

AutoCAD[®] drawings: Security Issues



**West Virginia Office of Miner's
Health, Safety and Training**

June 2, 2005

AutoCAD[®]: the defacto mining industry standard

Advantages:

- Maps are comprised of layers that can be easily manipulated
- 95%+ of the mining industry
- Compatible with most popular GIS applications
- Maps are high precision

Disadvantages:

- Maps are comprised of layers that can be easily manipulated



Definitions

- **Raster Maps:**

- Digital data -- picture comprised of pixels
- Examples: .PDF, .TIF, .JPG



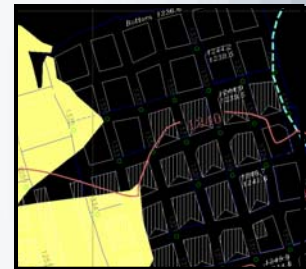
- **Vector Maps:**

- Digital data – drawing comprised of lines
- Examples: .DGN, .DXF, .DWG

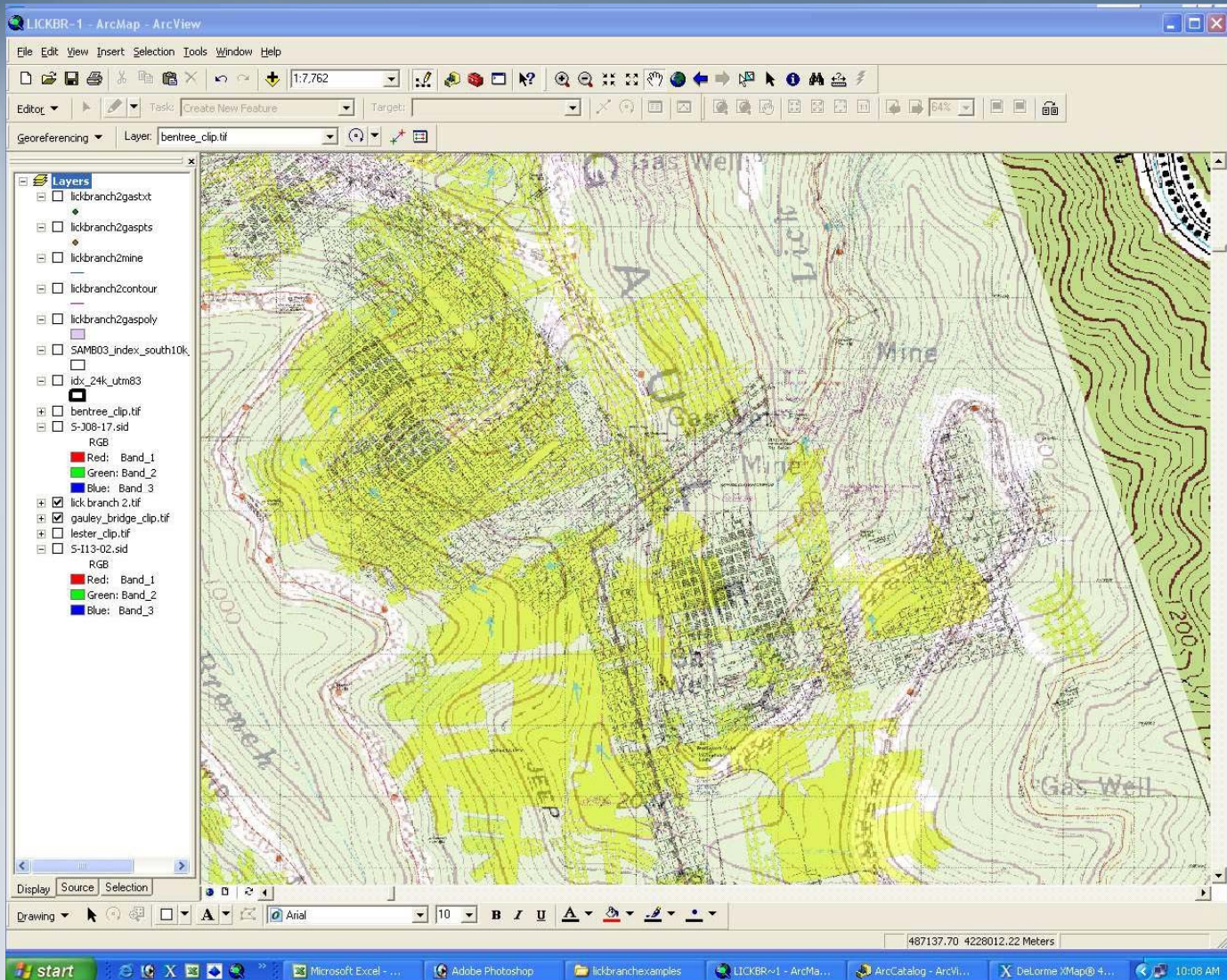


- **Hybrid Maps:**

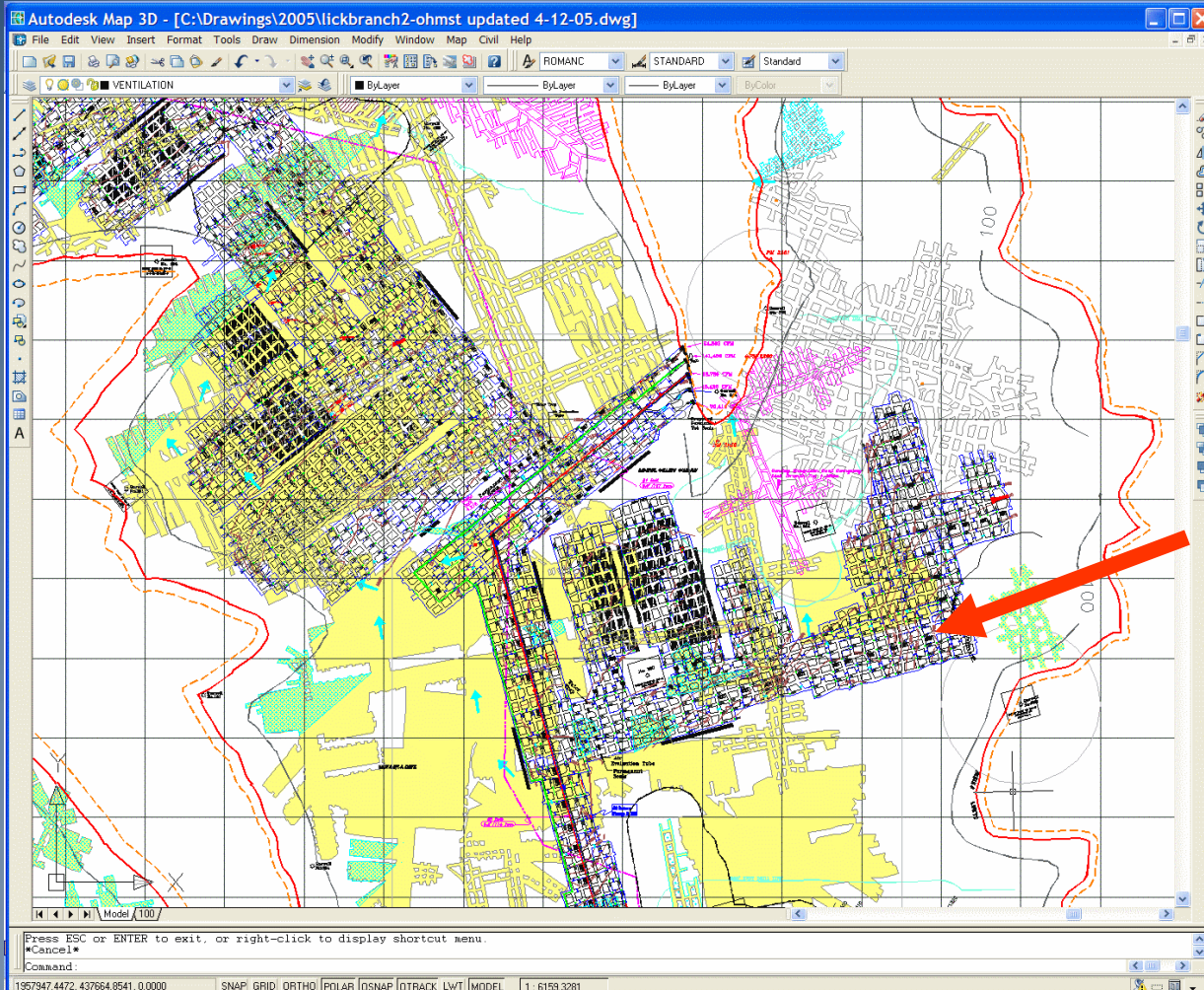
- Digital data – drawing comprised of both raster and vector elements
- Examples: .PRJ, .DGN, .DWG



Using Scanned Paper Maps

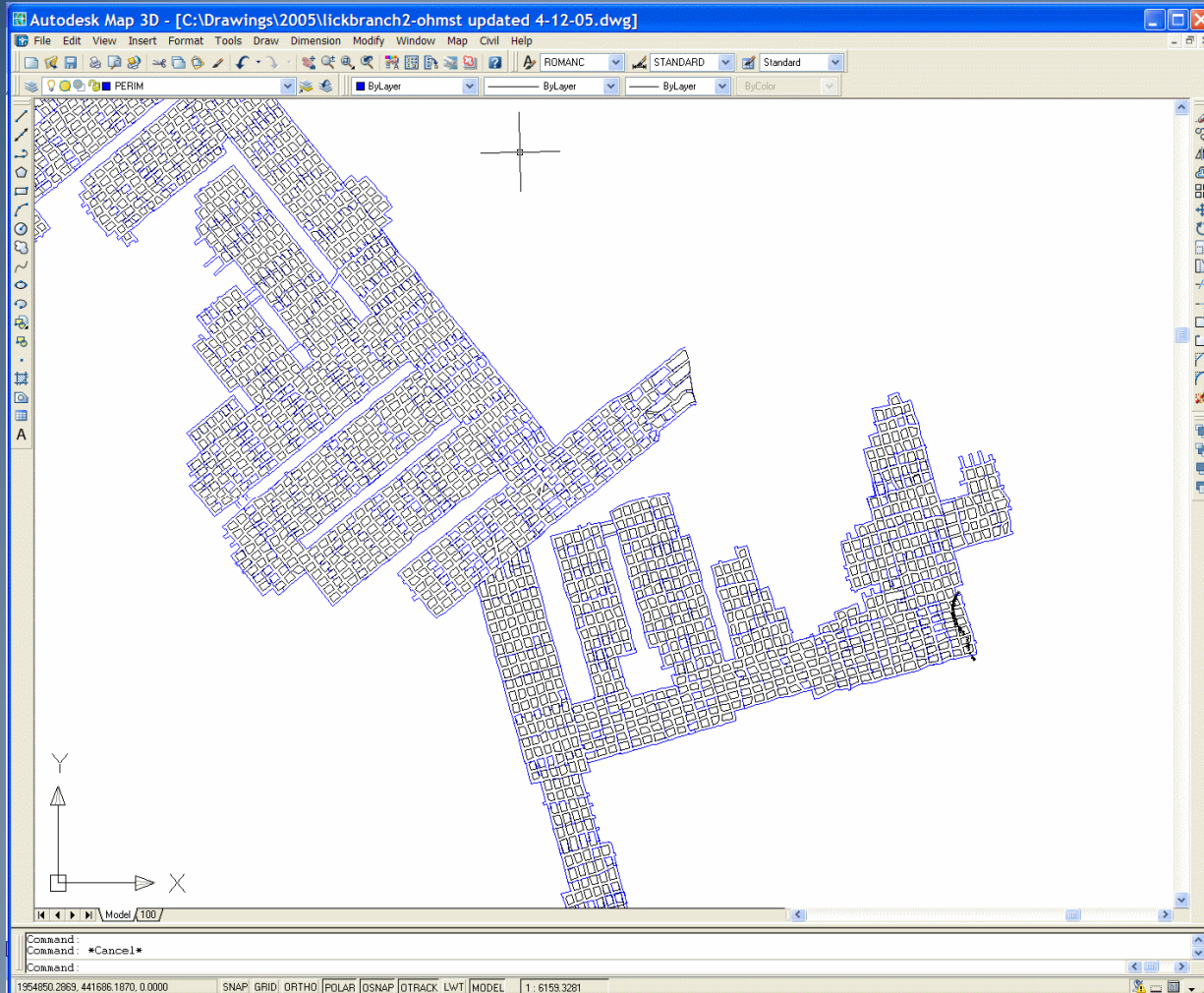


Using Layered .DWG Data



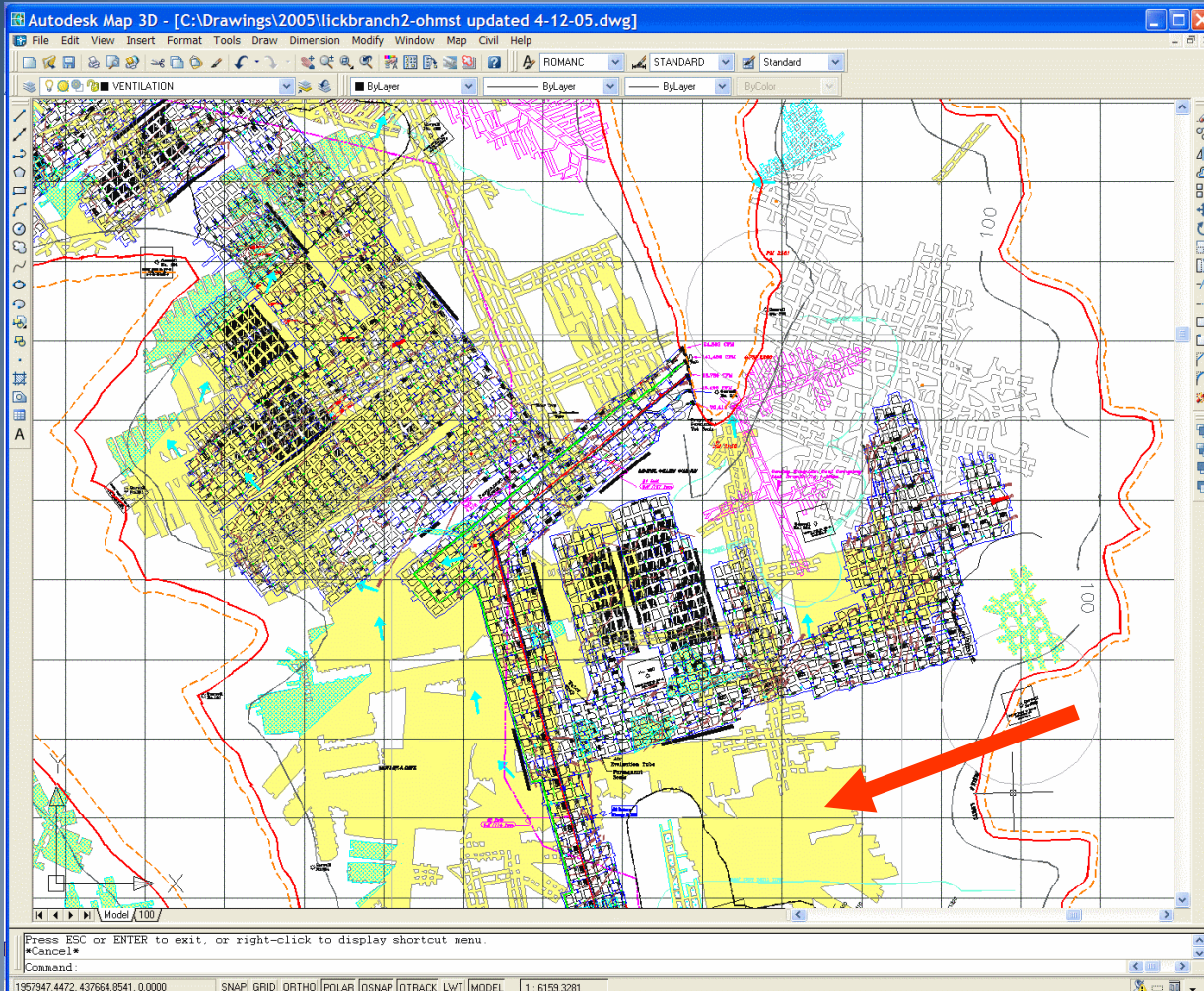
Data is kept in layers which can be turned on and off.

Using Layered .DWG Data



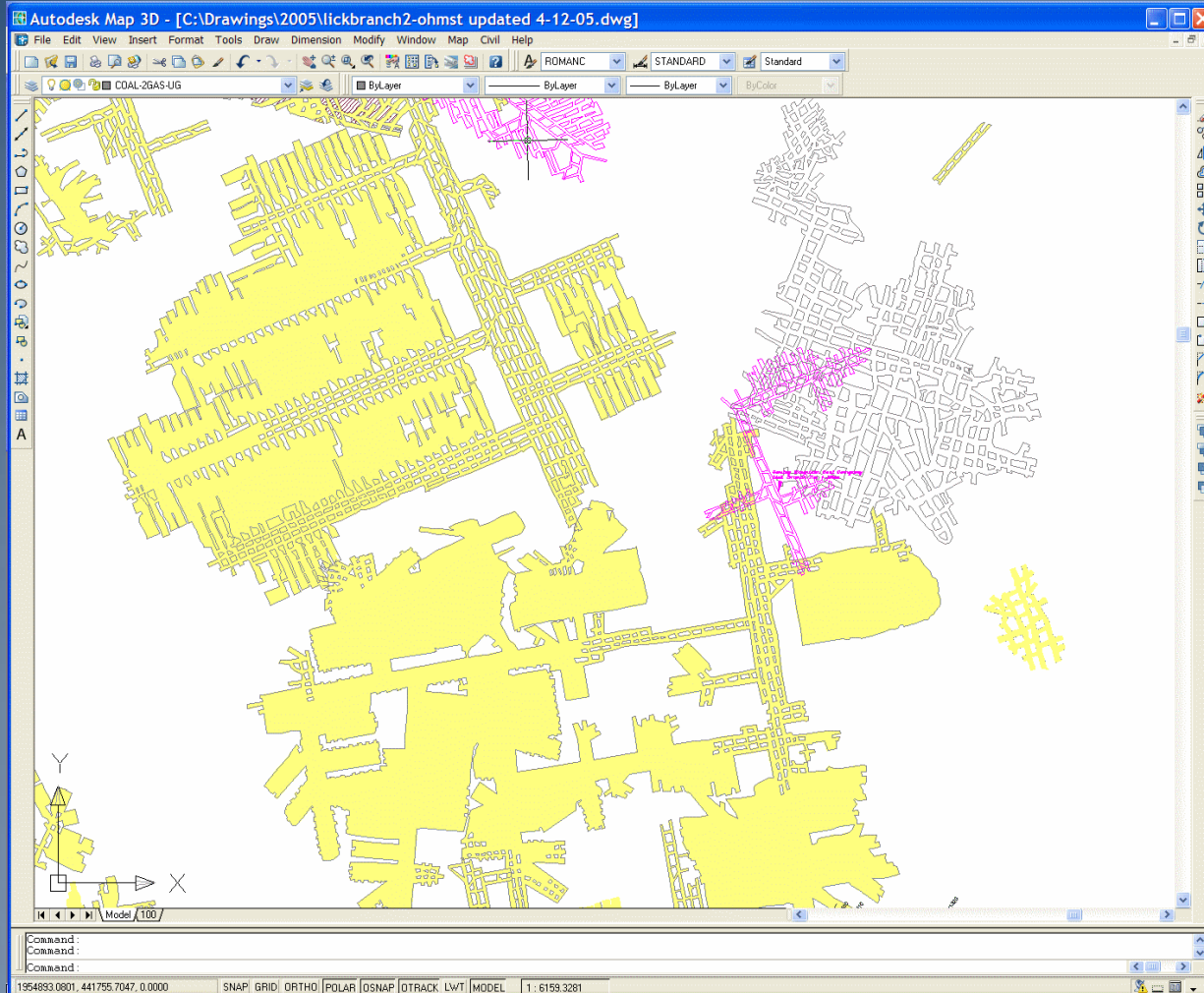
Active mine works.

Using Layered .DWG Data



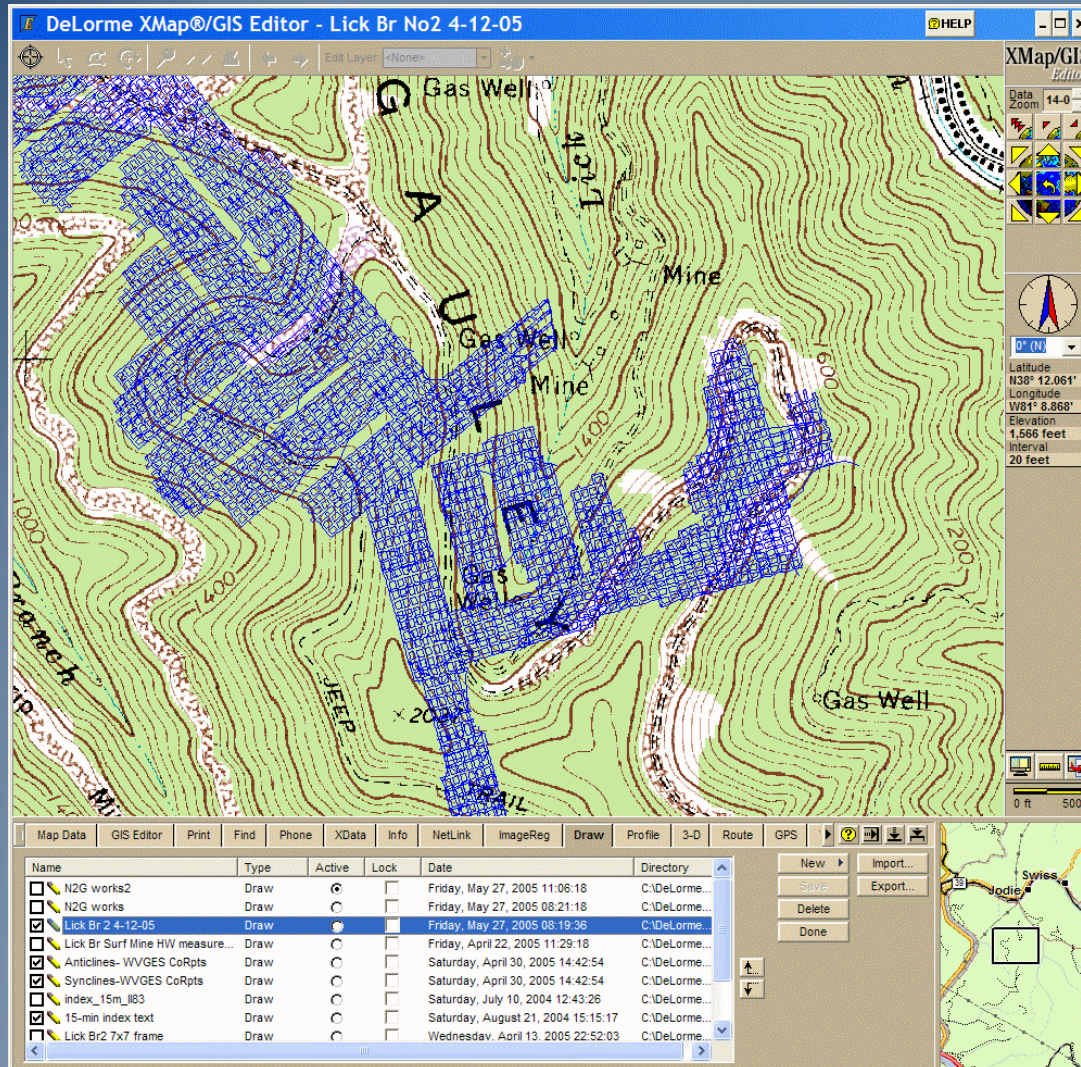
Raster data and vector data are layerable.

Using Layered .DWG Data



Overlying mined-out
seam

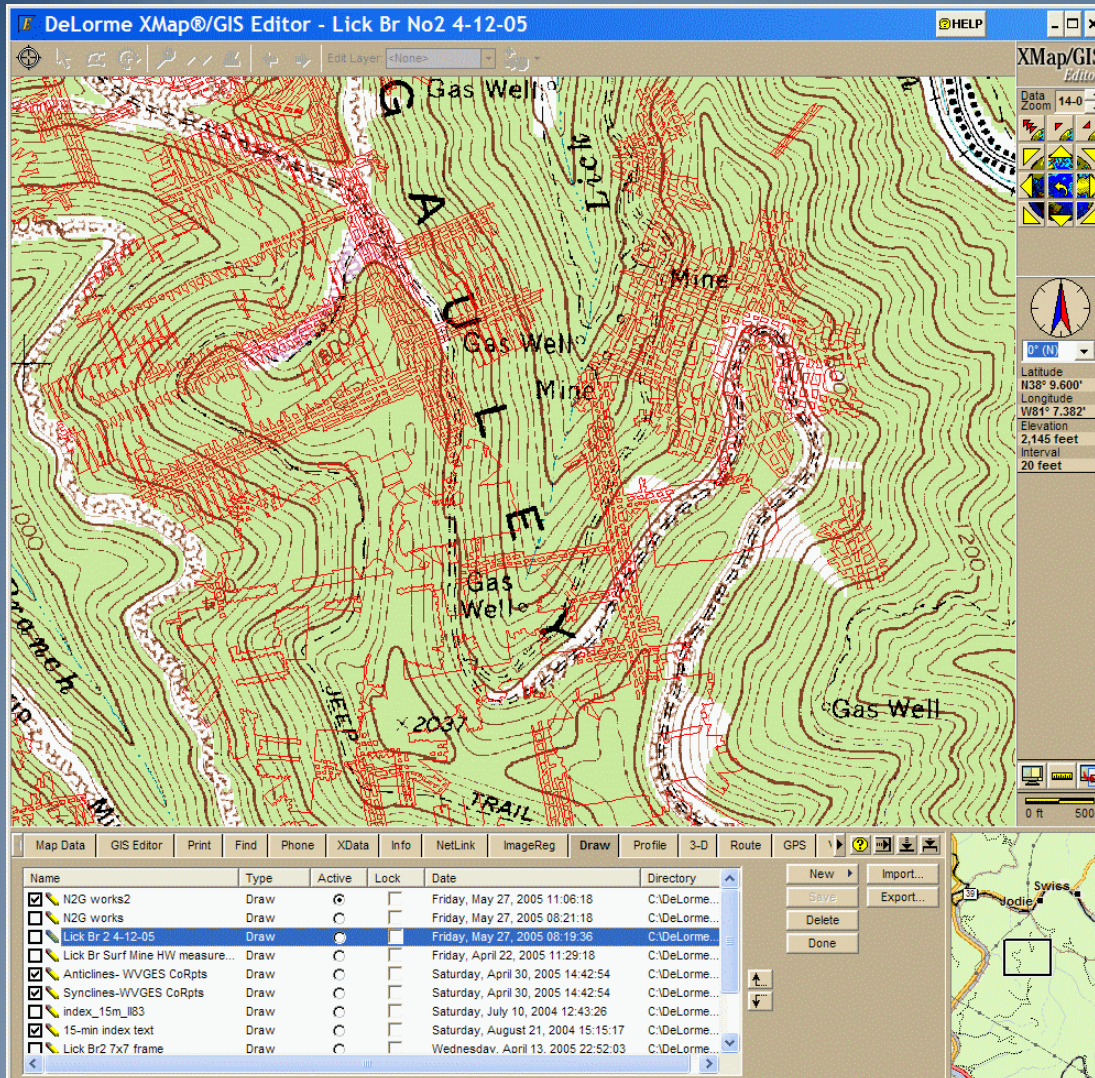
Importing .DWG Data into GIS



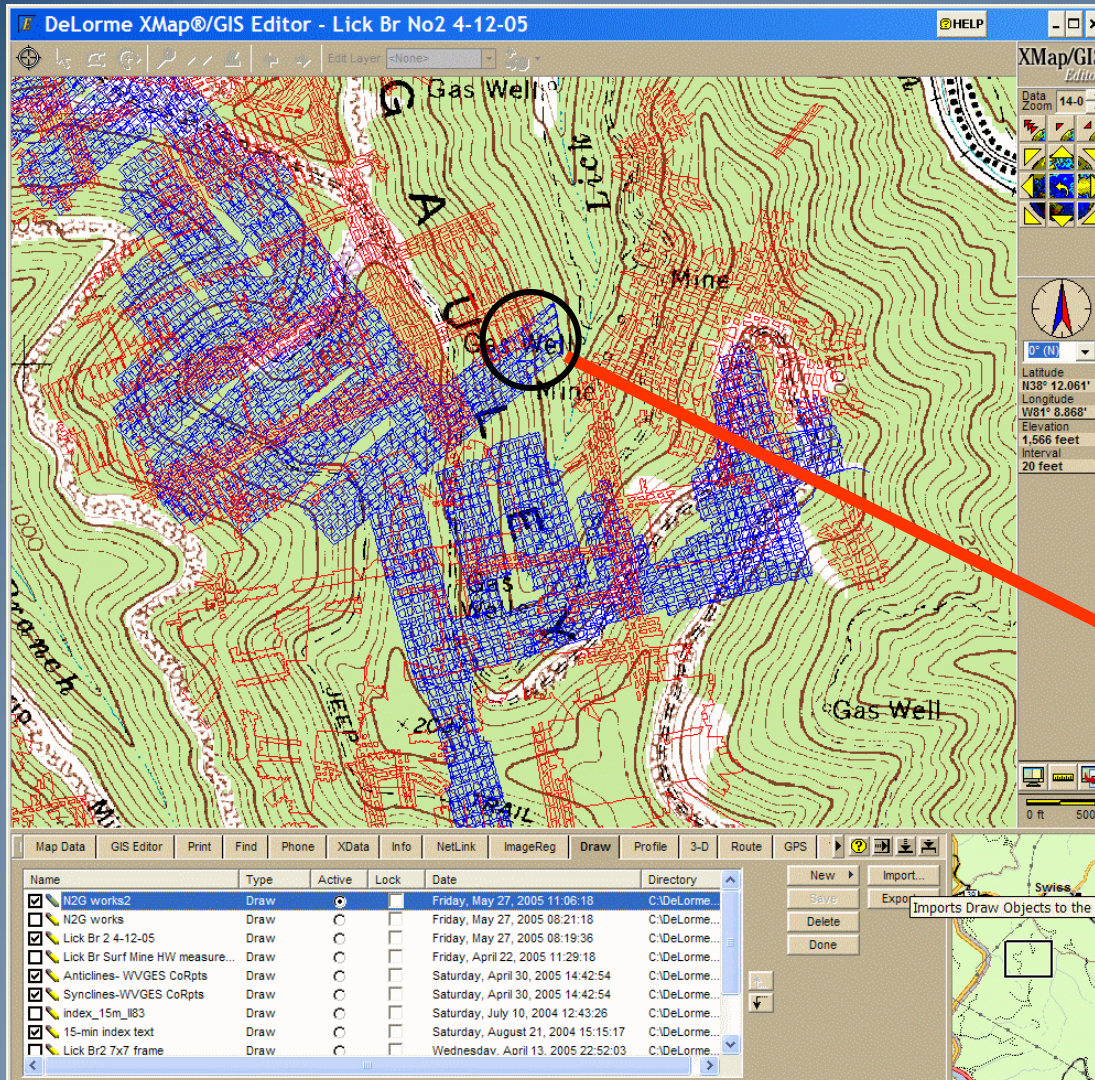
Active Lower
Seam brought
Into GIS

Importing .DWG Data into GIS

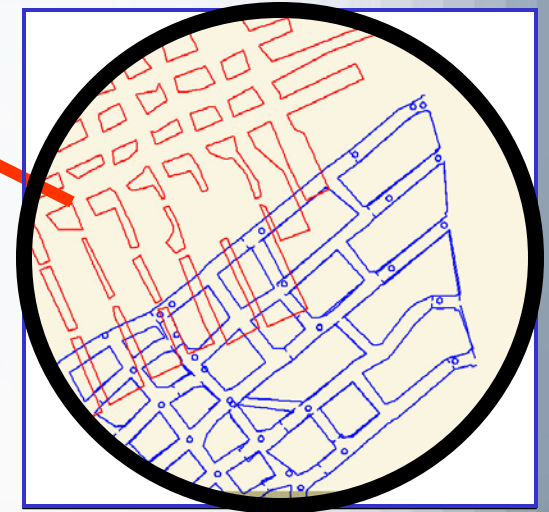
Mined-out
Upper Seam
brought
into GIS



Importing .DWG Data into GIS



Upper Seam
and
Lower Seam
superimposed



.DWG drawings are easy to alter

Digital vector drawings present special security and drawing integrity concerns that raster drawings do not.

Main Advantage:

- Maps are comprised of layers that can be easily manipulated

Main Disadvantage:

- Maps are comprised of layers that can be easily manipulated



Distributing .DWG Files



The “Dark Side” . . .

- Proprietary information can be stolen at the push of a button
- Hidden layers can be viewed and misconstrued
- Engineering consultants lose leverage for payment
- Like hanging out one's dirty laundry

Possible Solutions



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- Create new drawing w/o proprietary layers

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- DWF files

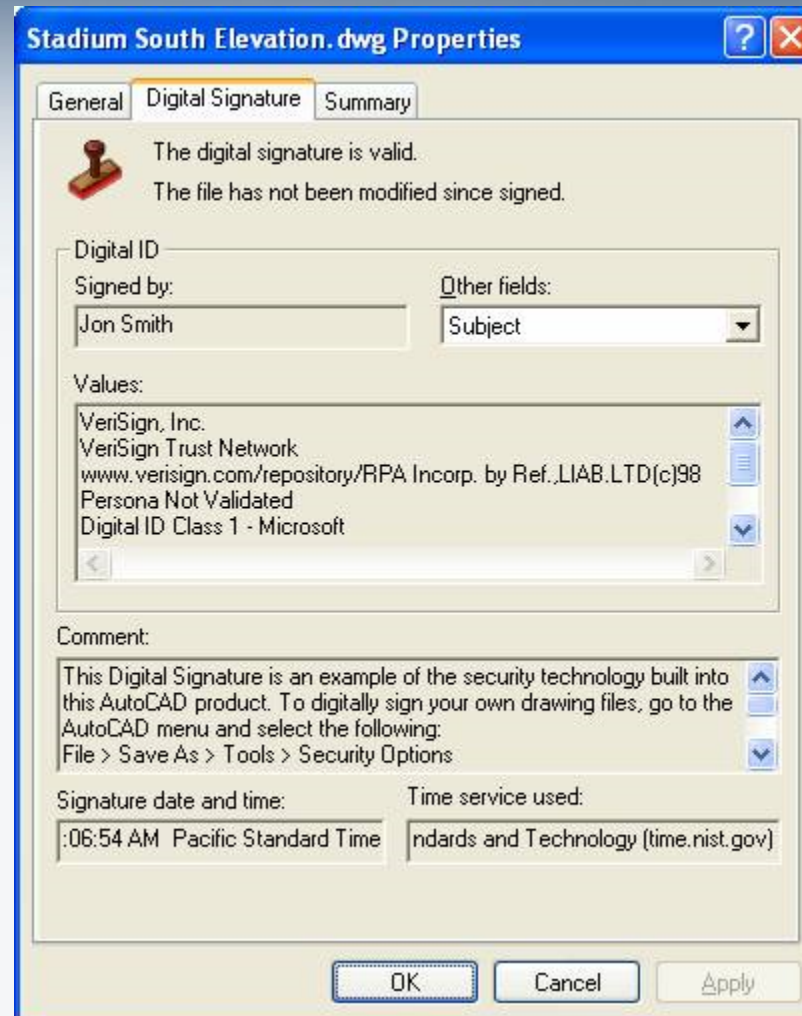
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- Third-party lock software: CadLock, etc.

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- DWF files
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- Digital signature

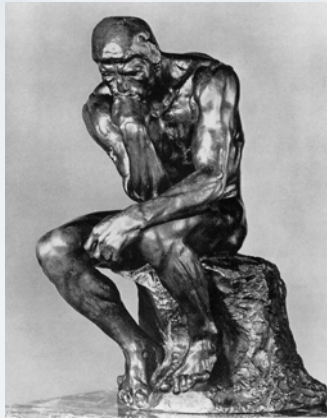
Digital signatures



Possible Solutions

- Create new drawing w/o proprietary layers
- DWF files
- Third-party Lock software: CadLock, etc.
- Digital signature
- FOIA exemption

Food for Thought



- DWG drawings are a powerful source of map data
- 2-edged sword
- Agencies must strictly limit distribution
- FOIA exemption recommended