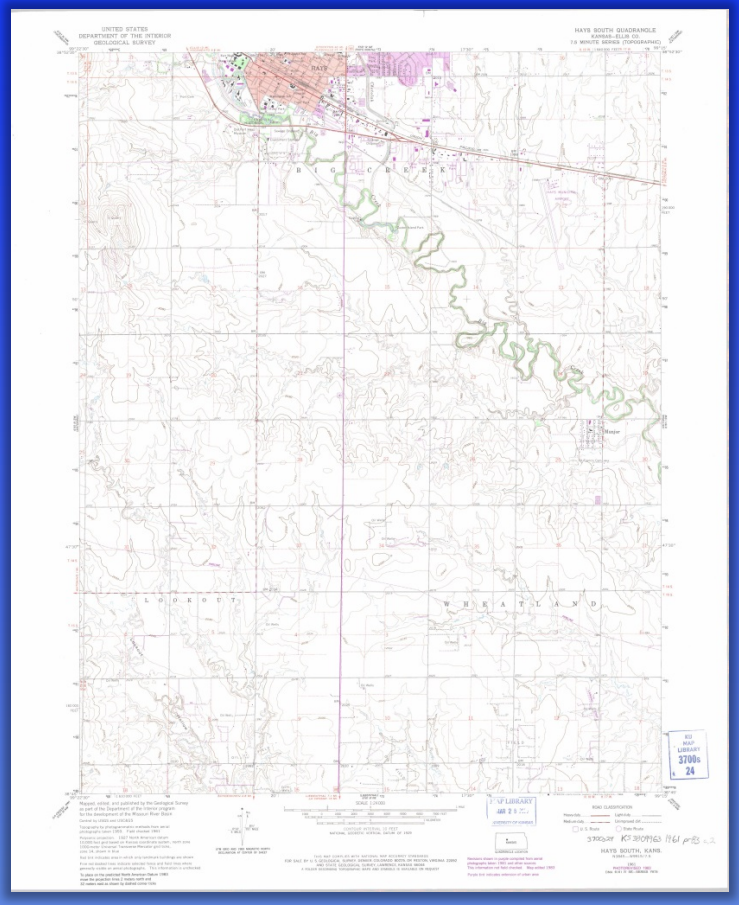
Steps


File Edit Image Layer Type Select Filter View Window Help
Scrubby Zoom
Actual Pixels
Fit Screen
Fill Screen
Print Size
Mode
Adjustments
Auto Tone Shift+Ctrl+L
Auto Contrast Alt+Shift+Ctrl+L
Auto Color Shift+Ctrl+B
Image Size... Alt+Ctrl+I
Canvas Size... Alt+Ctrl+C
Image Rotation
Crop
Trim...
Reveal All
Duplicate...
Apply Image...
Calculations...
Variables
Apply Data Set...
Trap...
Analysis
Brightness/Contrast...
Levels... Ctrl+L
Curves... Ctrl+M
Exposure...
Vibrance...
Hue/Saturation... Ctrl+U
Color Balance... Ctrl+B
Black & White... Alt+Shift+Ctrl+B
Photo Filter...
Channel Mixer...
Color Lookup...
Invert Ctrl+I
Posterize...
Threshold...
Gradient Map...
Selective Color...
Shadows/Highlights...
HDR Toning...
Variations...
Desaturate Shift+Ctrl+U
Match Color...
Replace Color...
Equalize

Example – 24K quadrangle

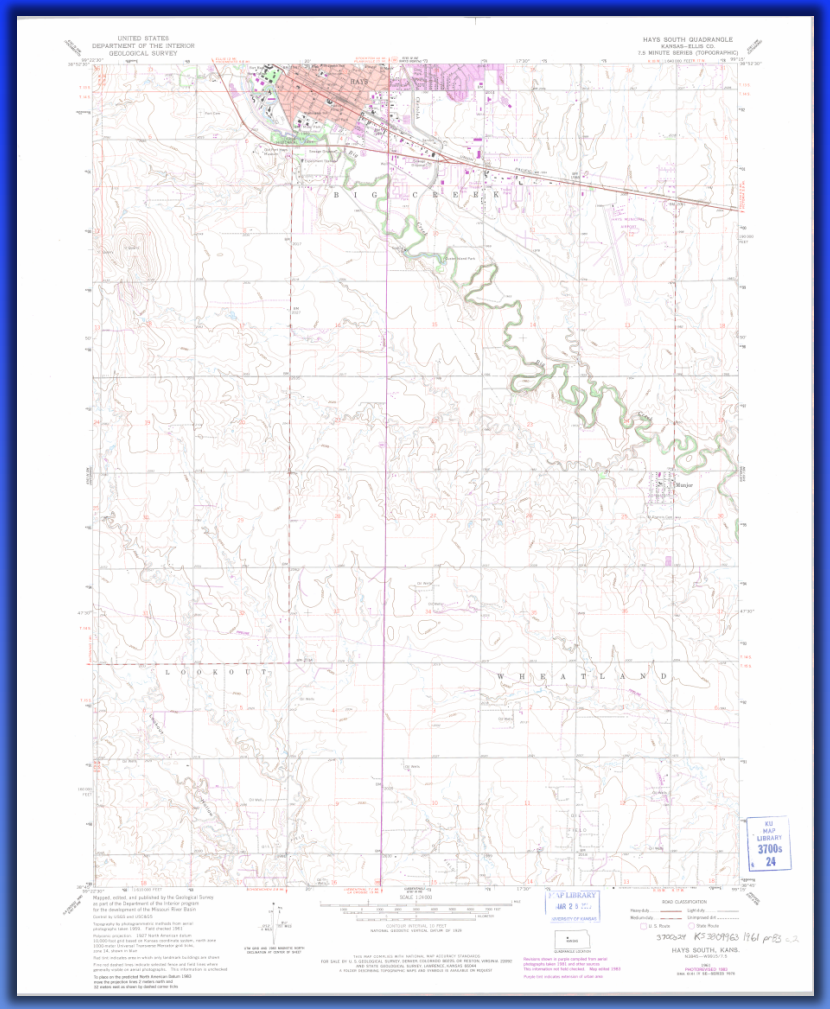


USGS US Topo version, Hays South, 1961-PR83
Gray background makes it difficult to use



My scanned version of the same
map before a quick cleanup

24K quadrangle after cleanup



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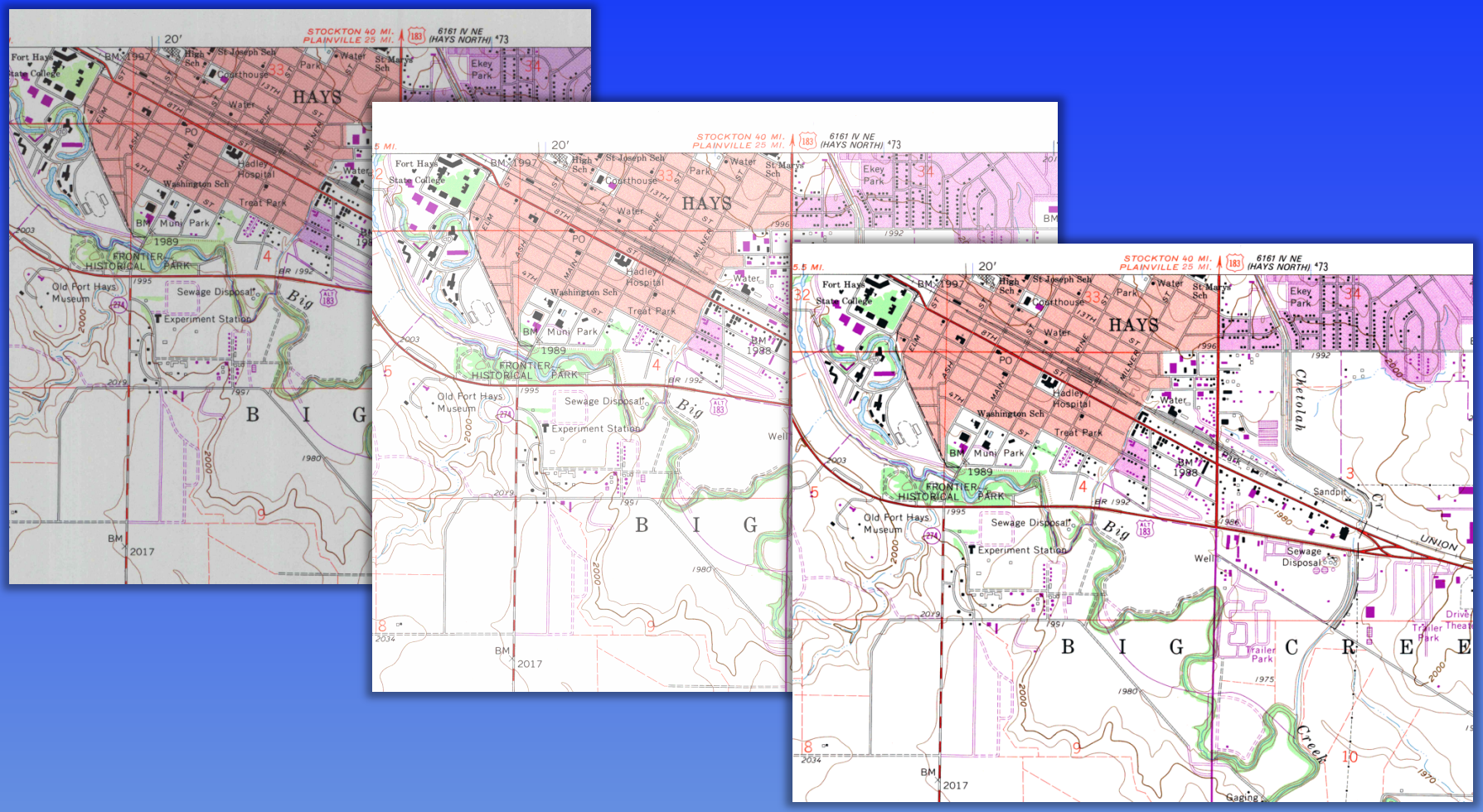
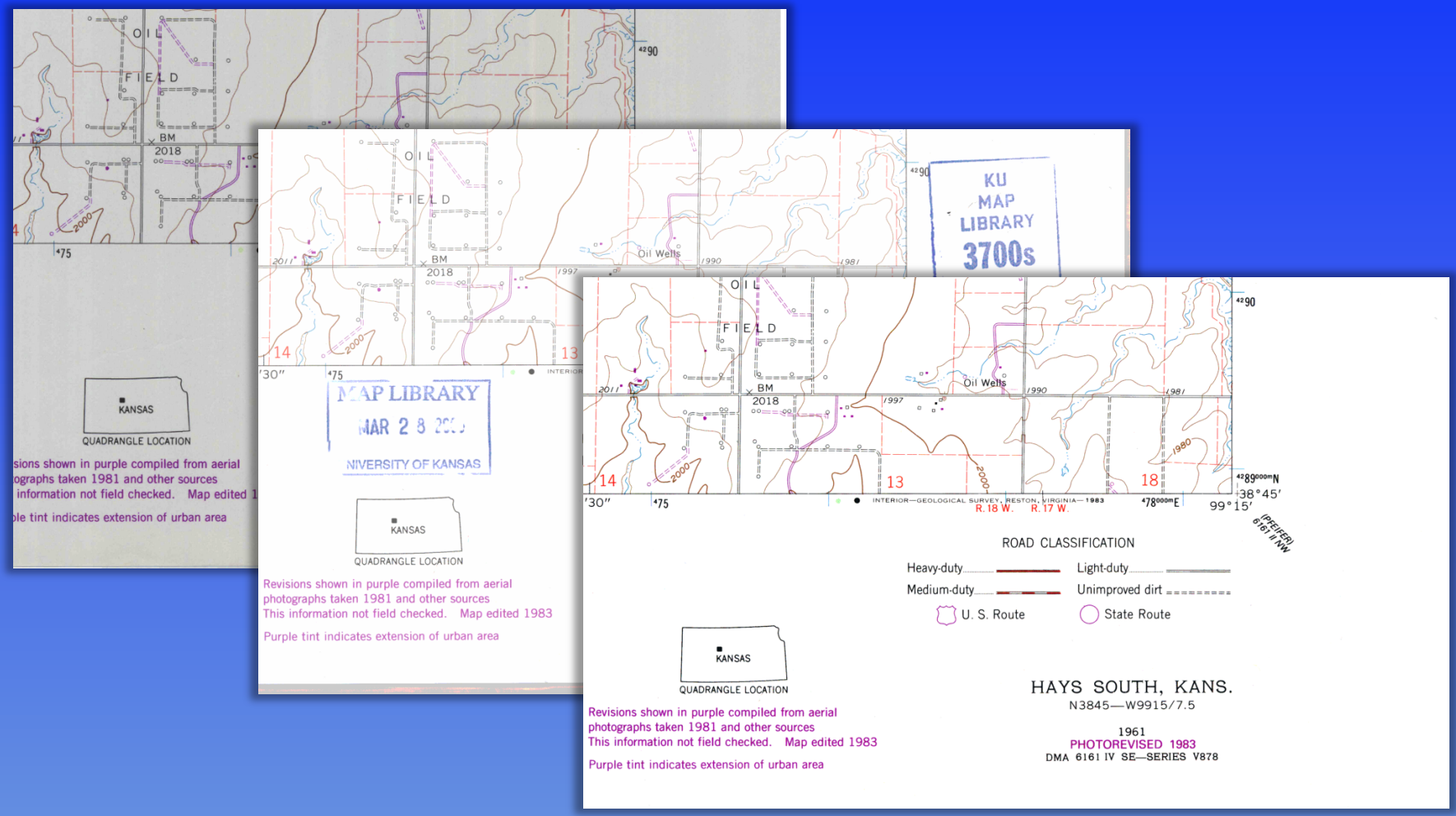
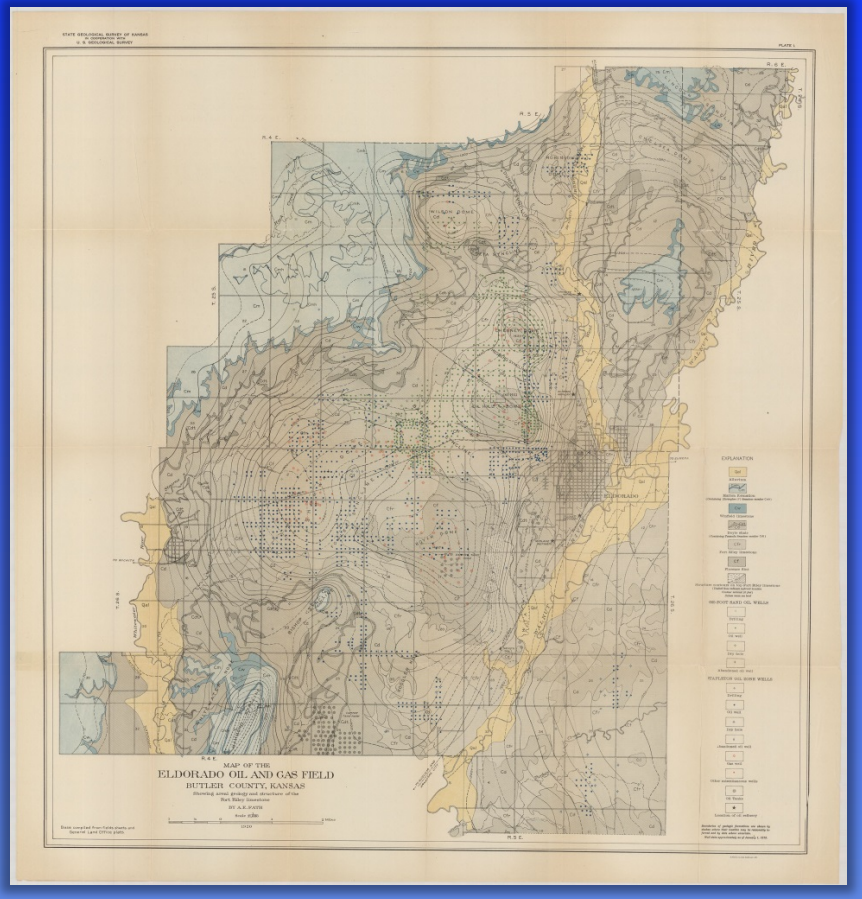
Before-after comparison

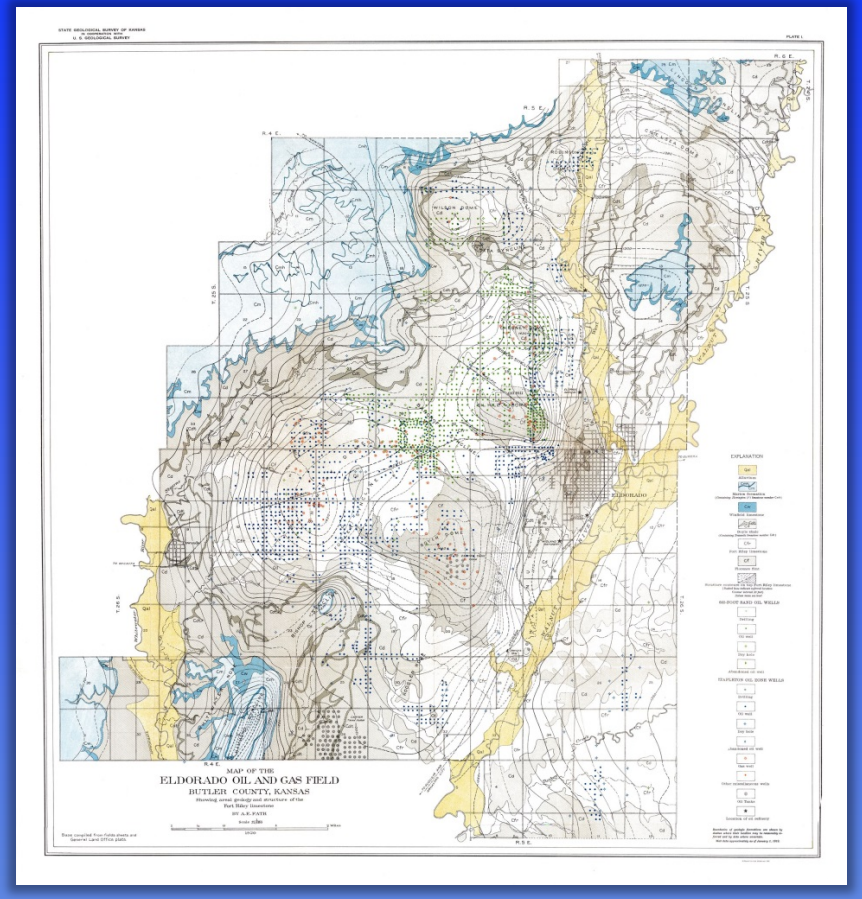


Before-after comparison II



To clean…or not to clean?





Map of the El Dorado, Kansas oil and gas field (1920) before and after cleanup

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Questions?