



Texas Council of Engineering Companies  
2010 Engineering Excellence Awards  
Gold Medal Winner – Category D: Survey and Mapping Technology

San Jacinto River Authority



# San Jacinto River Authority GIS Database

The San Jacinto River Authority operates Lake Conroe, a man-made drinking water supply north of Houston. With 150 miles of shoreline, Lake Conroe is a major recreational facility serving all of Southeast Texas. The Authority permits and inspects all piers, boat-slips, boathouses, marinas, and septic and irrigation systems, and maintains the aquatic vegetation control program for the lake. To maintain water quality, the Authority routinely performs periodic water sampling; licenses and inspects on-site sewage facilities near the lake; and permits and inspects marine sanitation facilities on all ships using the lake.

Prior to 2009, lake operations staff used a manual system to record and update permit records that are the basis for monitoring compliance and collecting annual fees for more than 3,500 docks, 1,500 on-site sewage facilities, and 260 irrigation systems. The time-intensive manual process—reviewing paper files of permit applications and payment receipts and comparing subdivision maps with appraisal district records to uncover current owners and their billing addresses—resulted in a large percentage of uncollected revenues.

To help the Authority improve workflow efficiency and increase their revenues, Brown & Gay Engineers, Inc. developed a web-based, Graphic Information System (GIS) database; verified and input existing data; and trained lake operations staff in operating the system. While GIS has long been used to record information linked to land, this is the first



**BROWN  
& GAY**  
ENGINEERS, INC.

known instance of GIS linking a physical object to a permit to collect revenues and monitor compliance.

The user-friendly system features drop-down menus for ease of entry and consistent data; data files coded to appraisal district property ID numbers for easy property owner updates; color coding that instantly identifies renewed versus expired permits and the time period that has lapsed between inspections of on-site sewer facilities; a document management system to house electronic paperwork such as original permit applications, payments, and photos tied to the permitted facility; and the ability for field staff to record and update information using hand-held mobile devices that upload data in real time.

The program's initial focus was to reduce the backlog of 1,200 unbilled or overdue dock licenses. In creating the permit tracking system, Brown & Gay Engineers actively engaged members of the lake operations staff so that the solution optimized their workflow efficiency.

With the system up and running in less than 2 months, the project came in ahead of schedule.

Since the new system's implementation, the Authority has recaptured revenues (71 percent decreased backlog in the first 5 months) and improved operational efficiency. During field verification of existing records, 100 docks and numerous irrigation systems that had never previously been recorded were identified, adding to the revenue pool.

The discovery of a large number of residential property owners pumping the lake for irrigation prompted the Authority to develop a new revenue-producing program of individual lawn irrigation metering (only large golf-course users are currently metered and charged for usage). This important new revenue program will be relatively easy to implement because the new permit tracking system is already in place.

The project was initiated in December 2008, its first phase completed in January 2009, and additional features were added in October 2009.

