NATIONAL INSTITUTES OF HEALTH, MD

NIH...Turning Discovery into Health

Office of Research Facilities

The National Institutes of Health, a part of the U.S. Department of Health and Human Services (HHS), is the nation's medical research agency—making important discoveries that improve health and save lives. NIH is made up of 27 institutes and centers spread across the country. The home of NIH is in Bethesda, Maryland, across the street from the National Naval Medical Center. Other NIH campuses exist in Frederick, Maryland; Baltimore, Maryland; Research Triangle Park, North Carolina; and Hamilton, Montana. Coordination and maintenance of the physical infrastructure of these campuses for the benefit of the institutes and centers rests with the Office of Research Facilities Development and Operations (ORF). ORF maintains both the campus infrastructure and the physical building spaces occupied by the institutes and centers, and is responsible for new construction, renovations, environmental protection, planning and space management, and property management.

Bethesda, MD

Approximately five years ago, ORF began the use of GIS technology. Like most organizations of the time, ORF focused on the infrastructure outside of the building envelope. Starting with the Bethesda campus and standardizing on Esri's technology, ORF built datasets for the campus that included digital orthophotography, planimetrics, and utilities (water, sewer, stormwater, electric, gas, steam). Driven largely by ORF's Division of Environmental Protection (DEP) headed by William (Kenny) Floyd, additional layers and applications were built that included specific information needed to manage fertilizing, mowing, stormwater regulation compliance, and maintenance of the campus greenspace along with a detailed tree inventory of the urban forest associated with this campus. Over the years, DEP has continued to develop datasets both inside and outside of the campus buildings; has expanded the geographic extent of the areas covered to include the campuses in Frederick, Baltimore, Research Triangle Park, and Hamilton; and has built a variety of applications that take advantage of the GIS datasets to assist in the management and operations of the campus infrastructure.

Hamilton, MT

Now, NIH maintains a multi-campus ArcSDE database utilizing ArcGIS 10 that includes a depiction of all interior spaces, along with attributes conforming to a standard room naming convention that allows linkage to a variety of facilities databases. Recent examples of how this enterprise level GIS is being used to manage daily operations includes:

> **A telephone inventory »** Over the years, the NIH campus in Bethesda acquired thousands of telephone lines to support the variety of institutes and centers that reside on the campus. While it was relatively easy to add new lines, there was no coordinated system for eliminating lines and the ongoing costs when they were no longer necessary. As a result of a request from the campus emergency services group to assist in the integration of their emergency call system with the physical location of telephone numbers, an inventory of all physical phones on campus was conducted over a two month period in the summer of 2010. A field-based application was developed and used to inventory approximately 22,000 phone locations. This inventory identified

Research Triangle, NC

approximately14,000 phone lines that were in the database, which in fact did not exist. It is anticipated that this could result in an annual savings in the millions.

Decommissioning » Since the establishment of the Environmental Protection Agency (EPA) in the early 1970's, a variety of then commonly used materials have been determined to be potentially hazardous within the workplace. Notably, exposure to the existence of asbestos, lead and mercury have been determined to be potentially harmful to building occupants. NIH is a research facility with buildings whose construction dates back over 80 years. DEP found it necessary to inventory these hazardous materials to attempt to ensure that exposure is minimized. An Esri field-based application has been developed to assist in the inventory of these materials and to incorporate the extent of existence of the materials into the GIS-based building database. This database is now being used to manage the mitigation efforts required by law.

A web-based viewer » Recognizing the value of GIS-based quality data, and desiring to make the data available to a wide variety of NIH users, DEP sponsored the development of a simple to use web-based viewer of GIS data. This application is now operational and available to all authorized NIH personnel. The expectation is that the functionality of the Viewer will be expanded over time based on agreed upon needs.

Sustainability » Like all federal facilities, NIH is concerned with minimizing the facilities impact on the environment and compliance with the variety of federal executive orders and legislation requiring reduction in the use of water, energy, the emission of carbon, and maintaining a healthy indoor environment for all workers on campus. Utilizing the GIS database as a core, NIH is working to implement a web-based GIS-based system for monitoring and reporting usage characteristics down to the room level across the campus.

ORF and DEP are working toward building and maintaining quality data to support these and other GIS-based applications.

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