## BUILDING CAPACITY

Darryl Booth, MBA

# GIS Builds Capacity to Reclaim Brownfields and Respond to Public Requests: Elkhart County, Indiana

**Editor's Note: A need exists within environmental health agencies to increase their capacity to perform in an environment of diminishing resources. With limited resources and increasing demands, we need to seek new approaches to the business of environmental health.**

**Acutely aware of these challenges, NEHA has initiated a partnership with Decade Software Company called *Building Capacity*. *Building Capacity* is a joint effort to educate, reinforce, and build upon successes within the profession, using technology to improve efficiency and extend the impact of environmental health agencies.**

**The *Journal* is pleased to publish this bimonthly column from Decade Software Company that will provide readers with insight into the *Building Capacity* initiative, as well as be a conduit for fostering the capacity building of environmental health agencies across the country.**

**The conclusions of this column are those of the author(s) and do not necessarily represent the views of NEHA.**

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In our introductory column in November, I spoke of profiling right-minded environmental health projects that address the numerous challenges agencies face today. I know that citizens want more information about the health of their communities. They expect answers (and not just data, but conclusions) faster than ever before. GIS stands out as a tool health agencies must utilize to meet this pressing need. The best application of GIS technology can bring about far-reaching insight and manifest inferences about the relationship between our environment and our health never before imagined.

GIS is software used to view, manage, and analyze data connected with specific locations. Public health data always includes a location component, to which GIS adds a valuable perspective. An Esri® white paper (Esri, 2011) put it succinctly as follows:

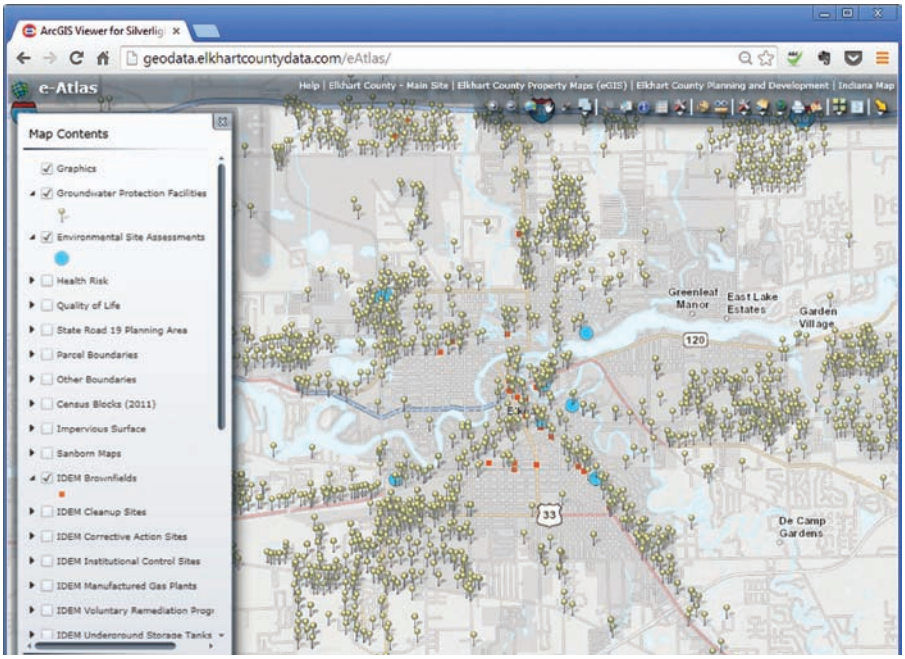
> GIS technology integrates common database operations, such as query and statistical analysis, with the unique visualization and geographic analysis benefits offered by maps. It is valuable to environmental health organizations for explaining events, predicting outcomes, and planning strategies. In this sense, GIS is much more than a computer map; it is a decision support system that integrates spatially referenced data and statistical analyses to address environmental health problems.

The health department in Elkhart County, Indiana, is one such agency that effectively utilizes GIS technology as both a decision support system and to improve customer service. The department developed a custom web application, originally to analyze brownfields (Esri, 2010), and eventually evolving into a resource that citizens can access to identify local health hazards as well as health opportunities.

The project began with the county's groundwater protection program, which monitors over 5,100 groundwater protection sites (facilities that store over 25 gallons of hazardous materials or are on a septic system) as a way to confirm the status of sites that are (or are not) health hazards. This program was born of a critical localized need to protect groundwater resources (Elkhart County Board of Commissioners, 2014).

FIGURE **1**

**eAtlas Showing "Groundwater Protection Facilities," "Environmental Site Assessments," and "IDEM Brownfields" Layers**




IDEM = Indiana Department of Environmental Management.

Brownfields are properties stigmatized by a real or perceived health threat. Beyond being a health hazard, brownfields are often a visual blight for a community and can lower adjacent property values. Elkhart County has a strong industrial history, but what has been good for the economy now poses a serious threat to community drinking water. "We have a lot of groundwater, but the water tables are high and the soil is sandy, so we are at risk for contamination from spills," says John Hulewicz, former groundwater program supervisor. "We have six Superfund sites, which is extremely rare for a county with a population of less than 200,000."

Aware of their vulnerability, the program works closely with local facilities to monitor their activities and hazardous substances, balancing education with enforcement. But as facilities close down or depart, their environmental footprint remains. A 2006 County Comprehensive Plan (Elkhart County Board of Commissioners, 2006) called for better land use management and prompted the department to reconsider these lots. Having relied on a paper-based filing system for over 20 years, the health department lacked a community wide representation and did not have the capacity to determine the health status of each property. Elkhart thus sought and won a U.S. Environmental Protection Agency (U.S. EPA) brownfield assessment grant to implement a data management system that would empower them to identify and reclaim underused sites in an organized and defendable manner.

The first step was to organize and scan the department's 44 drawers of paper files. Finding the right document management system is crucial, Hulewicz warns. "You have to put time into identifying exactly what you need so you know what to look for. It was vital that whatever system we chose was compatible for our needs and compatible for use with Esri products." The county selected Laserfiche (www.laserfiche.com) for this purpose.

The next step was to take those files (applications, complaints, inspections records) and connect each to an address. The team faced many of the standard challenges of converting paper to digital. Addresses change over time as they are annexed into the city; facilities go out of business; some files (for example, waste tire sites far from any given intersection) did not even have an address. Records were filed by business name, not location, so properties that had hosted several businesses over time were split across multiple files. "Ultimately, though, we were able to take all the groundwater files and associate them with a point on a map, even when numerous facilities had occupied that space."

Elkhart County's GIS team partnered with Symbiont, an engineering and consulting firm based in Wisconsin, to develop the map-based data management system. Utilizing Esri ArcGIS technology, the project team created eAtlas (Figure 1), available at http://geodata.elkhartcountydata.com/eAtlas/. Elkhart's documents were scanned using optical character recognition, which allows the system to search scanned text. Each linked document can be viewed within eAtlas (Figure 2).

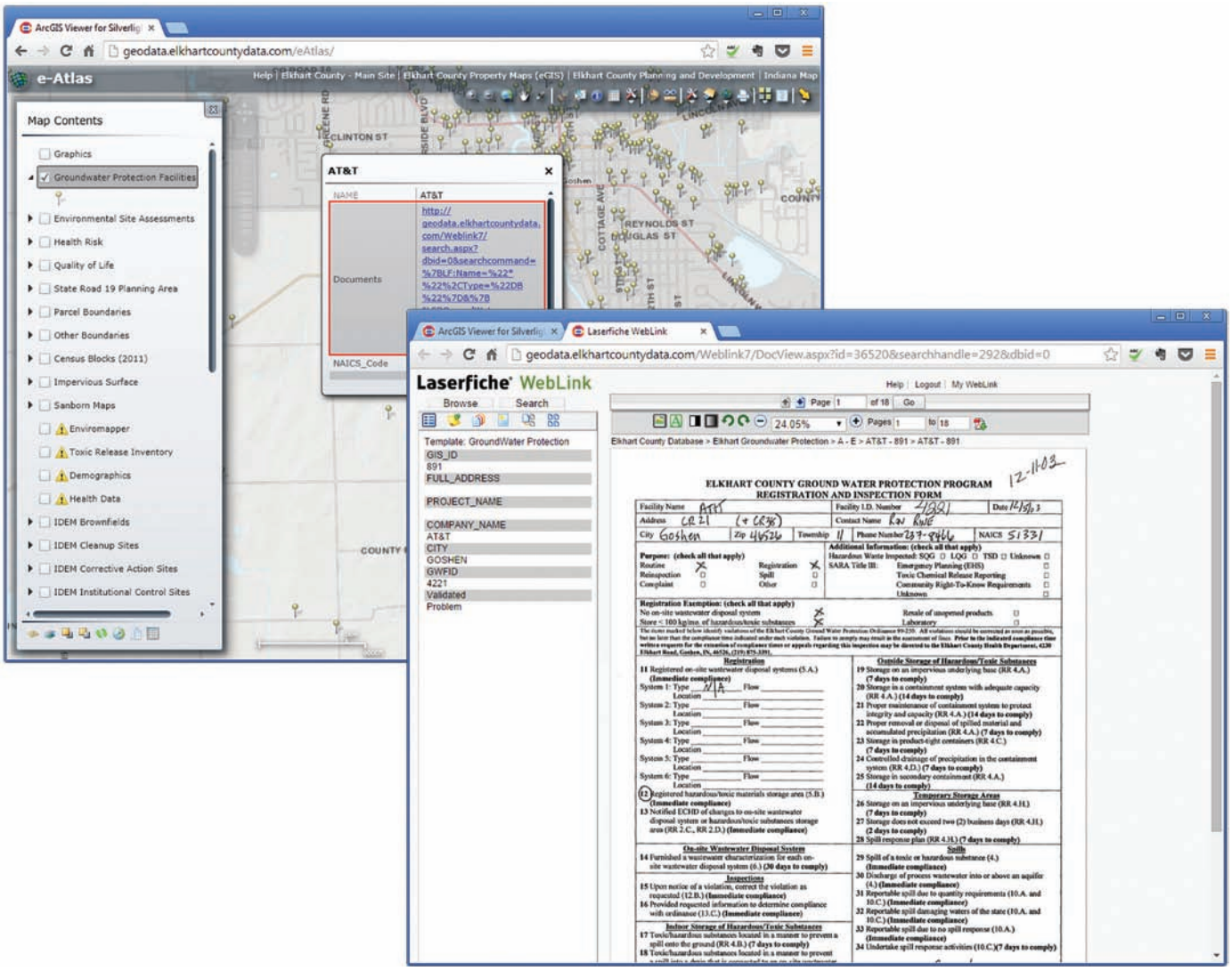
This project resonates with me for a number of reasons. I'm primarily impressed by the seamless marriage of regulatory needs with public interest. Originally, two sites were created, eAtlas and another called What's In My Backyard (WIMBY). WIMBY was born from Not In My Backyard (NIMBY), the characterization of a community's opposition to new, traditionally industrial, development.

"We wanted to be more positive," Hulewicz told me. "We could show the detrimental things, but we also wanted to show the quality of life things that people are interested in—'What schools or churches are near me, are there any bike trails or golf courses?'" Incorporating groundwater protection data and other environmental datasets from organizations such as U.S. EPA, the state of Indiana, and neighboring regions and departments, eAtlas and WIMBY were eventually combined into a single, public-facing Web site. Users can choose from many different data layers, from more regulatory focused "groundwater protection facilities" and "tire waste sites" to quality of life layers such as "cleaned up" and "uncleaned" meth lab locations, hospitals, libraries, and parks. Viewers can choose from several base maps, including aerial photos or "topographic" (Figure 3).

Not only is this system a positive, transparent resource for the community, but it has

FIGURE **2**

**Clicking the "Documents" Link for a Selected "Groundwater Protection Facilities" Site Layer Displays Linked Documents via Laserfiche**




increased the agency's capacity. They save dozens of hours every month by directing record requests to this site and have been able to steer their own activities based on the conclusions that this application provides. In part because of this resource, several former brownfields have been redeveloped into neighborhood parks and other treasured communal areas.

The county intends to develop this tool further to create a scoring model by which the program can rate a facility's risk utilizing parameters such as number of spills, hazardous material storage methods, and type of chemicals. The division could easily enhance the system with other environmental health layers. The state of Florida Department of Health is using GIS to create a parcel-based drinking water and wastewater inventory to identify the drinking water source and the method of wastewater disposal for every built parcel in the state. Calculate the time your office would save and the positive image you'd cultivate if all this valued information were immediately and automatically available to constituents! If the records are already considered "public," make them obtainable.

If you are interested in pursuing a project like this, find more resources at www.decadesoftware.com/column.

*Acknowledgement:* Kelly Delaney, marketing communications manager for Decade Software Company, provided the research for this column.

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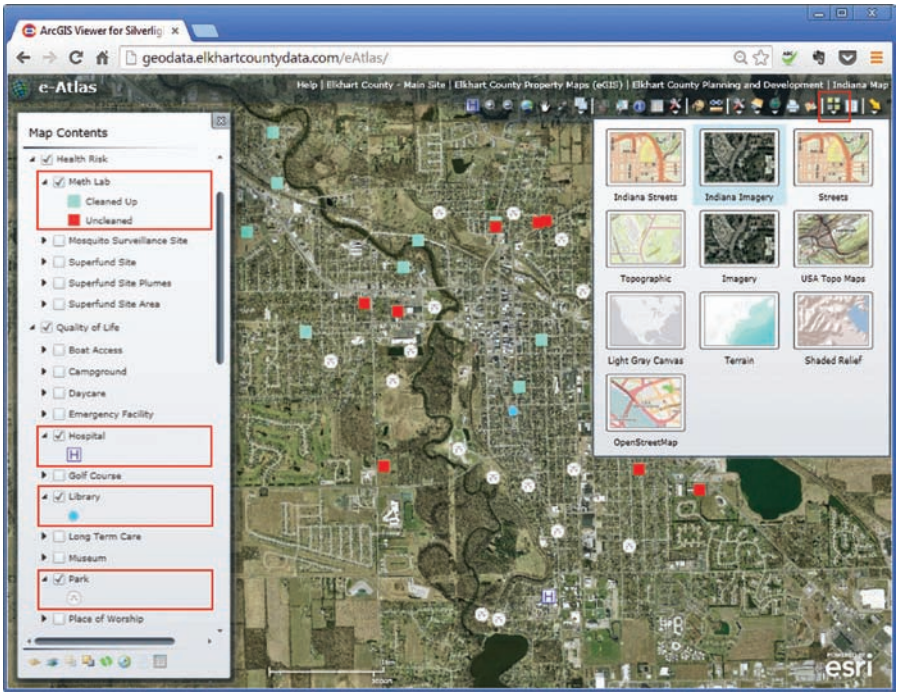
FIGURE **3**

**Several Selected Quality of Life Layers and Base Map Options**

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