

# Kentucky's Mine Mapping Initiative

## Map Scanning

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# Scanning Goals

- Capture the visual essence of the original map as best as possible within practical limitations.
- Minimize file and memory footprint while maintaining adequate visual quality.
- Result stored in a file format that can be read by a broad array of image viewers, GIS environments, and CAD applications.
- For viewing: 24 Bit JPEG, High Quality.
- For GIS/CAD: 8 Bit GeoTIFF, Packbit.

# Scan Settings

- There is no one combination of scan settings that fits all scanners. The best way to establish scan settings is by vigorous trial and error. While this approach is tedious and time consuming, it also provides a good way to gain knowledge and experience on how various combinations of settings affect the output quality and file size of resulting images.

# File and Memory Footprint

- The file footprint is the size of the image file stored on a digital medium and varies based upon compression method used.
- The memory footprint is the amount of memory required to load and display the image. The memory footprint is determined by the number of pixels in the image multiplied by the pixel depth.

# Resolution and Memory Footprint

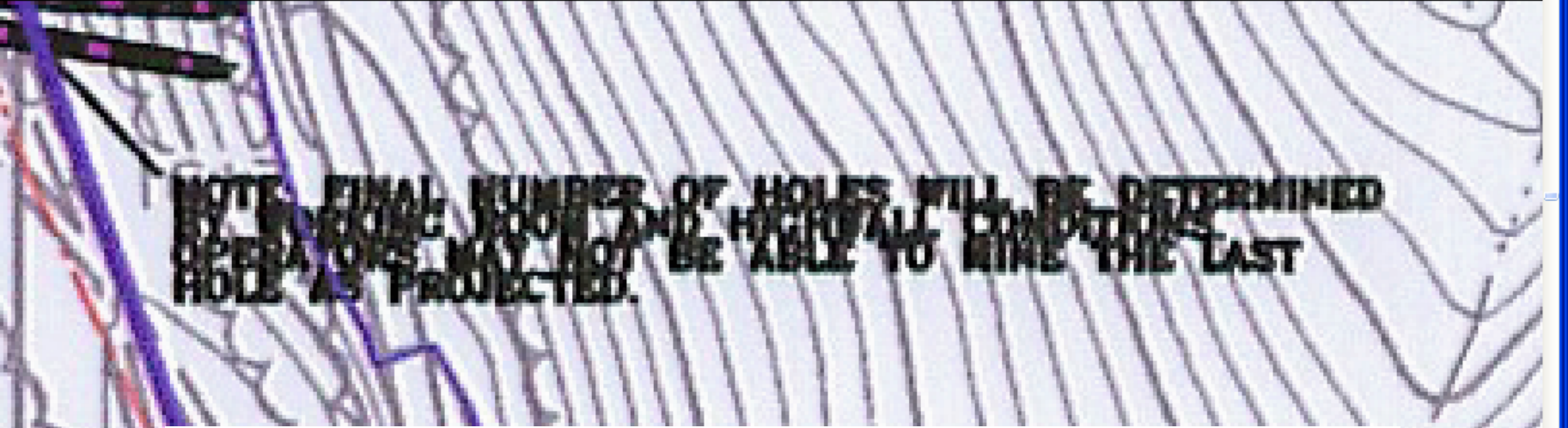
42" x 60" Map Scanned @ 24 Bits Per Pixel

100 DPI (0.01")	72.1 Mb
200 DPI (0.005")	288.4 Mb
300 DPI (0.003")	648.8 Mb
400 DPI (0.0025")	1,153.6 Mb

# Compression Schemes

- TIFF PackBit – Lossless scheme that exploits repetition of pixel values to reduce the file footprint. The original pixel matrix is preserved when decompressed.
- JPEG – A robust scheme based on a variable quality scale that achieves far greater compression, but at the expense of preserving the original pixel matrix (lossy). JPEG lossless (full quality) is similar to PackBit, but more aggressive.

# SCANNED UNCOMPRESSED TIFF



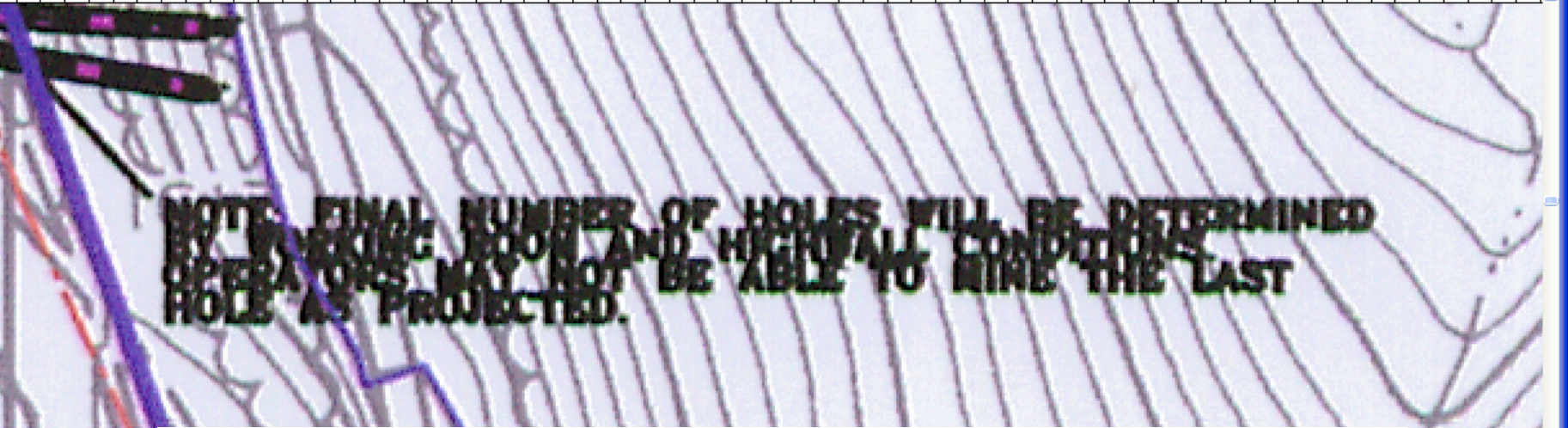
**NOTE: FINAL NUMBER OF HOLES WILL BE DETERMINED  
BY WORKING DRAWING AND HIGHWALL CONDITIONS.  
OPERATORS MAY NOT BE ABLE TO MINE THE LAST  
HOLE AS PROJECTED.**

200 DPI, 24 Bits, 129.8 Mb    Text Height = 0.03"

300.TIF @ 200% (RGB/8)

33

34



**NOTE: FINAL NUMBER OF HOLES WILL BE DETERMINED  
BY WORKING DRAWING AND HIGHWALL CONDITIONS.  
OPERATORS MAY NOT BE ABLE TO MINE THE LAST  
HOLE AS PROJECTED.**

300 DPI, 24 Bits, 295.9 Mb    Text Height = 0.03"



200 DPI



300 DPI





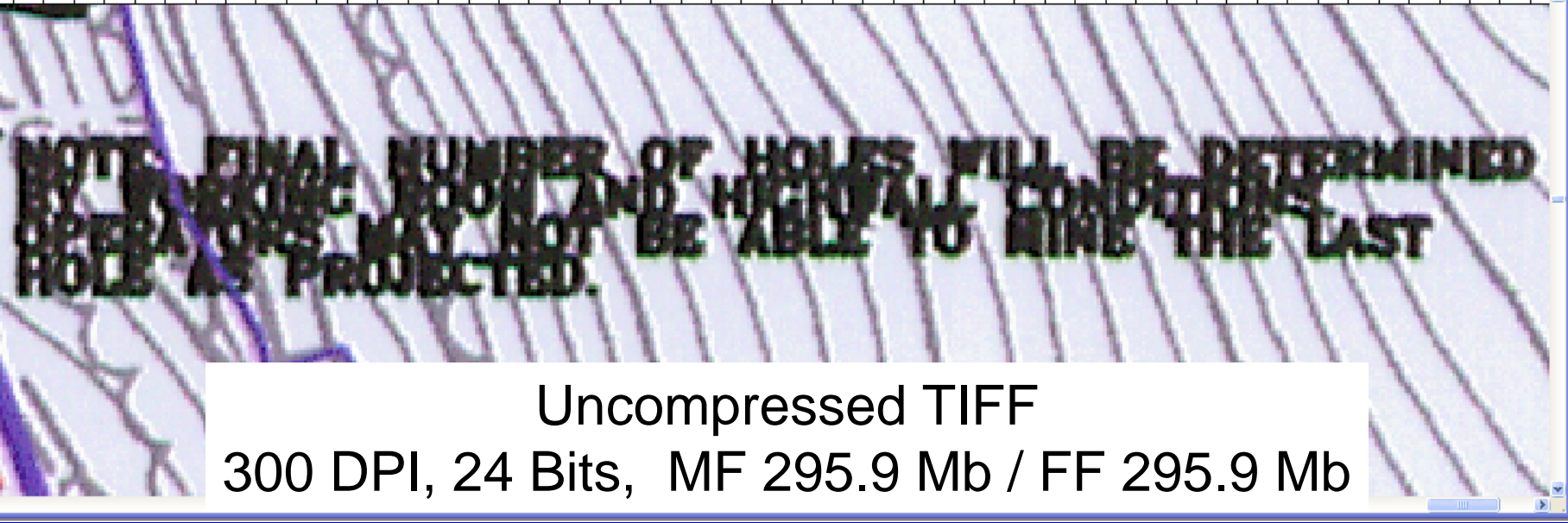
**NOTE: FINAL NUMBER OF HOLES WILL BE DETERMINED  
BY JACKING DOWN AND HIGHWALL CONDITIONS.  
OPERATIONS MAY NOT BE ABLE TO MINE THE LAST  
HOLE AS PROJECTED.**

Photoshop JPEG 9  
200 DPI, 24 Bits, MF 129.8 Mb / FF 19.7 Mb

1\_300.TIF @ 250% (RGB/8)

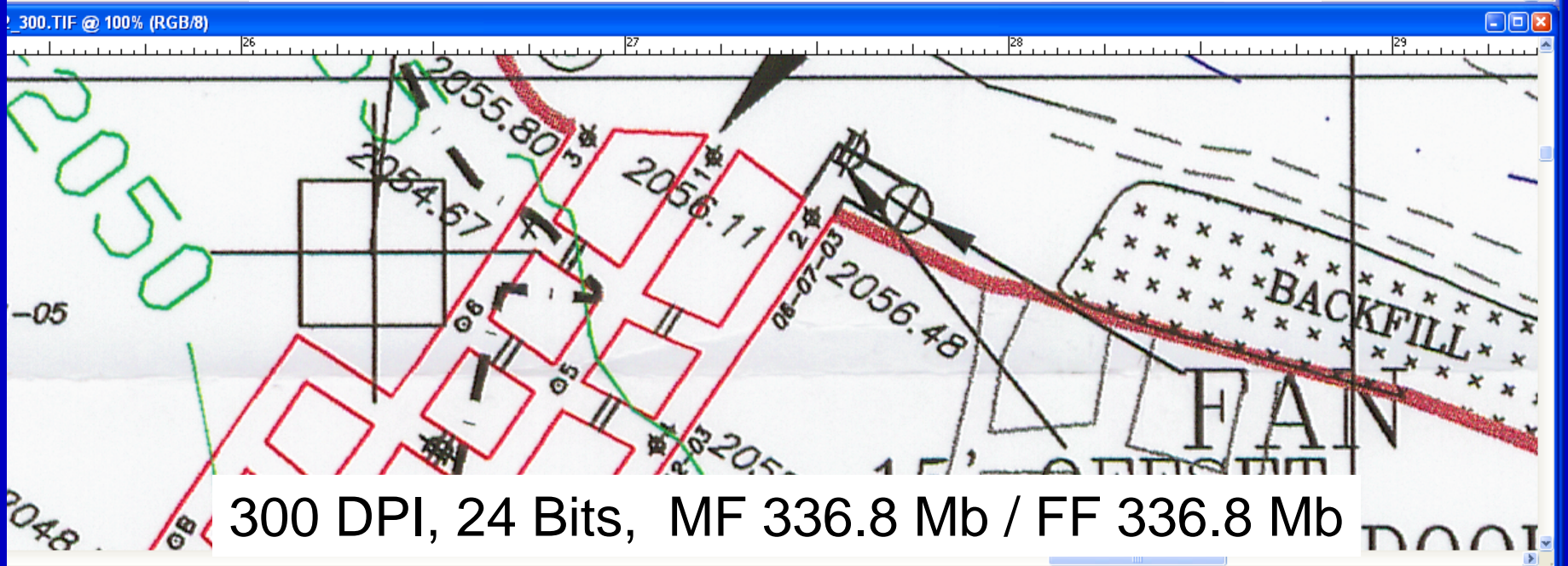
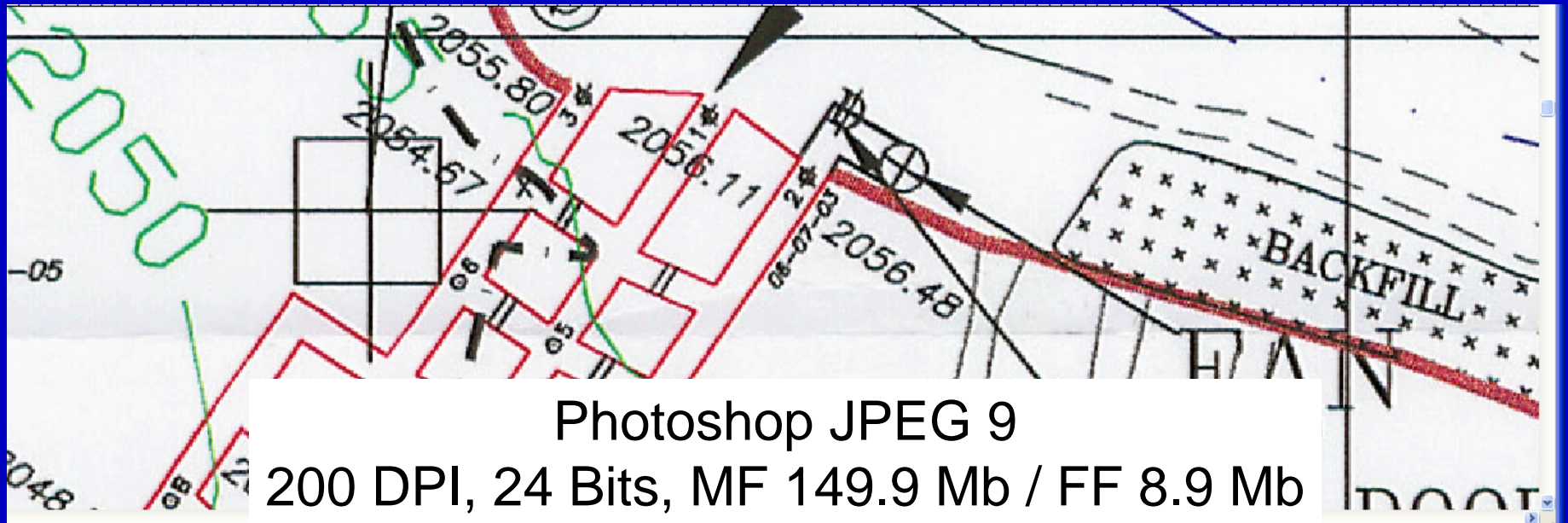
33

34

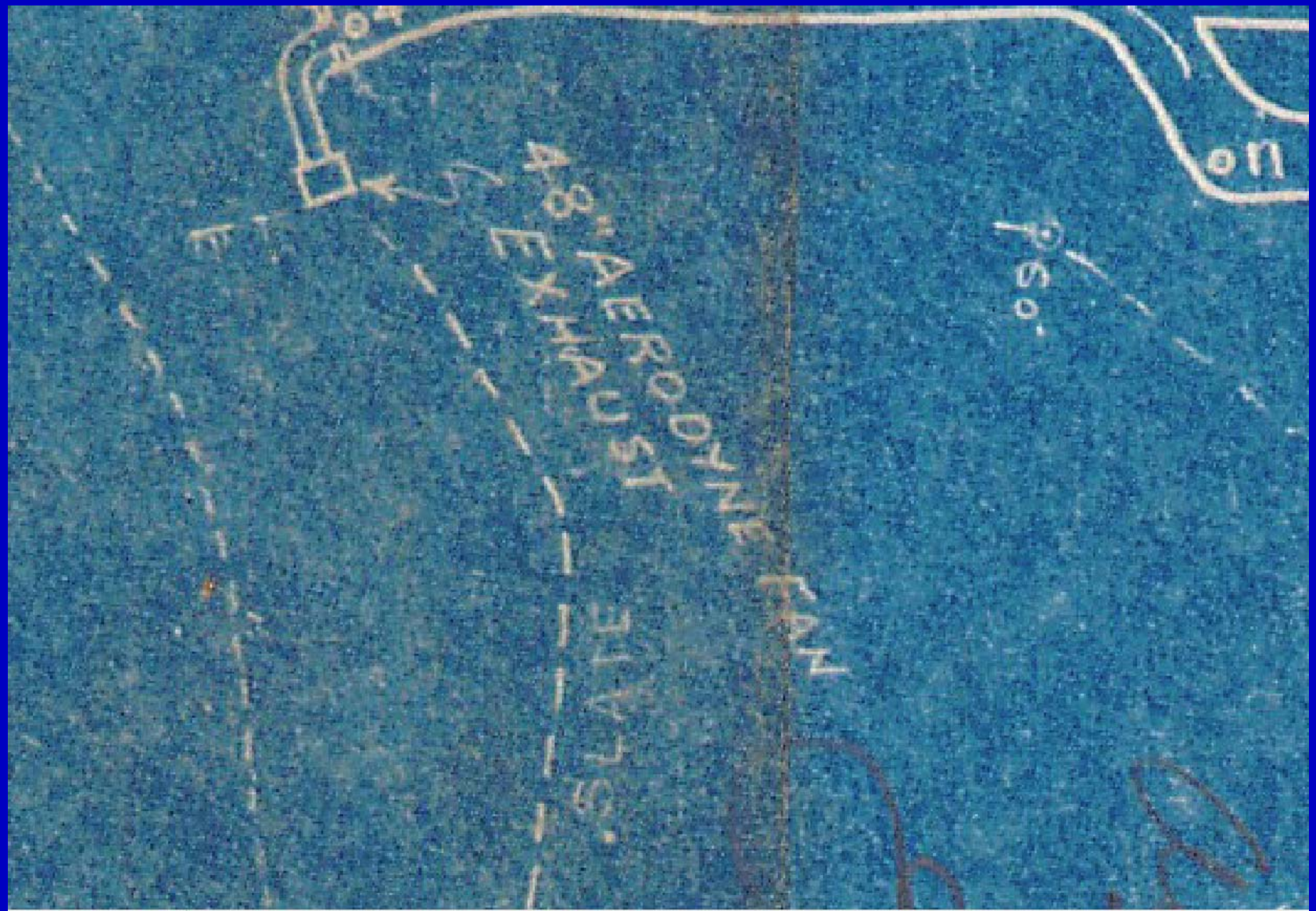


**NOTE: FINAL NUMBER OF HOLES WILL BE DETERMINED  
BY JACKING DOWN AND HIGHWALL CONDITIONS.  
OPERATIONS MAY NOT BE ABLE TO MINE THE LAST  
HOLE AS PROJECTED.**

Uncompressed TIFF  
300 DPI, 24 Bits, MF 295.9 Mb / FF 295.9 Mb

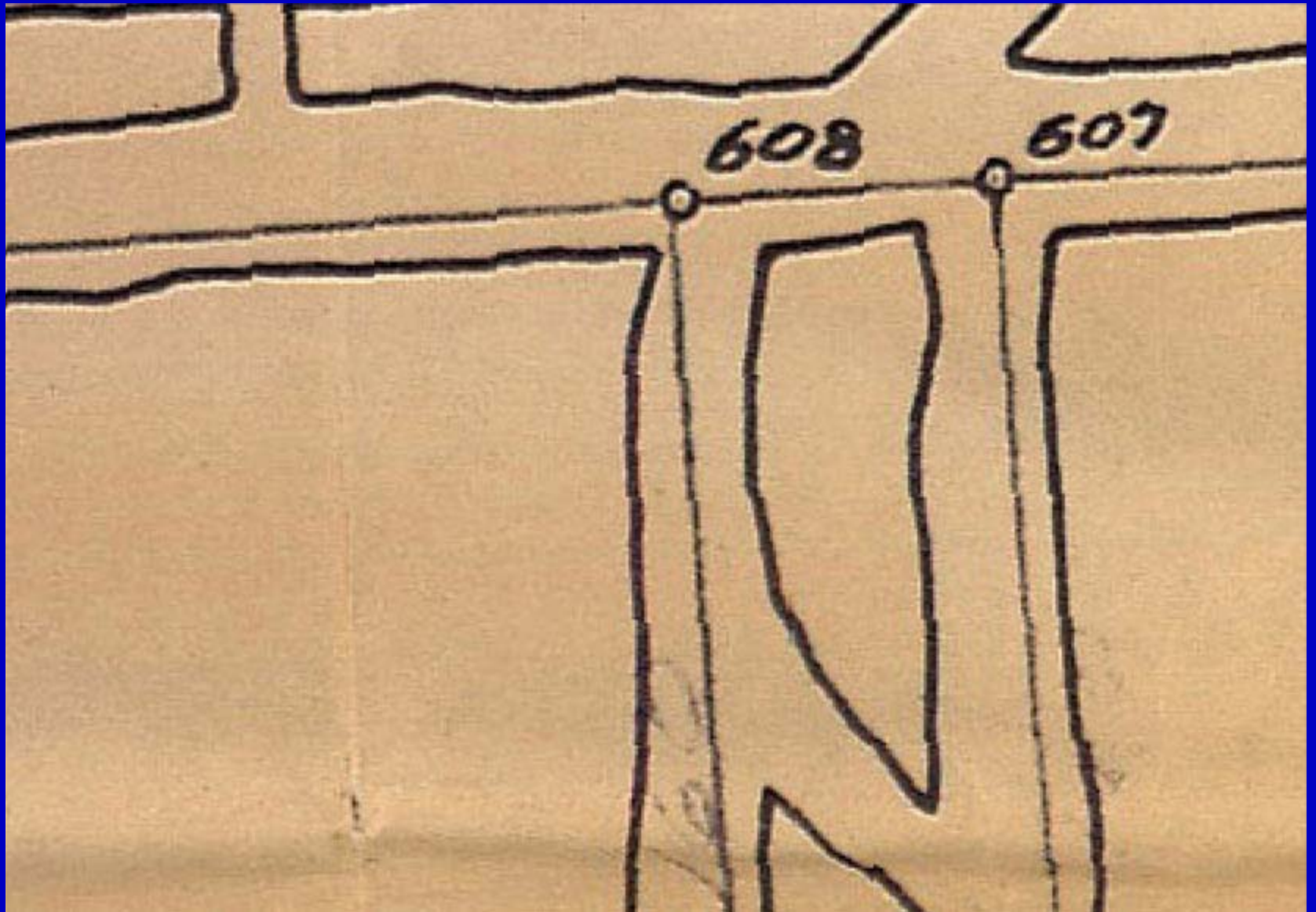






200 DPI, JPEG PS9 @ 200% 55.4 Mb / 7.92 Mb





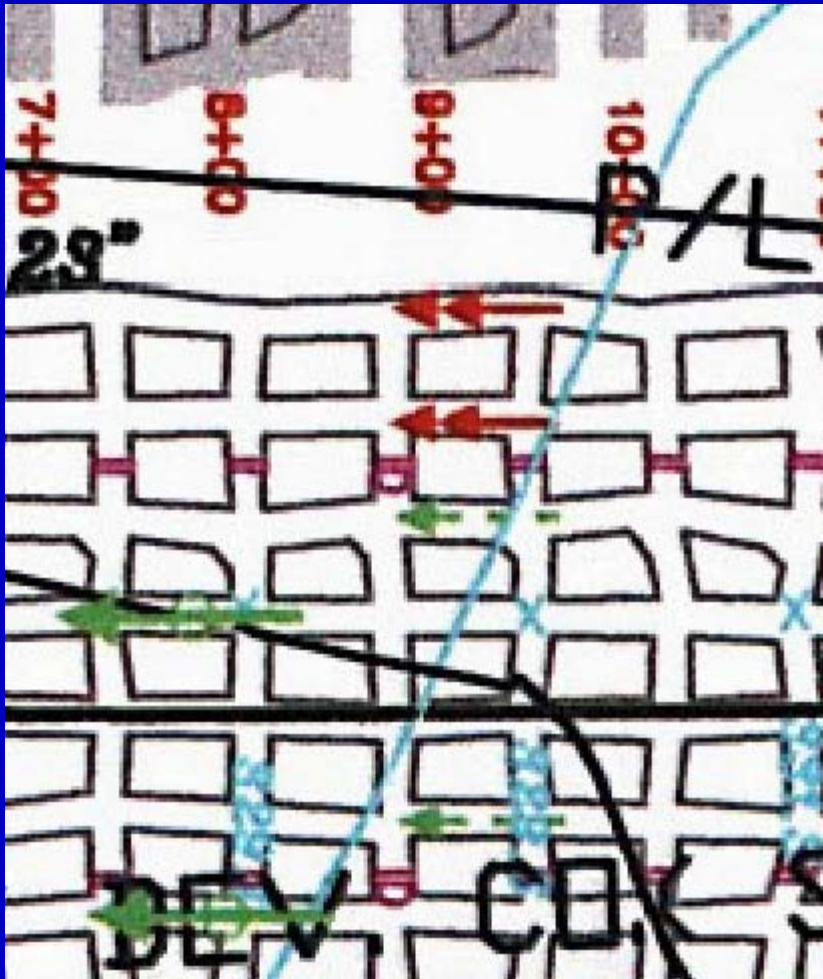
200 DPI, JPEG PS9 @ 200% 466.7 Mb / 43.0 Mb



200 DPI, JPEG PS9 @ 200% 362.9 Mb / 30.2 Mb



# Post-Processing: Color Indexing



24 Bit

MF = 200.0 Mb

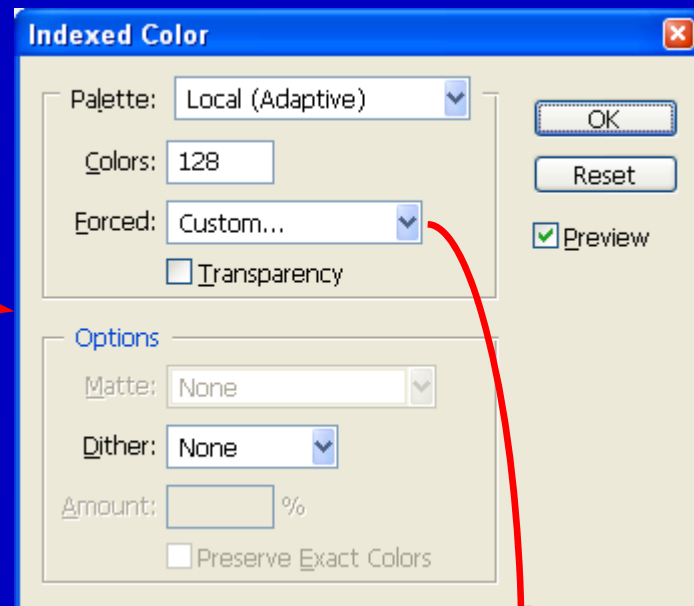
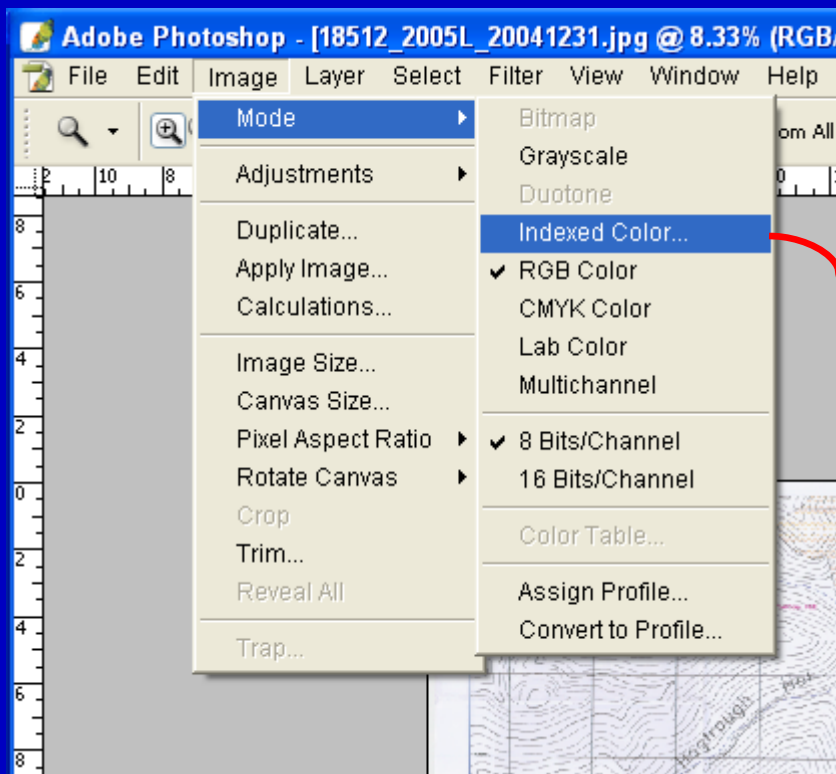


8 Bit / 128 Colors Adaptive

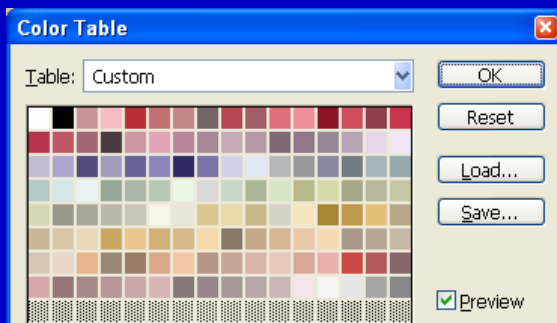
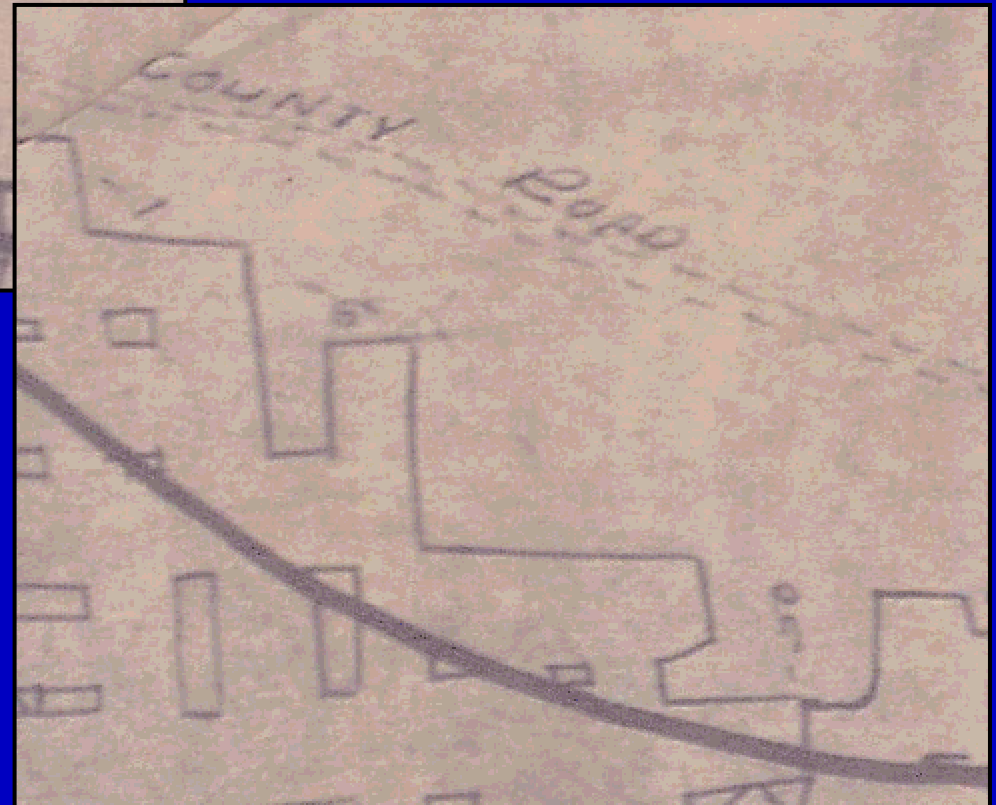
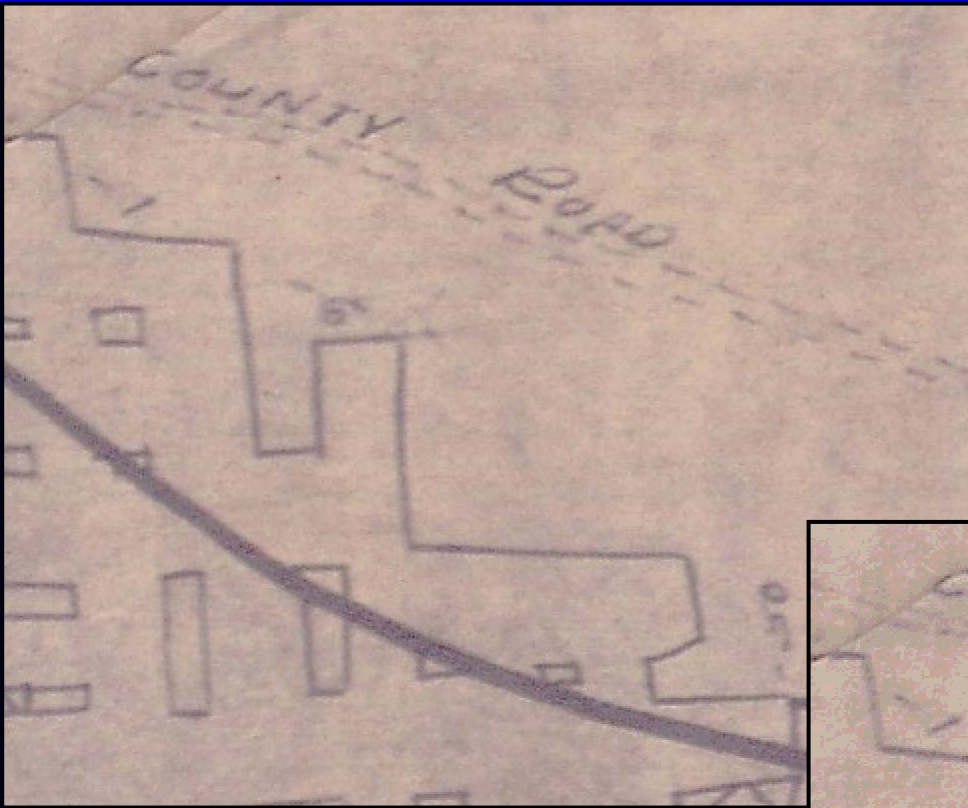
MF = 66.7 Mb / FF 29.0 Mb

# Color Indexing in Photoshop

- Convert RGB Mode to Indexed Color
- Reduce to Best-Fit (Local Adaptive) 128 Colors
- Force White = 0 and Black = 1 (Monobit Scheme)



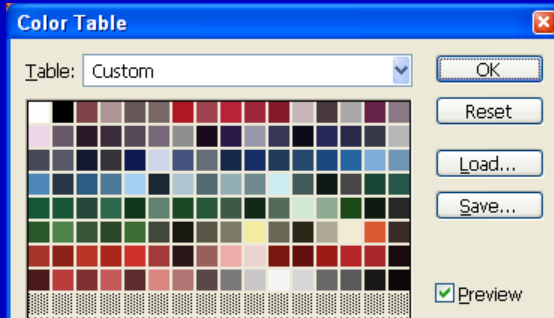
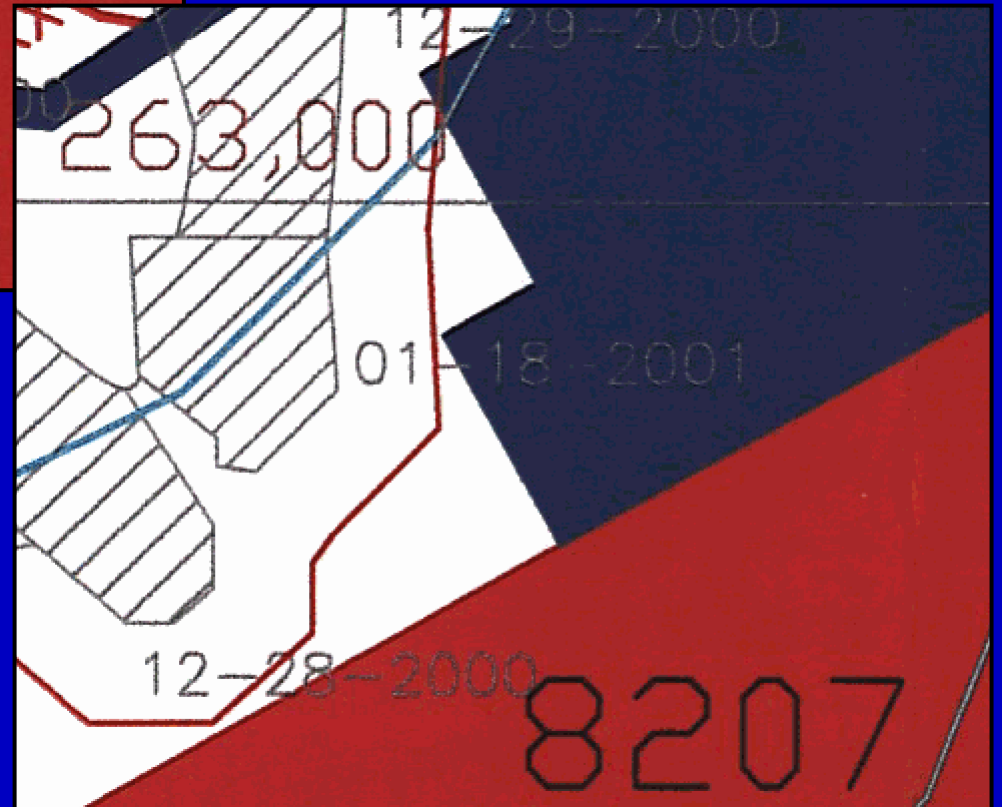
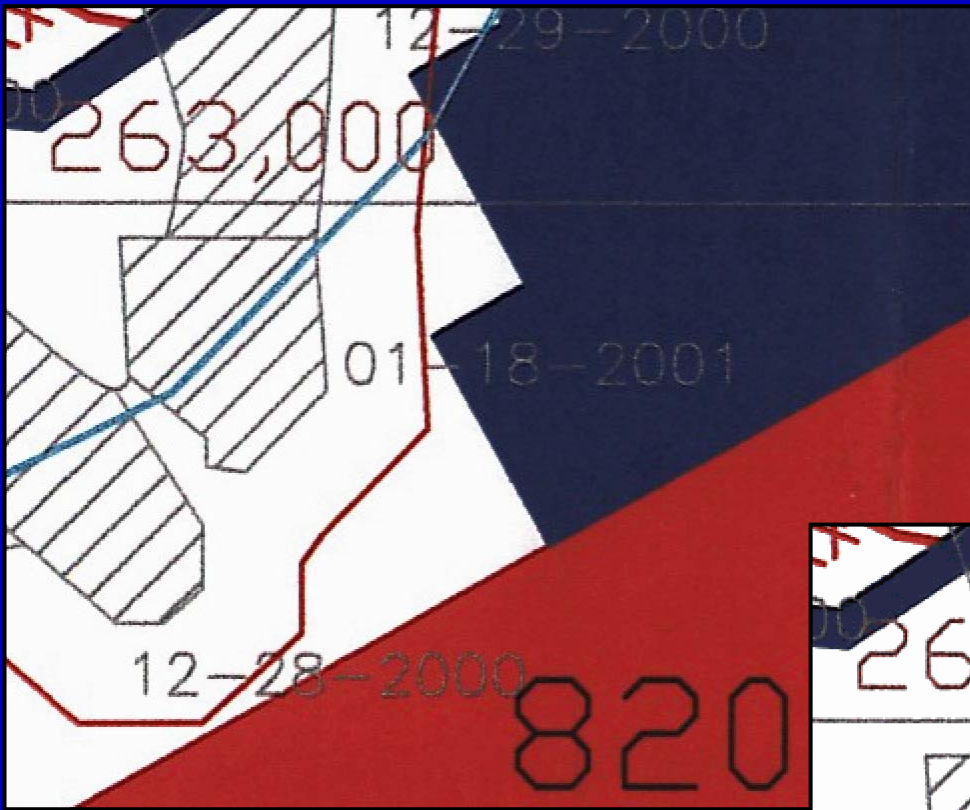
RGB Color Mode



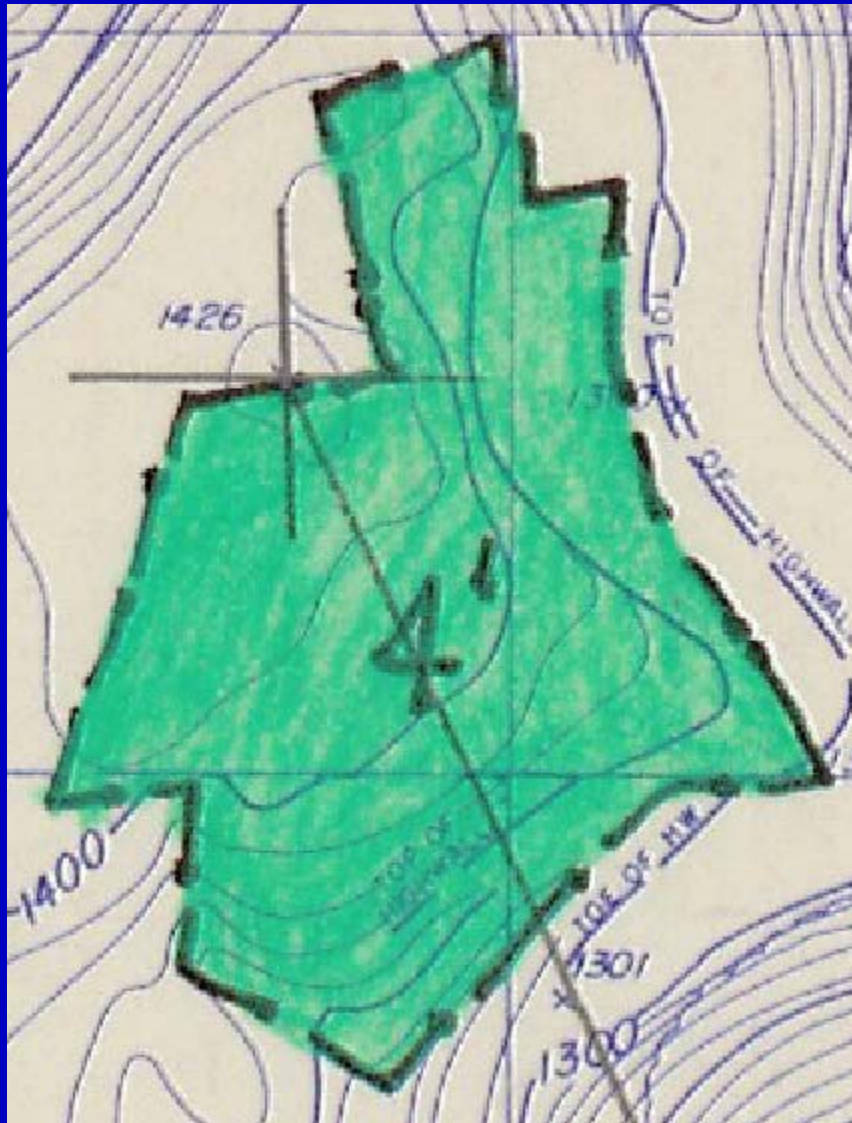
Indexed Color Mode  
128 Color Adaptive



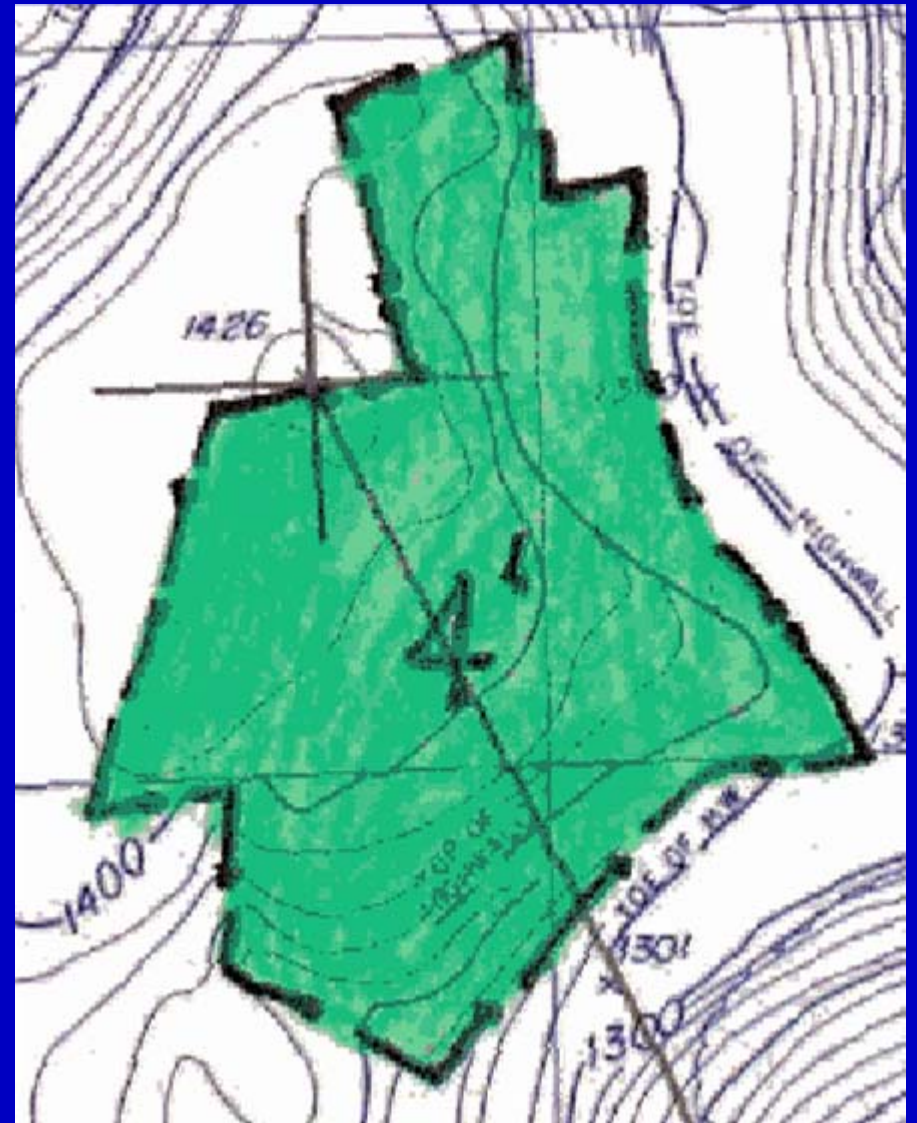
RGB Color Mode



Indexed Color Mode  
128 Color Adaptive



24 Bit  
MF = 145.0 Mb



8 Bit / 128 Colors Adaptive  
MF = 51.6 Mb / FF 17.9 Mb