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UNH And Applied Geosolutions, Llc, Offer New Urban Planning Tools For Rockingham And Strafford Counties

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CICEET

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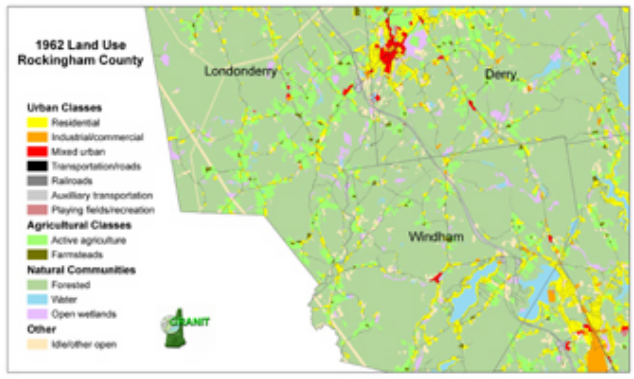
DURHAM, N.H.--- A new set of urban planning tools, developed by researchers at the University of New Hampshire and Applied GeoSolutions, LLC, of Durham, is transforming the hindsight of historic patterns of development into a 20/20 vision of the future for Seacoast communities.



The researchers have integrated aerial maps and land use data from Rockingham and Strafford counties into a digital Geographic Information Systems (GIS) archive that tracks changes in the region's residential, industrial and agricultural development from 1962 to 1998. They also created a computer model that forecasts where and how future growth will take place—information that communities need to better manage watersheds, estuaries, open land and other resources.

The project is funded through the Cooperative Institute for Coastal and Environmental Estuarine Environmental Technology (CICEET), a partnership between the National Oceanic and Atmospheric Administration (NOAA) and UNH, dedicated to creating technology for cleaner water and healthy coastal environments.

"Planners need better ways of understanding past and current patterns of development if they are to make decisions that accommodate future growth while protecting water quality and natural resources," says Fay Rubin, the scientist in UNH's Complex Systems Research Center who co-leads the project with William Salas of Applied Geosolutions. "They can use these tools to understand and manage growth in a way that reduces water pollution, whether it comes from urban stormwater runoff, or an industrial or municipal source."

For example, parking lots, roads, buildings and other impervious surfaces associated with development threaten water quality by increasing polluted runoff and reducing groundwater recharge. Planners can use the GIS archive as the basis to estimate the impact of impervious surfaces on water quality, and with this benchmark in hand, forecast how impervious surface

associated with future growth might further water quality.

Rubin, Salas, and a team of associates including David Justice, GIS project manager, and Sam Lingeman, GIS analyst, have scanned, processed and archived more than 1,400 photos to create the archive.

What the archive reveals about Seacoast development will not surprise anyone who has lived through the boom—farmland is disappearing, and acreage developed for suburban, urban and industrial use is on the rise.

Accessible through the GRANIT web site (http://www.granit.sr.unh.edu), workshops and by CD/ROM, the archive offers the first comprehensive "snapshot" of the Seacoast region at three points in time: 1962, 1974, and 1998. The high level of detail in the photography makes it possible to distinguish farmland from wetland, commercial from residential developments, and even make out structures as small as a pier.

To inform a predictive computer module that planners can use to forecast future development pressures, Salas has used this archive to compare historic development patterns to economic, demographic and transportation data, as well as biophysical information such as soil type, topography and proximity to water bodies.

"The model identifies how access to economic opportunities and local biophysical conditions influenced historic development, and uses this knowledge to predict where the development pressures will be greatest," explains Salas. "It is assumed that land will be used for whatever brings the highest value, but 'value' can vary. Land that is relatively closer to Boston, for example, is more likely to have a higher value as a residential property and be developed."

While the archive and the predictive model have been tailored to support Seacoast communities, the project methodologies also will be useful for statewide agencies, as well as for other regions in need of a model to develop similar planning tools.

"When you are planning a major initiative, like the Interstate 93 expansion, it is critical to coordinate with land use and transportation planners at the community level," says Ansel Sanborn of New Hampshire's Bureau of Transportation Planning. "Tools like these can inform their planning process so that they understand the larger impact of a local decision."

Editors: High-resolution photos of Rockingham County Land Use in 1962 and 1998 are available for download at:
http://unhinfo.unh.edu/news/img/granit/rockingham1962.jpg
http://unhinfo.unh.edu/news/img/granit/rockingham1998.jpg