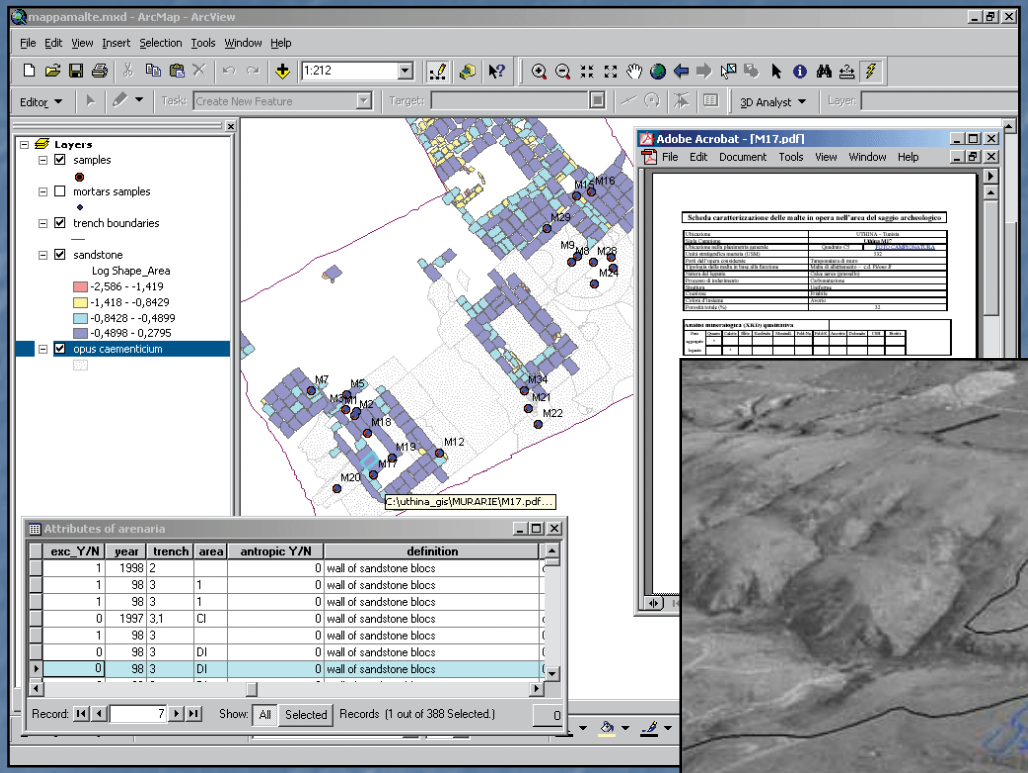
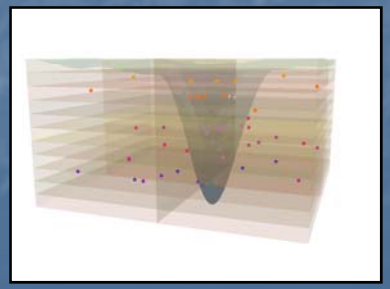
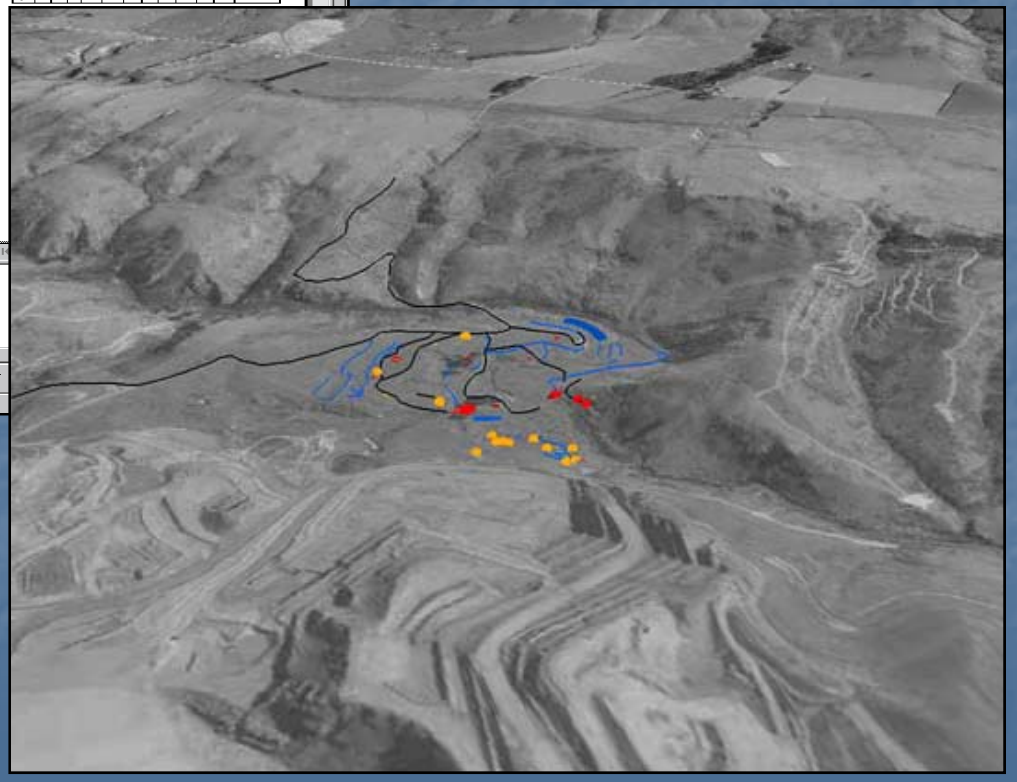
Geographical Information Systems (GIS) and Anthropology







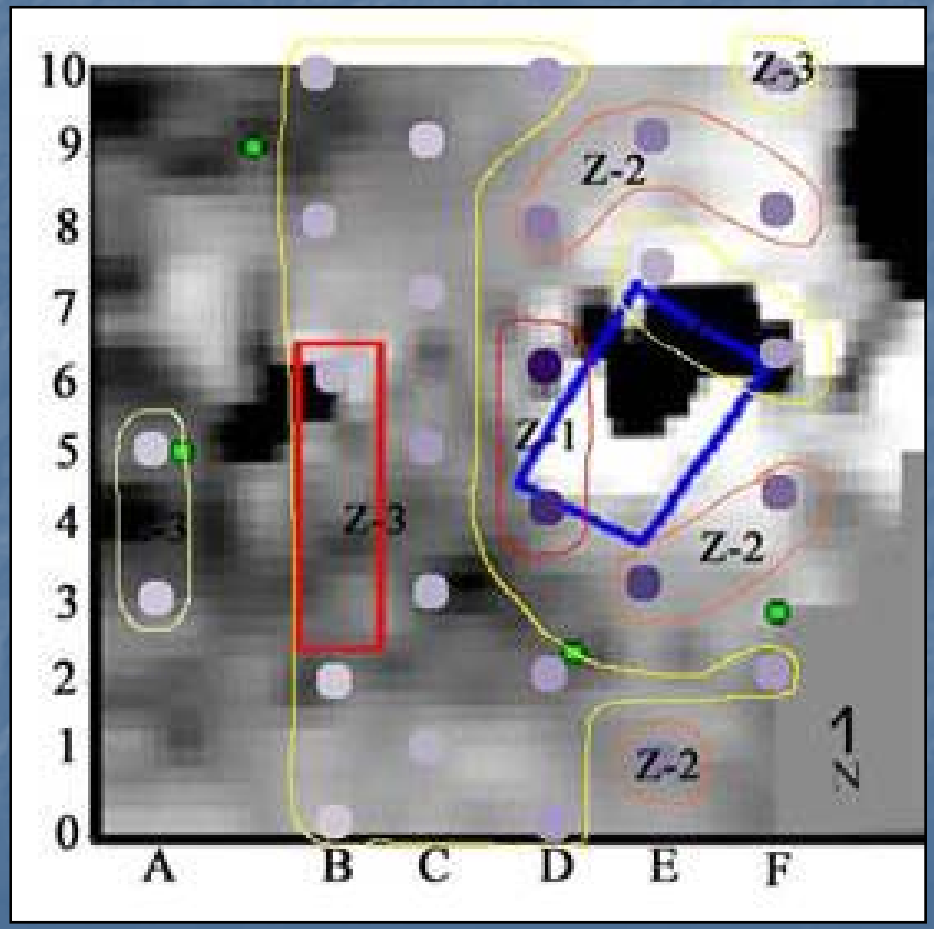
Geographical Information Systems (GIS) and Anthropology

What is GIS?

G = Geographic
- positions
- attributes
- spatial relationships

I = Information
- useful data
- linked via location

S = System
- Users
- Hardware
- Software
- Data



Geographical Information Systems (GIS) and Anthropology

What is GIS?

Definitions of GIS - numerous, to say the least!

- In one sense, simply a software package
- a computer database containing information about the earth
- an integrated system of software and geo-referenced data for planning

> "A set of tools for collecting, storing, retrieving at will, transforming, and displaying spatial data … for a particular set of purposes." (P.A. Burrough, 1986)

> "An information system that is designed to work with data Referenced by spatial or geographic co-ordinates. In other words a GIS is both a database system with specific Capabilities for spatially referenced data as well as a set of Operations for (analysis) with the data." (Star and Estes 1990)

Today, they are even more ways to define GIS!

Geographical Information Systems (GIS) and Anthropology

What is GIS?

Why is it useful? Because its unique!

- Events occur in places, where they occur is important
- Problems that involve an aspect of location are geographic problems
- A GIS knows about locations

History of GIS

- 1960's - the first GIS
- 1970's - advances in technology
- 1980's - commercialization
- 1990's - advances in usability
- Today - everywhere you want to be

Geographical Information Systems (GIS) and Anthropology

Components of a GIS

1. Computer System
   - software to do the job
   - processor requirements
   - enough storage for large amounts of data

2. Spatially referenced data (geo-referenced)
   - thematic layers
   - two types, raster and vector

3. Data management procedures
   - allows for storage, manipulation and retrieval of data
   - should provide access to multiple users and allow efficient updating

4. People
   - the most important aspect

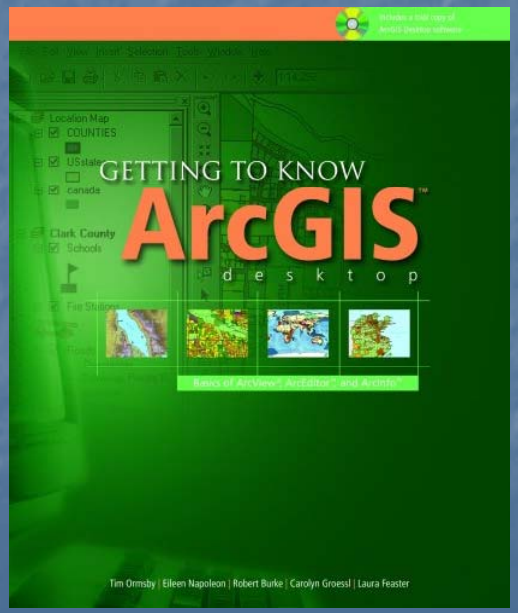
Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Computer System

Hardware - general rule “the faster the better”

Recently, most mid-range laptops can handle these programs

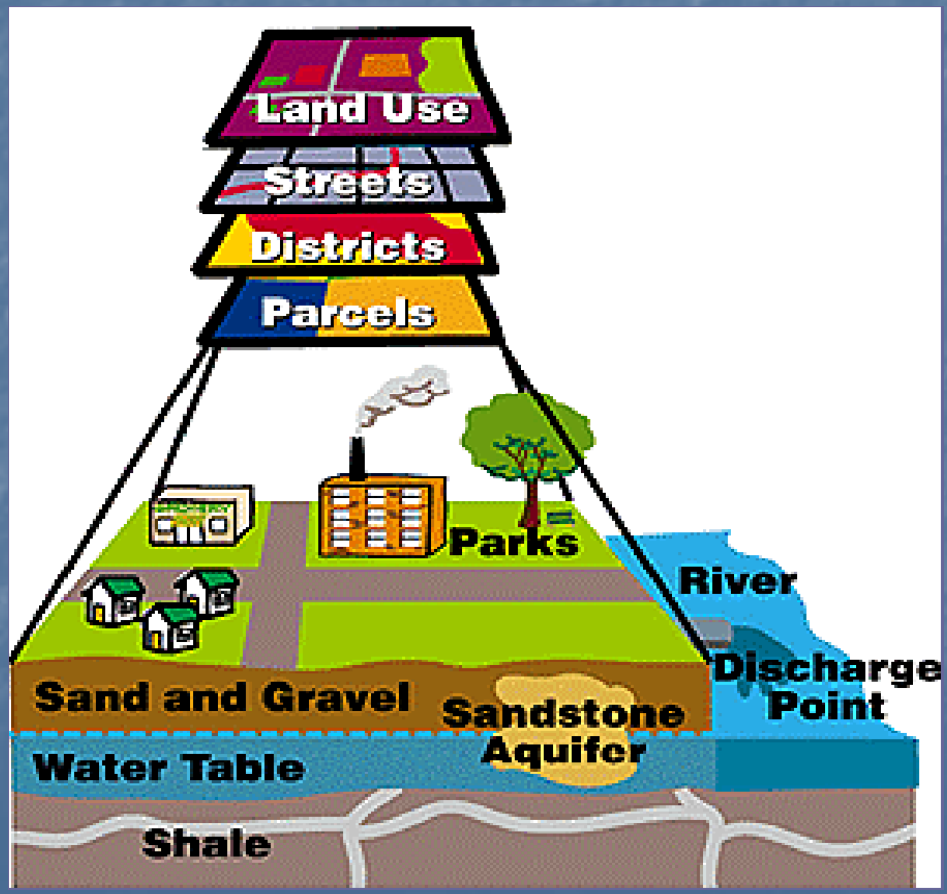
Software - two main programs used by archaeologists



Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Its all about the thematic layers



Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Raster Data - continuous data

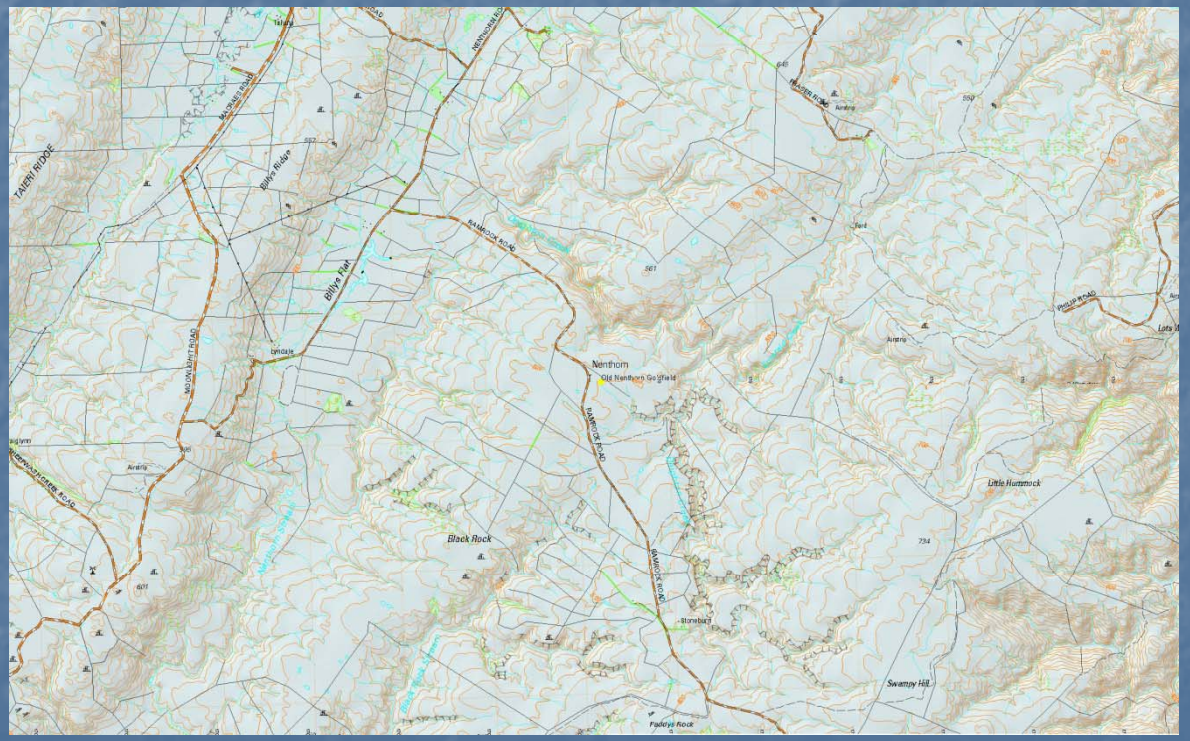
Rainfall

Elevation

Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Raster Data - continuous data

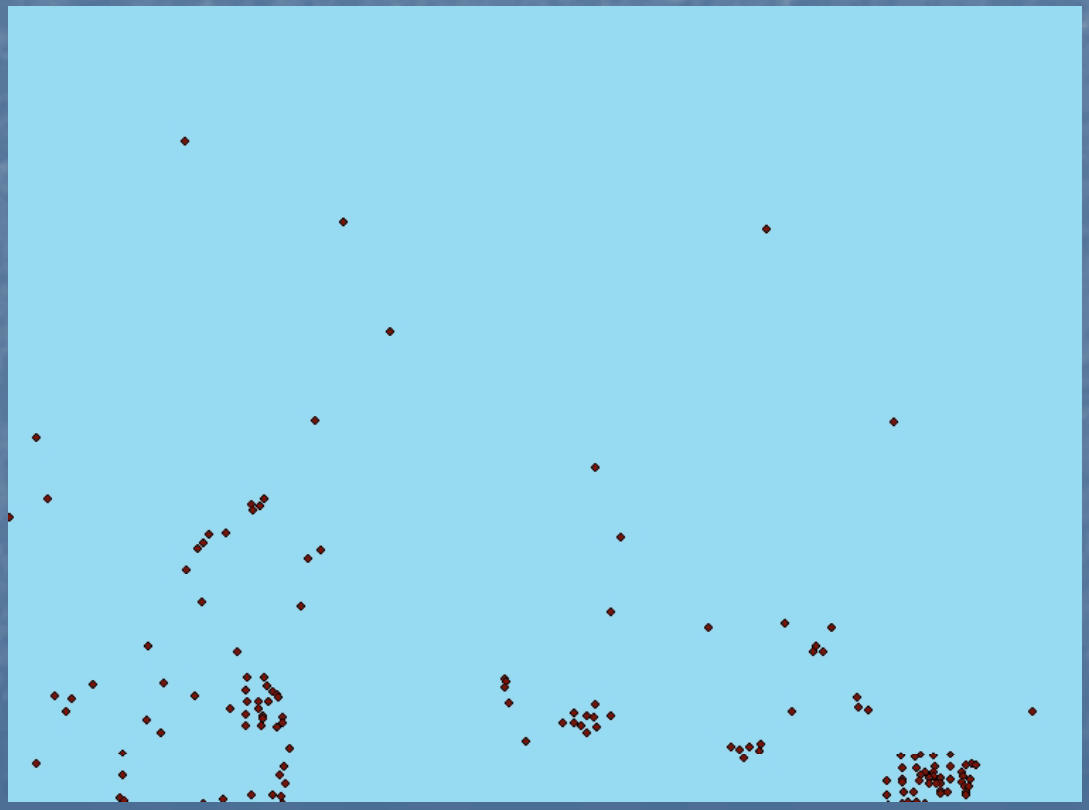


Images

Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Vector Data – points



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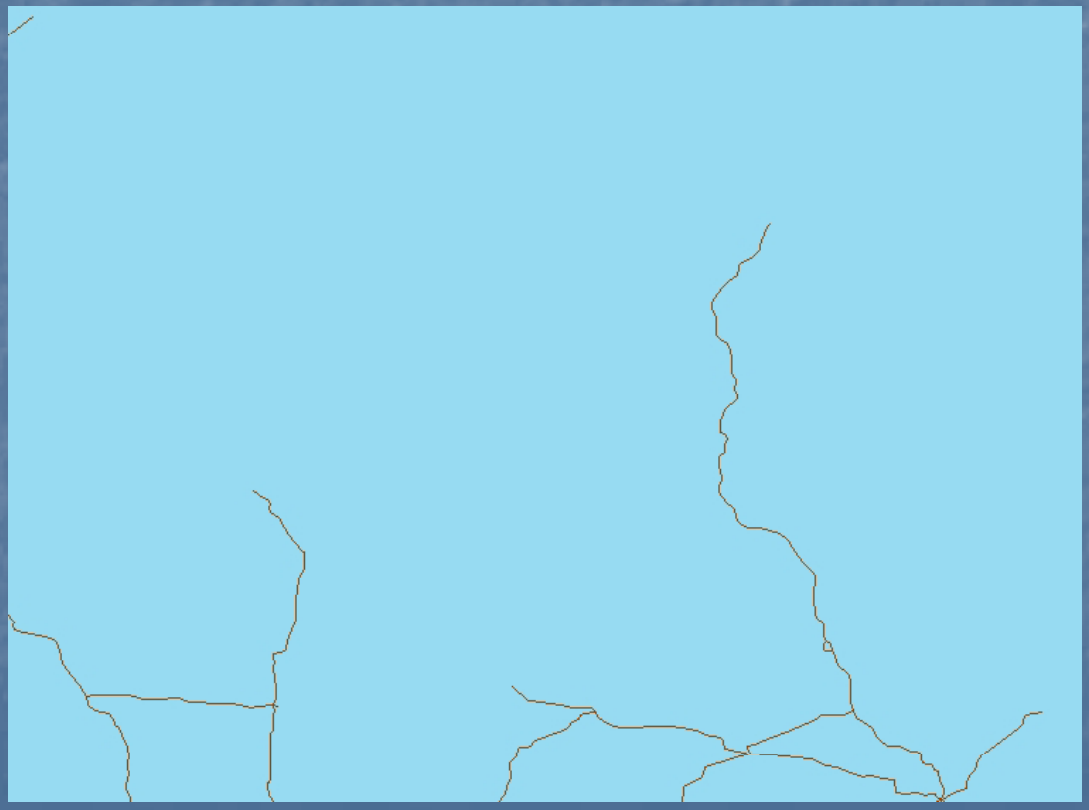
Components of a GIS
Structure

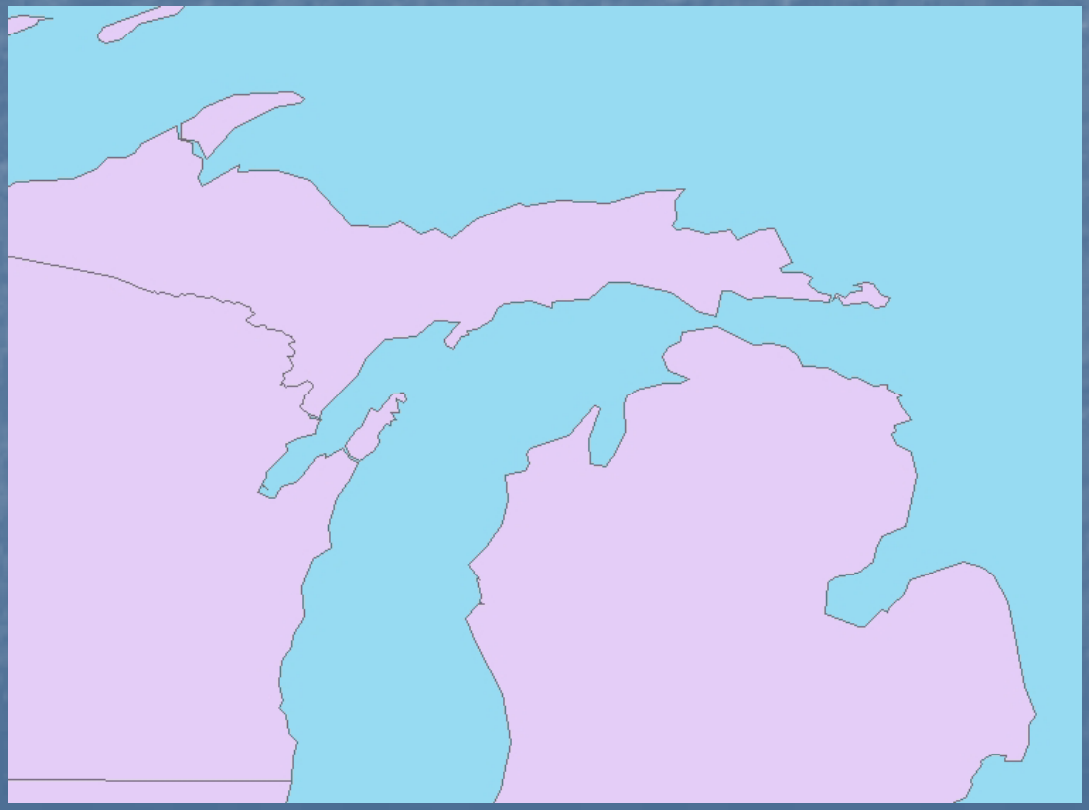
Vector Data – points, lines



Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

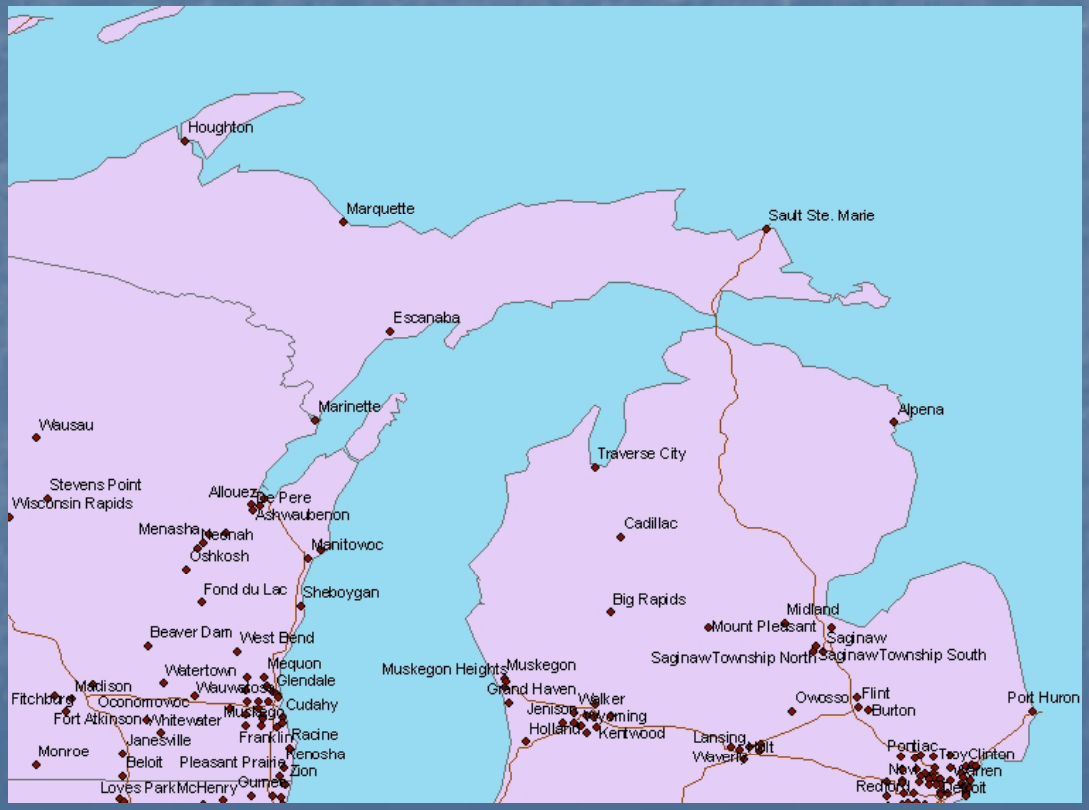
Vector Data – points, lines, & polygons (area)



Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

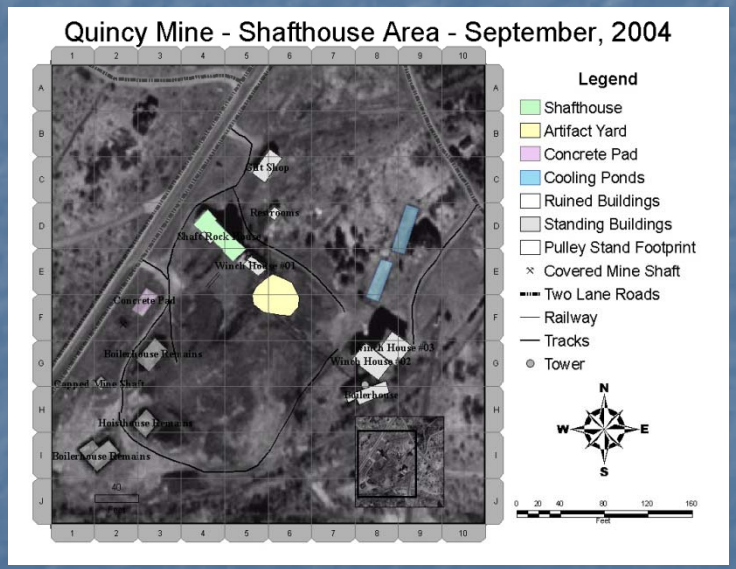
Vector Data – points, lines, & polygons (area)

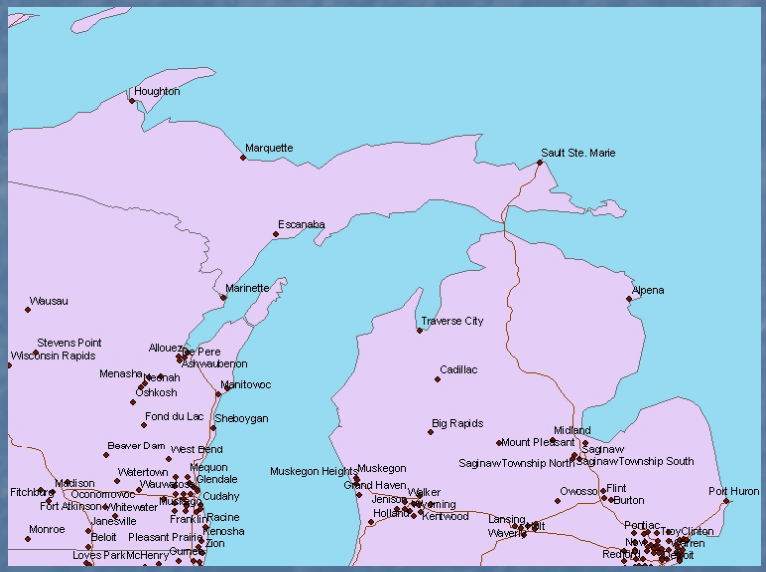


Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Vector or Raster? Is there a better format?



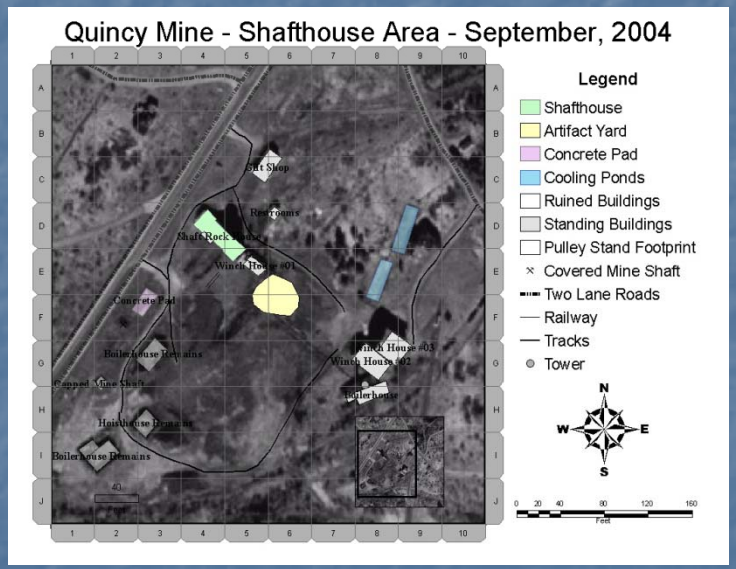


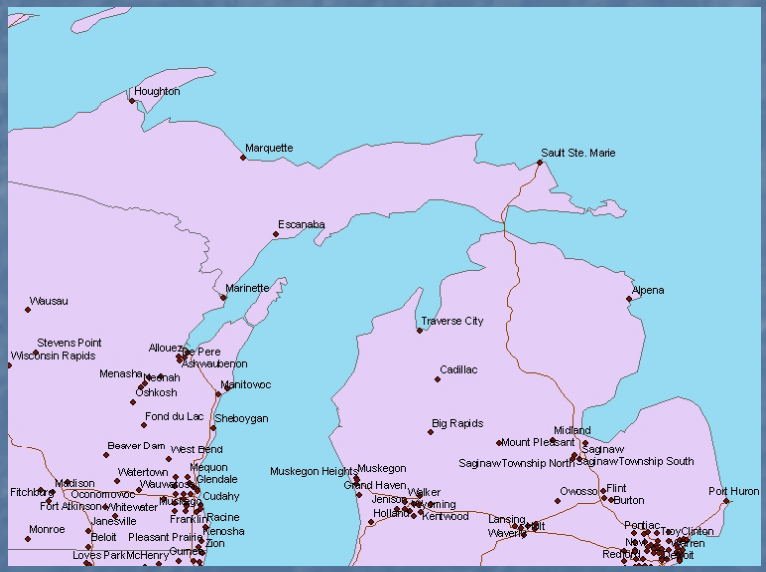
Geographical Information Systems (GIS) and Anthropology

Components of a GIS
Structure

Vector or Raster? Is there a better format?

We use both, we need both.





Geographical Information Systems (GIS) and Anthropology

Components of a GIS - Data Management Procedures

- storage, manipulation and retrieval of data
- provide access to multiple users and allow efficient updating
- documentation promotes above qualities, its necessary but often lacking

I chose to use ArcGIS' geodatabase structure

Geographical Information Systems (GIS) and Anthropology

Components of a GIS
People!

The most important component

No GIS exists in a vacuum, they are made to be used

People are required to plan, implement and operate the GIS

People make the decisions based on GIS

Human being are part of the world

Geographical Information Systems (GIS) and Anthropology

Components of a GIS

Enter Data

- Global Positioning System (GPS)
- Standard survey equipment
- Scanning maps
- Digitizing features by hand (the most time intensive)
- The internet (very fast)

Integration of Data

- Looking at data in meaningful ways