



Photos courtesy of Bexar Metro 9-1-1 Network.

GIS:

MAKING 9-1-1 EFFECTIVE

By Bob Long, Bexar Metro 9-1-1 Network District

GIS is an important part of the success of this emergency communication district.

GIS PRODUCTS ARE THE FOUNDATION OF THE BEXAR METRO 9-1-1 mapping effort and play an important role in engaging targets and providing accurate locational data. Executive director Bill Buchholtz places great importance on the Bexar Metro 9-1-1 database. He is constantly looking for ways to enhance its completeness, accuracy and automation. But how important is GIS to the 911 community and, particularly, the Bexar Metro 9-1-1 Network District?

Bexar Metro 9-1-1 is an emergency communication district established in 1987 to serve the people of San Antonio, TX, and the surrounding area. Today the district is responsible for 9-1-1 service in three South Texas counties: Bexar, Comal and Guadalupe. Bexar serves approximately 1.3 million customers,

who operate about 1.7 million telephones. It also covers 2,545 square miles and thirty-five jurisdictions and includes eighteen PSAPs. Bexar answers about 1.2 million 9-1-1 calls per year. Its 9-1-1 database is developed by the local carriers, hosted by SBC (the local exchange carrier [LEC]) and quality-controlled by the Bexar Metro 9-1-1 staff.

Bexar's response to those 1.2 million calls depends to a large extent on the quality of its database and map. A significant effort goes into the quality control of the 9-1-1 database. San Antonio and the surrounding areas enjoy some of the fastest growth in America; development—urban sprawl—is all around. As a result, Bexar Metro 9-1-1 has invested considerable effort and resources into ensuring its database and digital map are complete, accurate and up-to-date. The staff is in constant contact with SBC and local community partners working together to ensure the database is a highly accurate product. Bexar has teamed up with surrounding municipalities to share data and seek solutions to resolve issues. Today, it has a map that includes multiple data sets or layers—including emer-

agency service numbers (ESNs), street center lines and cell tower locations, among others. Aerial imagery is yet another layer being added. The imagery allows for even greater accuracy and helps call takers and dispatchers know exactly where calls are coming from and where first responders need to go.

GIS Not Novel in Bexar

From the very beginning, the Bexar Metro district has been a serious consumer of GIS services and products. Its emphasis on database and mapping accuracy isn't new. In 1996, on the occasion of its tenth anniversary, the executive director, the director of operations and the GIS manager each commented on the "importance of database development and mapping accuracy." Each of them focused on the enabling characteristic that accurate data provides when seconds count. Since then, they have reached agreements with municipal partners to share data and entered into a commercial contract to fly and image their area of responsibility on a reoccurring basis, mapping it for their use and the use of others. The city of San Antonio will make the aerial imagery product, resulting from this effort, available through the city website.

Bexar Metro uses the product as a cornerstone for its mapping efforts, which it shares with its 9-1-1 partners. The staff is monitoring and enhancing the map and database constantly to ensure absolute accuracy. In fact, Bexar's "Can you hear me now?" guy spends most of his time on the road, checking the accuracy of the database, map and the wireless providers' systems. He uses six handsets (one from each wireless carrier) and a GPS system to make test calls. He often uses a USGS monument as a known fixed site for call location comparison. All of that is focused on ensuring the 9-1-1 system can provide the best service possible. Today, Bexar Metro's top priority for fiscal year 2004 is to enhance its database through improvements to processes, enhancements to technology and better feedback loops.

Speaking of wireless, Bexar Metro 9-1-1 is about to complete Phase II. Each of its six wireless carriers is successfully

providing automated number and location identification—well within the standards prescribed by the Federal Communications Commission (FCC). It wasn't easy; the FCC has some of the toughest certification procedures in the business. It checks every part of the process—from the field and in the PSAP. It has to work flawlessly before the system is certified. The wireless carriers serving San Antonio and the Bexar Metro 9-1-1 District stepped up to the plate and met the challenge. In fact, the carriers using GPS technology often are able to locate callers to within fifty feet, and those using network solutions are locating callers to within one hundred feet on many occasions.

The basis of this capability is the database and digital map. One level of accuracy (database) enabled by another (map) allows an accurate wireless capability. Constant checking and continuous improvement ensures the network's capability and credibility with those who depend on it.

How else is Bexar Metro 9-1-1 using GIS? It recently worked with surrounding municipalities to develop and deploy an emergency notification system. It combines Communicator, a product from Dialogic Communication Corporation (DCC) (Franklin, TN) and the Bexar Metro 9-1-1 digital map. Embedded in it are the geocoded 9-1-1 database addresses. When they experience an emergency—manmade or natural—local community leaders can employ the ENS to advise citizens of the situation, warn them of danger, and provide instructions to help save lives and property. They know who to warn, because of their highly accurate database and map.

Most people don't really understand the complexity of the 9-1-1 system; many haven't yet thought about the usefulness of GIS data. Bexar Metro has, and working with others has made the Bexar Metro 9-1-1 network better and more capable, enhancing the safety and security of the citizens within its area of responsibility.

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GIS: Usefulness in Emergency

On Monday, January 31, 2003, Alaska Airlines Flight 261 went down about three miles from Anacapa Island in the Channel Islands National Marine Sanctuary in Alaska. Over the next several days, sanctuary staff used their existing geographic information system (GIS) of the islands and surrounding waters and provided other assistance to support the emergency response operations.

"We never imagined that we would have a plane crash in the sanctuary to respond to," says Ben Waltenberger, spatial data analyst at the Channel Islands National Marine Sanctuary. But sanctuary staff soon found that the GIS data layers they had on hand, such as bathymetry, topography, sea surface data, and marine oceanic data, provided rescuers with valuable information, first in the search for survivors and later in recovering debris.

"It really helped us to be able to get up-to-date charts from them," says Lt. Carlos Mercado, port state control coordina-

tor with the U.S. Coast Guard. "We used their information, and I know other agencies used it during the recovery process. It helped us."

Instead of charts or numbers, you could actually get a real-world perspective that was beneficial to getting a clear idea of what the crash site was like, what was happening, and what resources were around it.

"A lot of the data could be used in other crises as well," he notes. This kind of situation is tragic enough that you want to be prepared and have as much information as possible so that you're ready if it ever happens again."

—Geo Community (www.geocomm.com)

For more information about the role of the Channel Islands National Marine Sanctuary and NOAA in the response operation of Alaska Airlines Flight 261, visit www.nos.noaa.gov/news/flt261/flight261.html.