

St. Johns River Water Management District

Goals

- Integrate spatial data with the district's tabular databases.
- Provide district staff with access to a corporate database and standardized GIS systems.
- Make data available online for district staff and on the Internet as a feature service
- Share data with other government agencies, universities, corporations, and the public.

Results

- Improved communications in all aspects of district operations.
- Allowed non-GIS staff to incorporate spatial information into their daily work product, increasing efficiency and improving work product.
- Greatly enhanced public notification of the district's permitting activities.
- Simplified data sharing with other agencies.
- Satisfied legislative mandates.

Introduction

It is hard to think of Florida and not think of water. Statewide, there are approximately 1,200 miles of coastline and 7,700 lakes larger than 10 acres. It is known worldwide for its beautiful beaches, water sports, and fishing. Sports teams in Florida have names such as Dolphins, Marlins, and Gators.

In northeast and east-central Florida you will find hundreds of miles of Atlantic Coast and the full length of Florida's longest river, the St. Johns. In this region you will also find some of the state's largest cities, such as Jacksonville and Orlando, as well as favorite tourist destinations such as Disney World, Daytona Beach, and historic St. Augustine.

Maintaining the delicate balance between people and the precious water resources of this region are the men and women of the St. Johns River Water Management District (SJRWMD or District), one of Florida's five water management districts. SJRWMD is responsible for protecting water resources in all or part of 19 counties in the region. More than 650 dedicated staff members work each day to ensure the sustainable use and protection of water resources for the benefit of the people of the District and the state of Florida.

It is not hard to figure out how spatial information relates to the core missions of the District—water supply planning, surface water resource protection, protection against floods, and organizational effectiveness. Gathering the needed data for these missions is a continuous process. The next step is managing and analyzing all of that information.



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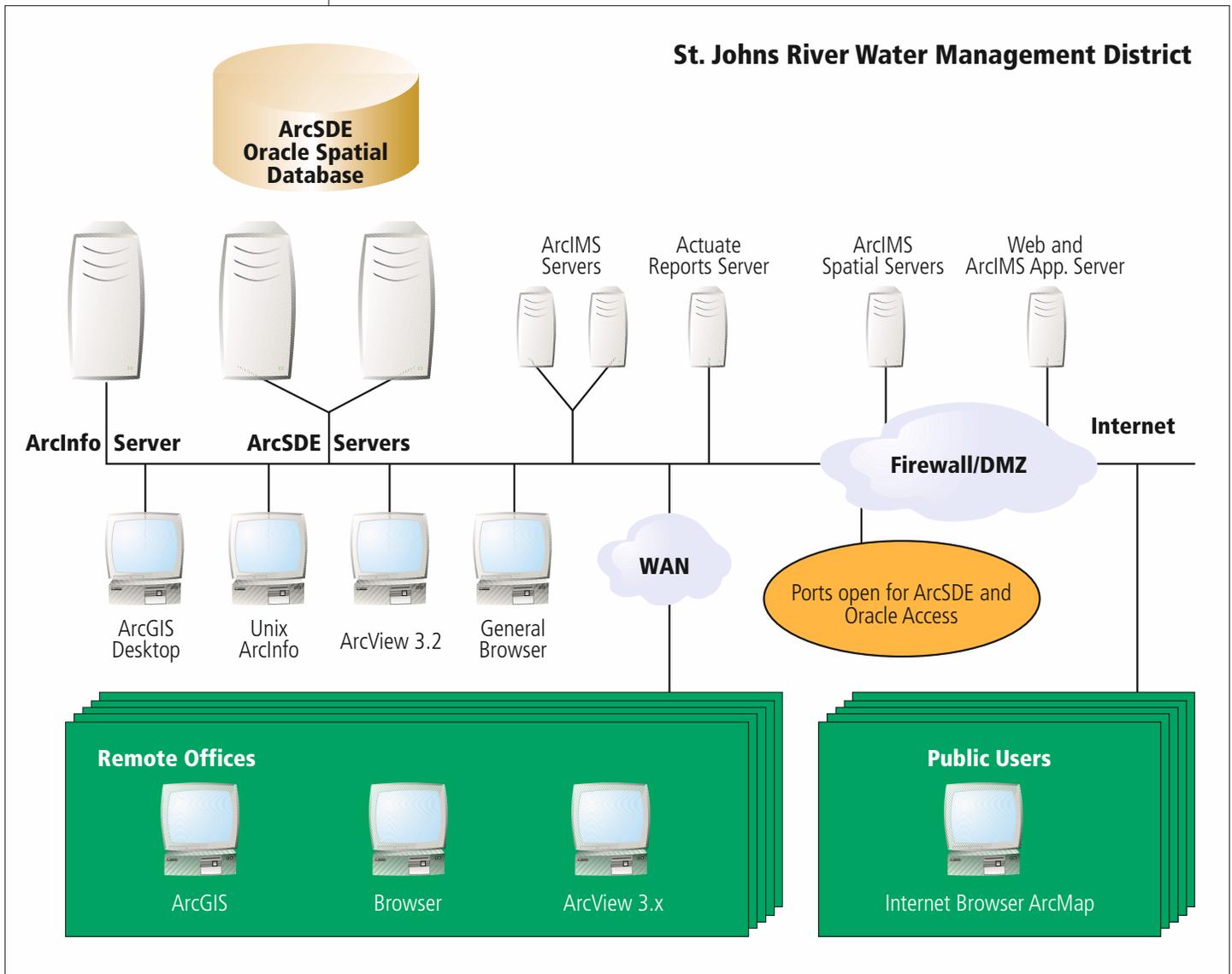
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An Enterprise GIS is Born

The District has been using ESRI software since the early 1980s. The use of geographic information system (GIS) technology at SJRWMD started out small and focused on specific projects such as wetlands mapping. But the successful application of GIS to these projects stood as an example for other projects. The District's mission as a water resource management agency lends itself naturally to the inclusion of GIS in virtually all the District's programs. Of great significance was the development of critical District-wide data layers and customized tools for easily accessing those layers. This spurred the spread of GIS, which has over the years become thoroughly entrenched in most of the District's core projects. Ongoing efforts to integrate spatial data with

the District's tabular databases are further cementing the use of GIS throughout the organization.

SJRWMD's enterprise GIS solution provides District staff with access to a corporate database and standardized GIS systems. This access allows users to share, update, and retrieve information within a central database. The District developed GIS data standards by designing the ArcSDE enterprise database, standardizing data storage, and developing and implementing District-wide customized applications for retrieving ArcSDE database information.



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Organization

The Department of Information Resources is responsible for District GIS program management, coordination of GIS activities, and the provision of GIS support for all departments. The department takes the lead on enterprise-wide data storage and management, development of the ArcSDE database, and the development of the GIS users' applications. The department also maintains the GIS servers and user desktops.

The Department of Resource Management maintains groundwater GIS modeling data. Typical data layers used include the top of the Floridan aquifer, the top of the upper retaining layer, soils, and Doppler rainfall data. This department also maintains the location of permitted projects and applications for the permits. The consumptive use permit (CUP) and environmental resources permit (ERP) locations are updated daily in the ArcSDE database. This data is available online for District staff and on the Internet as a feature service through ArcIMS.

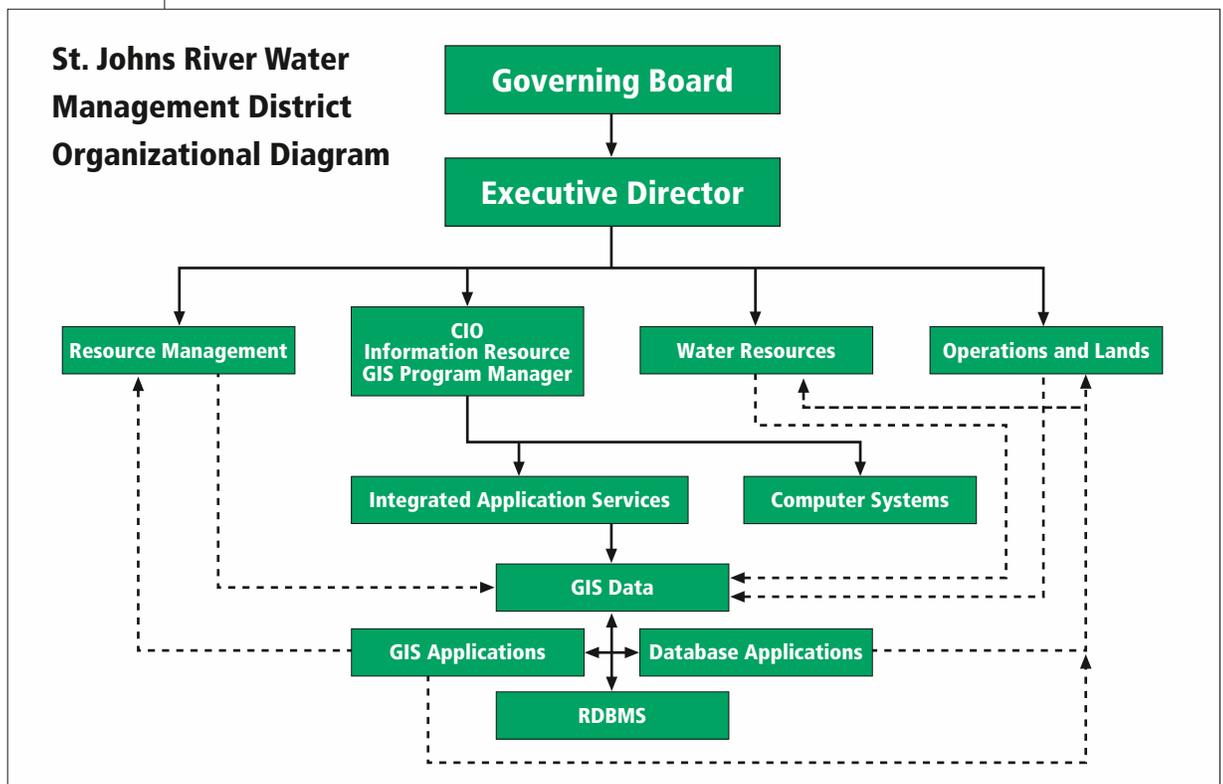
The Department of Water Resources uses GIS comprehensively. The Environmental Sciences Division is involved with the environmental management of District-owned property and environmental assessment District-wide. Business processes include resource mapping, ecosystem restoration, data modeling, and visualization. The Engineering Division conducts hydro-

dynamic modeling, water quality analysis, water storage analysis, watershed modeling, and surface water runoff analysis. The centralized ArcSDE database provides the most current data for these users.

The Department of Operations and Lands is involved in land acquisition, land management, facilities management, and planning. Land parcel data is of great interest to the department. The enterprise ArcSDE database greatly improves the GIS data access for land managers, planners, and land acquisition agents.

Each department in the District works independently in its own business area while sharing data and modeling results through centralized ArcSDE and Oracle databases. All data is live and accessible through the Web or ArcGIS client applications. District data is in high demand by other government agencies, universities, corporations, and the public. Organizations using District data include

- University of Florida
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Conservation Commission
- South Florida Water Management District
- Southwest Florida Water Management District
- Florida County Government Agencies
- City Governments
- Florida Water Wise Council



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System Design

ESRI software and extensions

ArcInfo 8.2 Desktop (more than 100 clients) **plus a core of UNIX-based ArcInfo Workstation users**

ArcView 3.x

(150 desktop applications; these users will be migrating to ArcView 8 Desktop over the next several years)

ArcSDE 8 (two database instances with Oracle8i [8.1.7])

ArcIMS 4 (four ArcIMS servers supporting eight ArcIMS intranet Web sites and two ArcIMS Internet Web sites)

DBMS:	Oracle8i (version 8.1.7) with limited usage of Oracle Spatial
Operating System:	Windows NT/2000 and Solaris 8 servers
Server Configuration:	DB server 1-Sun Enterprise 3500 with four 400 MHz processors DB server 2-Sun Enterprise 3500 with two 400 MHz processors App server-Sun Enterprise 5500 with six 400 MHz processors ArcIMS servers (4)-Dell Poweredge 2550 with dual 1 GHz processors
Number of Layers:	130 layers in ArcSDE
Type of Data:	(1) Basemap-hydrology, administration, contour roads (2) Natural Resources-land use, geological, ecoregions, soils, sea grass, wetlands (3) Regulatory-consumptive use permit, environmental resources permit, water supply (4) Planning-flood zone, state public land, District land, habitat conservation area
Size of Database:	50 GB of vector data stored in Oracle with ArcSDE, 100 GB of departmental vector data stored as files and in ArcSDE, and 300 GB of imagery stored as files

Benefits

- The District has been able to satisfy legislative mandates such as groundwater recharge mapping and water supply planning.
- Map generation has improved communication in all aspects of District operations—among staff and with decision makers, governmental partners, and the public. Maps have been a powerful tool for communicating the District’s mission and the results of its projects. For example, staff members rely on maps for clearly informing their Governing Board about permits being considered, greatly reducing confusion, saving time, and allowing the Board to focus on the decisions to be made.
- Non-GIS staff members are able to incorporate spatial information in their daily tasks, increasing efficiency and improving the work product.
- Public notification of the District’s permitting activities has been enhanced. It is much easier now for citizens to find out about permits being considered or approved for their neighborhoods.
- Data sharing with other agencies has been simplified. For example, the consumptive use permit database is now being shared live by other agencies via the Internet using ArcIMS.