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Chapter 1 : USGS South Carolina: Groundwater Availability of the Atlantic Coastal Plain Aquifers

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The location of salt domes is shown on a map at a scale of 1: A color coding system was used to show that the occurrence, size, shape, and location of these domes varies among sources. Two tables of additional data accompany the map and include other available information such as: The aquifer system consists of Cenozoic sediments that were divided into aquifers, permeable zones, and confining units Grubb, , p. This division was accomplished by: The composite data were compiled to study the possibility of salt domes as a source of salt in brine waters in Cenozoic sediments of the Gulf of Mexico Coastal Plain in the south-central United States and adjacent Continental Shelf Williamson and others, , p. The shallowest permeable zone penetrated by each dome has been identified in order to assess the possibility of salt dissolution and movement through the permeable zones. In this report, the compiled data are displayed on a map and in a table. Salt-dome locations and geometry were compiled from eight sources, each of which investigated all or part of the study area. Salt-dome name, location, depth to salt and caprock, diameter, volume, and identifying sources used for this compilation are provided in a table. The discrepancies in dome identification between references are due to several factors. First, the more recent references reflect advances made in seismic surveying and other remote sensing methods of geophysics. Therefore, some structures that were identified by earlier references as salt domes have been reclassified as non-salt structures, whereas other salt domes have been identified for the first time. For this reason, recent references were favored in compiling these data. Second, despite the advancements, identification of salt domes from seismic surveys remains highly subjective such that two people using the same data may reach different conclusions. Third, the different investigations are based on different databases of raw material and published information. For example, the U. Department of the Interior lists neither Martin nor Halbouty as references. Halbouty lists only those salt domes that have been confirmed by drilling, so that his base list of domes should be considered fundamental. However, Halbouty also identifies some domes that no other sources identified for example, Eugene Island Block Finally, the references use different depth criteria for identifying salt domes from deeper salt structures. Understanding the problem of locating and identifying salt domes from seismic survey data is important because seismic surveys are a major source of information for most of the references used in this report. For example, most of the offshore domes from Martin were identified from single-channel seismic surveys and gravity surveys. Single-channel seismic analysis does not allow for the differentiation between salt domes and shale plugs Martin, because both are piercement structures of similar densities. This may explain the large number of structures that Martin identified. Additionally, the actual location of salt domes may be blurred because of an effect called sideswipe that allows structures some distance from the map trace of the seismic line to be projected onto the line. Exact salt dome locations can be determined only from a very tight pattern of seismic lines and by correlating seismic surveys with other data.

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Chapter 2 : Numbered Report | Texas Water Development Board

The Gulf Coast Regional Aquifer-System Analysis (RASA) study area covers an area of about , square miles onshore in parts of Alabama, Arkansas, Florida, Illinois, Kentucky, Mississippi, Missouri.

Communication and coordination between USGS personnel and other interested scientists and water-management organizations are important components of the National Water Quality Assessment Program. Each study-unit has a local liaison committee made up of representatives from federal, state, and local agencies, academia, and the private sector who have water-resources interests and responsibilities. The south Florida project encompasses a 19,square-mile area that includes most of the southern half of the peninsula and contains a major urban complex of more than five million people. It focuses on the Kissimmee-Okeechobee-Everglades watershed, a major source of fresh water for the regional ecosystem. The watershed, which is predominantly underlain by shallow marine carbonate sediments to depths of about 20, feet, contains three major aquifer systems. The confined Floridan aquifer system is the principal source of water in the northern part of the study unit, but water from this system is too mineralized for most uses in the southern part of the unit. The semiconfined intermediate aquifer system, which overlies the Floridan, serves as a confining unit for the Floridan and is a source of fresh water for public supply along the Gulf Coast. The surficial aquifer system includes the highly permeable Biscayne aquifer - the principal source of potable water for southeastern Florida and an EPA-designated "sole-source" drinking water supply. The South Florida study addresses unique environmental issues by using a multiscale, interdisciplinary approach. The study design includes analysis of historical data, surface- and ground-water assessments, ecological studies, streambed sediment, and tissue studies. Largemouth bass, or Florida gar, have been collected at 15 sites to assess organic and trace-metal contamination. The program sampled surface-water quality at seven permanent sites and more than 30 synoptic sites. It also surveyed shallow ground-water quality in citrus groves, mixed agricultural lands, residential areas, and public water supply wells in the Biscayne aquifer. The study area programs - in critical ecosystems such as south Florida, San Francisco Bay, and the Chesapeake Bay - enable the USGS to enhance its scientific assistance to resource managers who require improved scientific information to resolve or prevent complex resource conflicts or environmental problems in specific ecosystems. Through multi-year efforts in each study area, USGS intensifies its provision of scientific information tailored to the specific management needs of that ecosystem. The information is designed to have a direct, significant, and immediate impact on management and policy decisions. It addresses regional or subregional issues that involve environmental resources such as water, minerals, and land. The program is multi-disciplinary and brings together scientists from appropriate disciplines to apply their diverse expertise to common problems. Disciplines include land characterization, surface modeling, geospatial database management, ground- and surface-water hydrology, geophysics, ecology, geochemistry, paleontology, hydrologic modeling, and contaminant, sediment, and nutrient dynamics. The south Florida program, which began in fiscal year , is an intergovernmental effort to reestablish and maintain the regional ecosystem. The USGS is one of the agencies that provides scientific information as part of the program. The initiative provides hydrologic, cartographic, and geologic data that relates to the mainland of south Florida, Florida Bay, and the Florida Keys and Reef ecosystems. Examples of the scientific information USGS provides to agencies involved in the restoration effort include: Army Corps of Engineers and the South Florida Water Management District need USGS data and information to improve models of water flows and water quality and to predict the consequences of the restoration efforts in south Florida. Everglades National Park needs USGS information about historical environmental conditions and the frequency of fire to understand current and historical water and fire conditions, to set ecological goals for restoration, to distinguish human influences from the natural background of water fluctuations and trace-element contamination, and to provide yardsticks to measure the success of the restoration. Environmental Protection Agency need information on mercury cycling to predict changes in the availability

of mercury to fish as a result of restoration. This information includes interactions of mercury with peat, algae, and dissolved organic carbon, as well as historical mercury concentrations in peat. Communities in the Florida Keys need information on nutrient seepage from ground water, provided by the USGS, to determine whether it is necessary to modify their sewage-disposal practices. Department of the Interior, U.

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Chapter 3 : Lower Mississippi Gulf Water Science Center

Get this from a library! Archiving data from Gulf Coast Regional Aquifer System analysis study. [Kimberly A Kirkpatrick; Geological Survey (U.S.)].

Overall, the populations of both states have grown rapidly. In NC, the population grew by The population is projected to grow another The numbers are similar in SC with a population increase of While NC and SC endeavor to increase their development of surface-water supplies in response to the rapid growth in these coastal populations, both States recognize that they are facing a number of unanswered questions regarding their groundwater supplies. For instance, the effects of groundwater withdrawals on the quantity of freshwater discharge to streams, estuaries, and wetlands are unknown. Further complicating these issues are regional concerns about saltwater intrusion, which is already occurring in some areas along the SC coast. The problem of adequate groundwater supplies and declining water levels in the Coastal Plain of NC and SC date back to the early part of the 20th century. For example, groundwater from the Middendorf aquifer had been used since to supply water to the Charleston, SC, area. More recently in , a phosphate mining operation in NC caused the dewatering of a part of the Castle Hayne aquifer. As a result, a capacity-use area CUA was established to regulate groundwater withdrawals from the Castle Hayne aquifer in the area of the mining operation. Under the CUA, a number of counties and municipalities within the central Coastal Plain region must reduce withdrawals by 25 percent within the next 6 years and by 75 percent within the next 16 years. Land subsidence measuring as much as 7 inches has been documented during the year period from in the central Coastal Plain of NC, and overall water-level declines are estimated to be as much as feet ft near pumping centers. The recent drought experienced in the East has further exacerbated the problem of declining water levels. During the drought, groundwater levels in the Coastal Plain of the Carolinas declined to some of the lowest levels on record. Freshwater intakes on the lower Pee Dee near Georgetown, SC, were shut down due to saltwater encroachment in the river as a result of the low-flow conditions. PROBLEM Increased groundwater withdrawals related to population growth and drought-related problems of the last few years have emphasized the need for more accurate, detailed information describing the groundwater resources in the Coastal Plain region. Both NC and SC recognize the need for cooperation to address these critical issues. The States further recognize the need for current water-management tools, such as an updated groundwater flow model for the Coastal Plain region. Groundwater availability and use in the Coastal Plain are formidable issues, having caused at least the State of SC to formally address. Currently, neither NC nor SC have up-to-date groundwater flow models of the Coastal Plain, although since completion of the Regional Aquifer System Analysis RASA models in both States, an abundance of groundwater pumpage, water-level, and hydrogeologic framework data have been collected. A second important objective is to provide a scientifically based management tool for optimizing conjuctive water-use strategies and for optimizing groundwater withdrawals in order to mitigate saltwater intrusion. Specifically, the proposed updated model would enable the States to: The modeling effort would include the surficial, Tertiary, and Cretaceous-age Coastal Plain aquifer systems. An essential part of this effort will be interaction with cooperators and stakeholders in both states and formation of several project liaison committees early in the project. In addition, USGS, state, and local agency databases will be reviewed for inclusion in the updated hydrogeologic framework and groundwater use database for the model. The groundwater flow model will be developed using MODFLOW Harbaugh and others, , and will use a commercial Graphical User Interface GUI to enhance pre- and post-processing tasks, as well as to allow for ease of use, model refinement, and updating. Geological Survey scientists from North and South Carolina will develop the model jointly, and will provide technical and scientific expertise for geohydrologic modeling. Members of the TAC will provide specific hydrogeologic data and modeling concepts for use in constructing the model, and will participate in all aspects of the project including acquisition and interpretation of geologic information, development and calibration of the MODFLOW model, and preparation of management

scenarios. The project will be organized to emphasize technology transfer to state and local scientists, engineers, and water managers. The study includes syntheses of streamflow data, aquifer boundary conditions, and hydraulic properties of the aquifer, such as aquifer transmissivity. During construction of the groundwater flow model, the study will test initial model parameters and model sensitivity, and perform a steady-state calibration of parameters. In subsequent iterative runs, the steady-state model will be used to refine a transient-model calibration, which will compare model results with the hydrologic data available.

Chapter 4 : Bianca Kurds - Google+

The Gulf Coast Regional Aquifer-System Analysis is a study of regional aquifers in sediments of mostly Cenozoic age in an area of about , square miles in the Coastal Plain of Alabama, Arkansas.

Chapter 5 : Mississippi Water Resources Conference - Abstracts

Three regional aquifer systems, the Mississippi Embayment aquifer system, the Coastal Lowlands aquifer system, and the Texas Coastal Uplands aquifer system have been developed to varying degrees throughout the area.

Chapter 6 : SOFIA - SFRSF - People, Land, and Water - Restoring South Florida's Future - USGS Researc

Abstract Study region. The Gulf Coast and Carrizo-Wilcox aquifer systems in the Gulf Coastal Plains of Texas. Study focus. Aquifer storage and recovery is a water storage alternative that is underutilized in Texas, a state with both long periods of drought and high intensity storms.