Urban Design & Natural Context
Open Space Exercise

Intention:

To give a broad and general interpretation of the natural context within which urban design takes place.

To look in more depth at the aspects of terrain, habitat/vegetation, and hydrology, as determinants of urban open space conservation and implementation.

Process:

Working in teams (maximum of three students), develop a diagrammatic representation of physiography, ecosystem structure, and hydrology for East Cambridge and Cambridgeport (You may increase the scope of the area as you see fit).

Combining this information with cultural and built form information gathered by your observation, propose a schematic conservation and development plan for an open space network.

Format:

Note: all drawings to be done (or reduced) at 11x17 size.

Part A: Three Diagrammatic representations of:

1. **Urban Physiography**

   Physiography is the study of the origin and distribution of the various landforms, such as mountains, plateaus, and plains that make up the visible surface of the Earth's crust. For physiographic study, an area may be divided into units by using a number of criteria, such as: local variations in rock and soil structure, topography, and types and amounts of erosion and deposition.

   Create a diagrammatic representation of your area's physiography with the following two types of information:

   1. Physiographic Districts: Based on common characteristics of soils, topography, and geologic history.

   2. Natural Features: Use exaggerated graphics to give an interpretation of important physical features.

2. **Urban Ecosystem Structure - Patches and Corridors**

   Using the landscape ecology concept of patches and corridors, identify the areas of existing habitat in your study area, (fragmented as it may be). This will include: stream corridors, parks, gardens, rail and powerline corridors; etc.

   Create a diagrammatic representation of your area's patches and corridors.

3. **Urban Hydrology- Watersheds**

   The third map in study series covers hydrologic features and systems. It should include floodplains and wetlands; standing water, such as rivers and lakes, including primary channelized and piped streams; and watershed boundaries.

   Create a diagrammatic representation of your area's hydrological system.

Part B: Open Space Proposal

Based on this general bio-physical analysis and your cultural/social observations as a context for urban design, present a conceptual plan for:

Open space conservation or restoration

Open space mitigation

Open space creation

Resources:

Federal

- USGS 1:24000 scale Topographic Maps & USGS Geologic Maps. **http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/ndcdb.html**

- FEMA Flood Insurance Rate Maps, **http://www.fema.gov/.** These show a high level of detail. FEMA, counties, or cities may have maps of more general views.

- National Wetlands Inventory, **http://www.nwi.fws.gov/**. 7.5' quad maps that have been digitized and converted to dlg (digital line graph) format. Dlg is a vector format developed by the USGS and the files are NOT images (gifs, jpegs). If you want to use the dlg files you must have GIS software (ArcView, MapFactory, etc.) that has the ability to import dlg format.

State

- Metropolitan District Commission **http://www.state.ma.us/mdc/mdc_home.htm**
- Mass GIS- Aerial Photos **http://ortho.mit.edu/nsdi/**
- Mass GIS- Shape Files (Need GIS Software to view) **http://www.magnet.state.ma.us/mgis/**
- County Soil Maps and Report (from County Soil Conservation Offices).

City of Cambridge

- Community Development Department Environmental & Transportation Planning **http://www.ci.cambridge.ma.us/~CDD/envirotrans/**
- GIS Database **http://www.ci.cambridge.ma.us/~GIS/**
- (Sewer Utilities are also a good source for locating underground piped streams.)

Organizations

- The Charles River Watershed Association **http://www.crwa.org/**