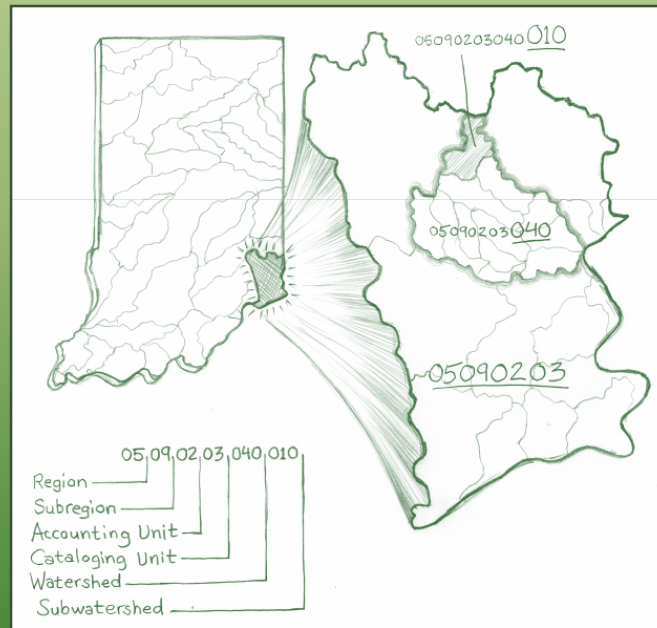


# Getting the Big Picture

## How to Look at Your Watershed



Indiana Watershed Planning Guide,

<http://www.in.gov/idem/programs/water/wsp/watershedmgmt.info.html>

# Before You Monitor Water Quality

- A onetime background investigation of the waterbodies and watershed
  - Town and county records
  - Maps
  - Photos
  - Existing studies and reports
  - Industrial discharge records
  - Oral histories
  - Talk to residents and stakeholders



[www.gobroomecounty.com](http://www.gobroomecounty.com)



USGS

Watershed Inventory Workbook for Indiana,  
<https://engineering.purdue.edu/SafeWater/watershed/inventoryf.pdf>

# Before You Monitor Water Quality

- **A visual assessment of the waterbodies and watershed**
  - Walk along the stream
  - Drive through the watershed
  - Note key features and document findings with photos, text, maps



[libizblog.files.wordpress.com](http://libizblog.files.wordpress.com)

# Initial Watershed Survey Uses

- Screening for pollution problems
- Identifying potential sources of pollution
- Identifying sites for monitoring



# Watershed Location and Boundaries

- Define geographic scope and hydrology of watershed
  - USGS map of hydrologic units
  - USGS topographic maps
  - Storm drain “maps” from local or municipal government offices
  - Stream headwaters, length, and flow path
  - Inflows and outflows for lakes and wetlands



Watershed Inventory  
Workbook for Indiana

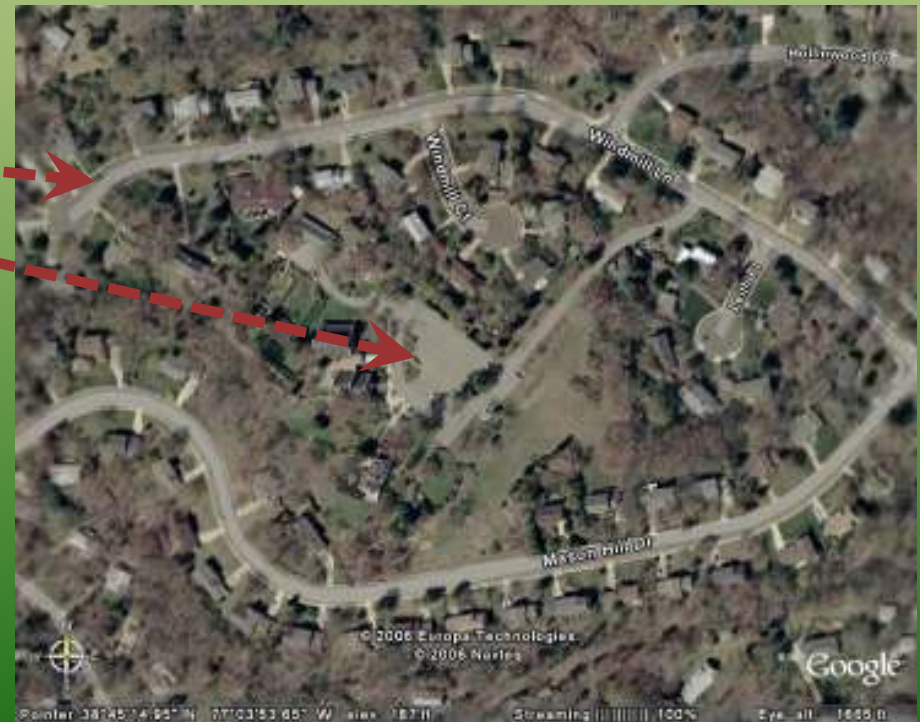
# Physical Features of Watershed

- Soils
- Floodplains & floodways
- Topography of the watershed
- Geology
- Karst (sinkhole) areas



# Land Use and Land Cover

- Current land use
- Potential land use (zoned)
- Impervious area

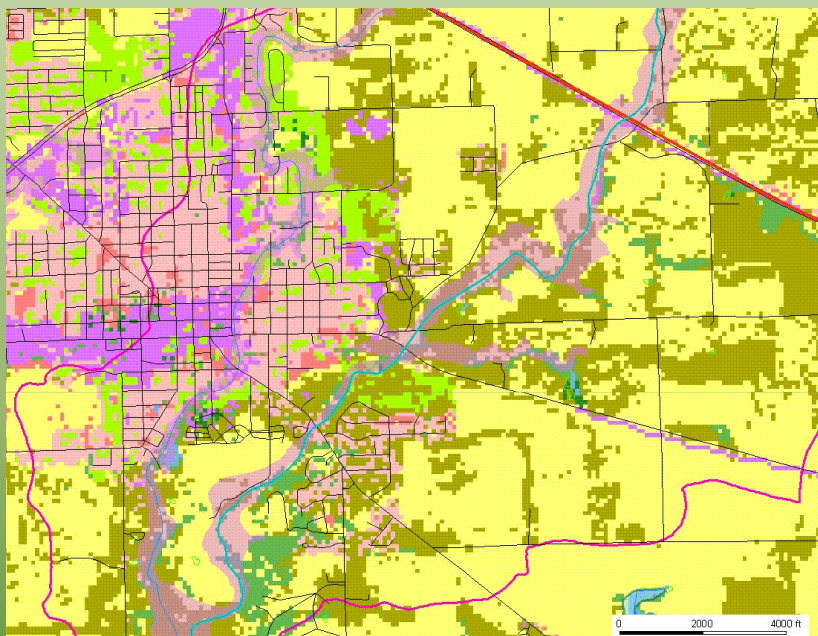


# **Tools and Data to Help**

# GIS Atlas for Indiana

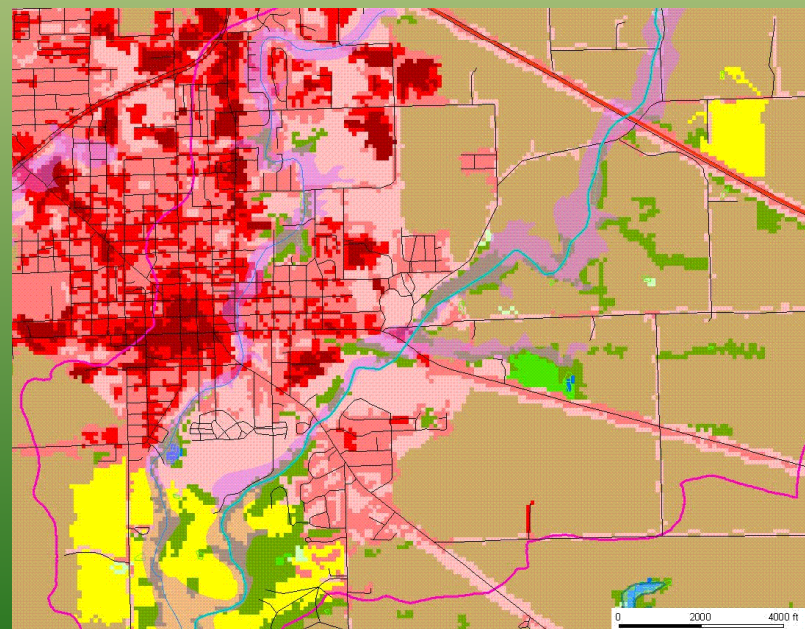
- <http://igs.indiana.edu/arcims/index.cfm>
- **Many data layers**
  - Reference (county boundaries, contours, etc.)
  - Infrastructure (roads, dams, etc.)
  - Agriculture and Land Cover (land cover, crops, soil associations, impervious surfaces, etc.)
  - Environment (CAFOs, NPDES, etc.)
  - Hydrography (waterbodies, floodplains)
  - Watersheds and Water Quality (boundaries, impairments, data)
  - Geology

# Track Land Cover Changes

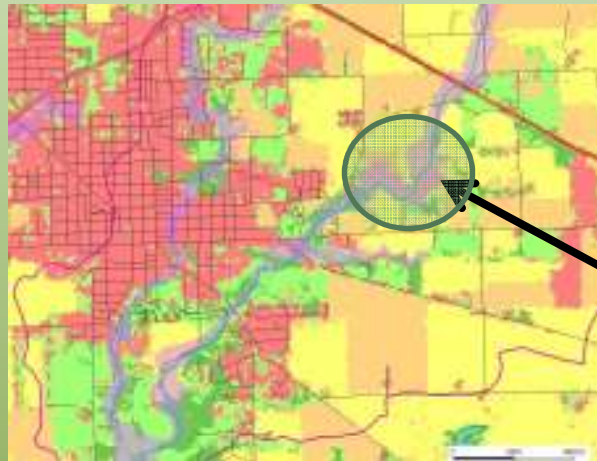


1992

2001



# Investigate Land Use in Floodplain

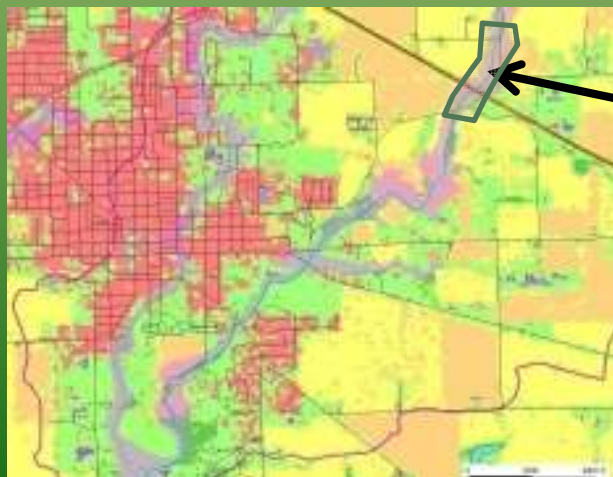


2001

Floodplain



2002



2003

Impaired  
Stream

# Web Soil Survey

- (<http://websoilsurvey.nrcs.usda.gov/>)
  - Access to soil and related information needed to make land use and management decisions
  - Provides all the information available in a County Soil Survey (i.e., SSURGO soil data, the aerial photo backdrop, plus all tables)
  - Convenient because it will aggregate and analyze the information for exactly the area you need

# Visual Assessment of Watershed

- **Residential and Urban Areas**

- Locate subdivisions, and observe which subdivisions have detention ponds
- Map sewerred and non-sewerred residential areas
- Observe sediment from construction areas



Watershed Inventory Workbook for Indiana

impervious areas, and observe  
sediment from impervious areas  
paved areas; observe management  
practices and evaluate roads



# Visual Assessment of Watershed

- **Locate wastewater treatment plants, industries, and other types of regulated facilities**
- **Characterize farming activities**
  - Use and storage of pesticides, fertilizers, and animal waste
  - Locate potential erosion areas

- **Characterize land**

- Public
- Logging



# Visual Assessment of Watershed

- Locate mining areas and potentially impacted water resources
- Observe current condition of streams and wetlands, and how adjacent land uses may be affecting them
- Identify socially important features of watershed for building a sound management plan



socially important features of watershed for building a sound management plan

## **Developing the Monitoring Plan**

- **Summarize findings from the initial survey**
- **Identify information gaps**
- **Identify potential water quality problem areas that should be sampled**
- **Identify potential major pollutant sources that should be assessed via water quality sampling**

