SECTION 1
INTRODUCTION

1.1 PURPOSE OF REPORT

Camp Stanley Storage Activity (CSSA) is located in northwestern Bexar County about 19 miles northwest (NW) of downtown San Antonio (Figure 1.1). Solvent contamination was detected in groundwater beneath CSSA in August 1991. At that time, the unidentified release(s) were discovered to have affected the Middle Trinity aquifer, which is a primary drinking water source. CSSA engaged in a series of environmental investigations during the ensuing 13 years to aid in the horizontal and vertical delineation of solvent contamination source areas within the aquifer. This report compiles those data into a cohesive Hydrogeologic Conceptual Site Model (HCSM) to describe and quantify the processes, which dictate the occurrence, fate, and transport of contaminants beneath and beyond CSSA borders.

1.2 PROJECT AUTHORIZATION

Initiation of this HCSM was authorized under Air Mobility Command (AMC) Contract F11623-94-D-0024, Delivery Order (DO) RL83, and subsequent work was authorized under the Air Force Center for Environmental Excellence (AFCEE) contract F41624-00-D-8024, Task Order (TO) 42. The work was conducted by Parsons under the technical supervision of the Air Force Center for Environmental Excellence (AFCEE) and was also overseen by U.S. Environmental Protection Agency (EPA) Region VI, Resource Conservation and Recovery Act (RCRA)-Enforcement Section, and the Texas Commission on Environmental Quality (TCEQ) since October 1993.

This HCSM combines work associated with numerous environmental investigations and remediation contracts under DOs issued by AFCEE and AMC, and represents the first issue of an iterative document that will be updated and refined as new data and information are discovered. The HCSM will provide the framework for an eventual numerical simulation of the hydrologic conditions at CSSA.

1.3 REGULATORY BASIS

Upon verification of solvent contamination in Well CS-16 on August 23, 1991, CSSA deactivated the well and notified water users as required by state and federal regulations. CSSA then initiated groundwater investigations, including installation of wells described in this report. In January 1993, preliminary evaluation data were presented to the Texas Department of Health (TDH), TCEQ (known at the time as the Texas Natural Resource Conservation Commission [TNRCC]), and EPA Region VI-RCRA Permitting Section, at a technical interchange meeting. The project plans of actions were submitted to EPA and TNRCC in May 1993.

On June 30, 1993, the EPA notified CSSA that an Administrative Order on Consent (Order) would be issued to CSSA. This Order, issued under Section 3008(h) of RCRA on May 5, 1999, required CSSA to investigate groundwater contamination, as well as solid waste management units (SWMUs) and areas of concern (AOCs) at the facility. Groundwater investigations conducted at CSSA, including the hydrogeologic investigations described in this report, are performed in accordance with the Resource Conservation and Recovery Act, as amended

(RCRA), USEPA's RCRA regulations (including 40 CFR Part 265), and EPA's corrective action policies and guidance as appropriate for use at RCRA facilities with interim status.

1.4 OBJECTIVES AND SCOPE

Construction of a complete HCSM is an iterative process that defines and quantifies the hydrologic regime at CSSA. Throughout the process, a preliminary HCSM was progressively tested and refined as additional data were integrated to yield a more detailed understanding of the physiographic, geologic, hydrologic, and geochemical processes that, in sum, control groundwater flow and contaminant migration within the aquifer. As the model evolved, the characterization program was tailored to address the specific data needs identified. In general, development of the HCSM involved the following work elements:

1. Combining all well and borehole information (physical, chemical, and geophysical) from selected domestic, stock, municipal, and industrial wells into a mappable database. This HCSM includes all available wells at CSSA and in the immediate vicinity;
2. Generating structure maps for each of the geologic layers from borehole information. This involved inputting elevation picks for each of the layers, grouping stratigraphic lenses defined in the correlations, and defining a grid to delineate the tops and bottoms of all layers. Also, attempting to identify major structural features that could dictate flow paths of groundwater and contaminant propagation;
3. Where sufficient data were available, performing selected stratigraphic correlations with regard to mineralogy, structure, fossil content, dissolution, water availability, and geochemistry. The correlations will be represented in cross-sections and fence diagrams. Evaluate/modify the stratigraphic geometric boundaries of the proposed HCSM;
4. Preparing new water level maps and water level difference maps for the water-bearing units (Lower Glen Rose [LGR], Bexar Shale [BS], and Cow Creek [CC] Formation) and correlating rainfall data with groundwater levels and response;
5. Preparing a generalized water budget for the HCSM area based on precipitation data, published recharge infiltration rates, and discharge from water supply wells and other parameters;
6. Defining and diagramming the contamination within the HCSM model layers; and
7. Evaluating migration pathways and potential receptors with respect to the CSSA contaminant plume(s).

1.5 REPORT ORGANIZATION

This report is organized in six sections. **Section 1** presents an overview of the report, including project purpose, regulatory basis, authorization, and objectives of the HCSM. **Section 2** describes the background, history, and environmental setting of CSSA. Contaminant source characterization is discussed in **Section 3**. Components of the HCSM are identified and built through narrative text and conceptual diagrams in **Section 4**. Building on the elements of the HCSM, **Section 5** discusses the fate and transport of contaminants within the groundwater system. Finally, conclusions and recommendations are presented in **Section 6**. Supporting data are found in the appendices.