Use of High Resolution Imagery for Mapping Impervious Surfaces in an Urban Watershed

The Kansas Urban Water Quality Restoration & Protection Initiative.

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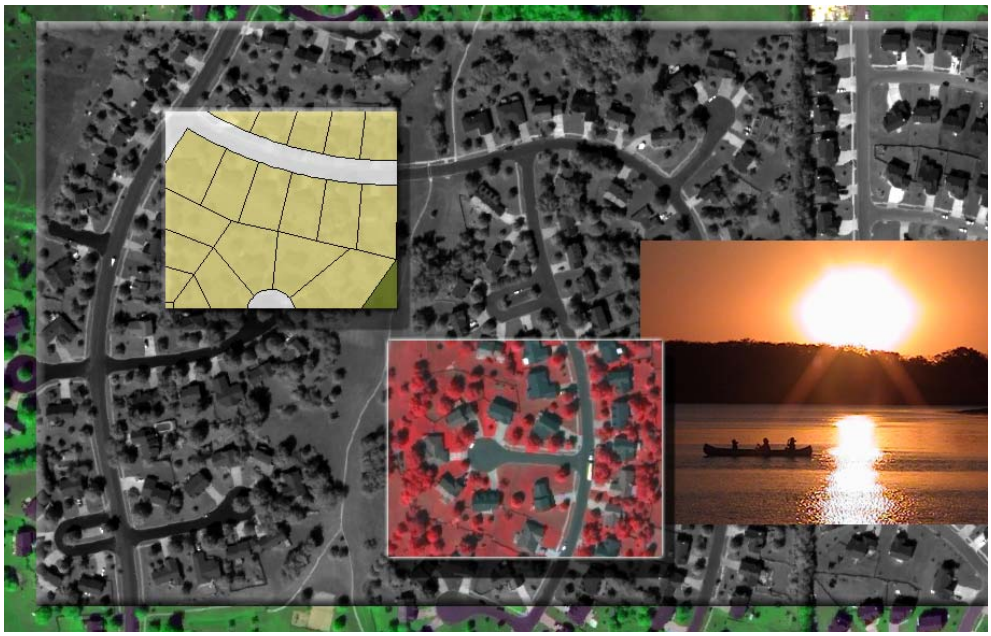
Local decision makers are often charged with the task of balancing the growth of their communities with increasingly stringent environmental regulations regarding non point source pollution and drinking water quality. Yet, information that is vital to making informed decisions is often not readily available.

The Kansas Biological Survey is working closely with the city of Olathe, Kansas, located just southwest of the Kansas City metropolitan area, to develop a watershed protection plan for Lake Olathe, one of two primary sources of drinking water for the city. The project is part of the Kansas Urban Water Quality Protection and Restoration Initiative, a multi-year effort to provide local water resource planners with a "toolbox" of resources for effective water quality management.



High resolution Quickbird imagery (Digital Globe, Inc.) is used by KARS researchers to address the complex relationships between natural resource conservation, urban development, and water quality. Inset photo, Cedar Lake, Olathe, KS.

The Lake Olathe watershed, covering approximately 10,000 acres, is currently threatened by the effects of rapid urban development. In addition, the city of Olathe will soon be required to comply with National Pollutant Discharge Elimination System (NPDES) Phase II requirements for storm water discharge. This combination of regulatory and community growth factors requires an increasing level of specific information regarding land use and land cover at the local level, which is inextricably tied to water quality concerns.

Use of Remote Sensing

We are using high resolution imagery to quantify and map impervious cover within the Lake Olathe watershed. We will also use these data to help identify valuable natural resource areas that will be used in development of a watershed protection plan. We are also working to enhance the information potential of high resolution imagery by incorporating ancillary GIS data.

Resource managers are being provided with detailed maps of land use, and other GIS/Remote Sensing derived information products that will allow them to model the impacts of future land use scenarios, identify priority water resources, and create priority water resource goals.

Benefits

The Kansas Urban Water Quality Protection and Restoration Initiative provides planners with visually simple, information-packed presentations that help them evaluate and identify current and historic natural resources, the impacts of alternative development scenarios, and address planning issues in a way that would otherwise be time consuming and expensive. The materials are provided as part of a "tool box" of technical assistance resources specifically geared for meeting local government planning needs. Use of the materials is encouraged through outreach programs to educate municipal officials, focusing on the critical linkage between land use and water quality.

Funding for this project has been provided through the **Kansas EPA Nonpoint Pollution Control Section 319 Grant and the Kansas Department of Health and Environment. (Grant #NPS-2K-46).** *This Fact Sheet series provides educational information on current examples of remote sensing applications from AV Members. No endorsement of or association with* ***AmericaView****SM by any funding agency other than the USGS should be implied.*