

GIS DEVELOPMENT FOR THE WAUKESHA WATER UTILITY

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INTRODUCTION

R.A. Smith & Associates assisted the Waukesha Water Utility in developing and implementing a GIS that takes a comprehensive approach to managing the utility's water distribution system data. The GIS creates efficiencies that include disseminating information quicker to the end user; eliminating duplicity of land base information; and making it easier to locate and update system information. The project consisted of designing the Geodatabase, converting all utility maps and database records to a digital format. This provides the utility with a seamless integration for water modeling, customer service, SCADA and other departmental functions.

DATABASE DESIGN

A vital portion of the project was building the Geodatabase to integrate into an enterprise solution for the Water Utility. There are numerous functions throughout the Utility that had to be taken into consideration when creating and completing the database. A key concern was ensuring that attribute tables will be linked with current and future departmental functions throughout the City of Waukesha and the Water Utility that can utilize other software systems. The Water Utility's Geodatabase went through its share of modifications. Even when the conversion project was in full swing, obscure feature sets that were overlooked needed to be addressed.

At the conclusion of its conversion project, the utility had an enhanced ESRI Water System data model. In order to allow for integration with a work order management system, a Legacy ID field was added to the feature sets. This would allow the utility to deploy the management system at the end of 2005, getting us closer to the data management approach that the GIS system was designed for.

DATA COLLECTION / CONVERSION TO A GEODATABASE

The utility learned from mistakes made with a previous GIS conversion project that had failed. One of the lessons learned was on delivery of data to the conversion firm. Instead of just handing over all of our bundles data, which is hard for the consultant to go through and understand its idiosyncrasies, the utility organized its bundle of varying data formats by Township and Range Sections. Throughout the city a plan was devised as to what sections R.A. Smith would be working. The Utility staff then worked ahead, researching any missing data or discrepancies for each of these sections, trying to make it more understandable

for the GIS Technicians doing the conversion. To accomplish this, bundles of different data types and binders for the each section were created; typically this would consist of copies of asbuilts, mylar hand drawn maps and AutoCAD drawings. The utility also provided them with shapefiles of GPS points including hydrants, water valves and curb stops, as well as an access database that contained IDs and other valuable feature information. A hierarchy of the different data formats had also been established for the conversion team to follow.

DATA INTEGRATION

The utility realized that by spending more effort upfront and making sure that the Geodatabase has attributes and links in place, the gathering of data from other sources to produce efficient and more intelligent documents was a major benefit. The added intelligence would allow for less duplication of data input, ease of system information updating, higher data accuracy and overall cost savings to the utility.

Currently the utility is working on its Master Plan which includes utilizing a new hydraulic modeling software package. This software will work with the GIS system and analyze the utility's current infrastructure and facility locations for future water system growth recommendations.

This is just one of the many benefits that were achieved through the efforts in designing a Geodatabase that would have an enterprise approach combining data from our system and others.

CONCLUSION

There has been a renewed sense of data quality since the completion of the project amongst the users at the utility. The other departments have been able to see the updates to the water system in a timelier manner and the ease of gathering data for the hydrant survey and flushing program have been tremendously effective. Don't get me wrong, there are still areas that need some work but as we go through these programs this year it has been easier to see the changes that needed to be made to the various systems along with making those changes. The GIS has given us the arena to create more robust reports, documents and maps for the utility enabling us to better manage infrastructure. During the year we plan to obtain laptops for our crews and facility locators so we can then deploy the data into the field and integrate new information with a work order management system. We have also developed the capability for our customer representatives to access the data to provide quicker data retrieval for customer inquires.

