INTRODUCTION

The U.S. Geological Survey (USGS) in cooperation with the Cheyenne-Arapaho Tribes, Concho River, Oklahoma, has undertaken a study of the Cheyenne-Arapaho Reservoir to evaluate the water quality of groundwater resources in the vicinity of the reservoir.

Purpose and Scope

The purpose of this study is to provide information on the hydrogeologic characteristics of the Cheyenne-Arapaho Reservoir groundwater system and to evaluate the water quality conditions within the reservoir. The study area includes the Cheyenne-Arapaho Reservoir and the surrounding area, and the study will provide a comprehensive assessment of the water quality of the Cheyenne-Arapaho Reservoir.

Method of Study

Data from previous hydrologic studies of the area and surrounding the Concho River were used to develop a hydrologic model of the area. The model was calibrated using available data from the Cheyenne-Arapaho Reservoir. The model was used to evaluate the water quality conditions within the reservoir and to assess the potential impacts of reservoir operations on the groundwater resources.

Aerial photographs of the area and surrounding the Concho River were taken to evaluate the land use and land cover of the area. The aerial photographs were used to identify potential sources of pollution and to evaluate the effectiveness of the reservoir in controlling the pollution.

Figure 1 — Location of study area

Figure 2 — Local identifier monitoring response

PHYSIOGRAPHY

The Cheyenne-Arapaho Reservoir is located in the Cheyenne-Arapaho Indian Reservation, in the southwestern part of the state of Oklahoma. The reservoir is located on the Concho River, which is a tributary of the Arkansas River. The reservoir is located in a hilly area with gentle slopes.

LAND USE

The reservoir is located in a highly developed area with a high density of homes and businesses. The area is characterized by a mix of residential, commercial, and industrial land uses.

Figure 3 — Map of the study area

Figure 4 — Groundwater levels in the area of the Concho River

CLIMATE

The study area has a high degree of variability in climate. Average annual precipitation ranges from 30 to 50 inches, and the area experiences a wide range of temperatures, with an average annual temperature of 65°F.

Figure 5 — Map showing the study area

Figure 6 — Groundwater levels in the area of the Concho River

GEOLOGY

The study area is characterized by a variety of geological formations, including sandstone, shale, and limestone. The area is also characterized by a variety of landforms, including hills, valleys, and ridges.

HYDROLOGY

The Concho River flows through the study area, and the Cheyenne-Arapaho Reservoir is located on the river. The reservoir is a key source of water for the area, and it is used for irrigation, domestic, and industrial purposes.

Figure 7 — Map showing the study area

Figure 8 — Groundwater levels in the area of the Concho River

LAND-USE AND GROUNDWATER DATA, CHEYENNE-ARAPAHO TRIBES, CONCHO RESERVOIR, CANADIAN COUNTY, OKLAHOMA

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