DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

GEOPHYSICAL INVESTIGATIONS
MAP GP–985

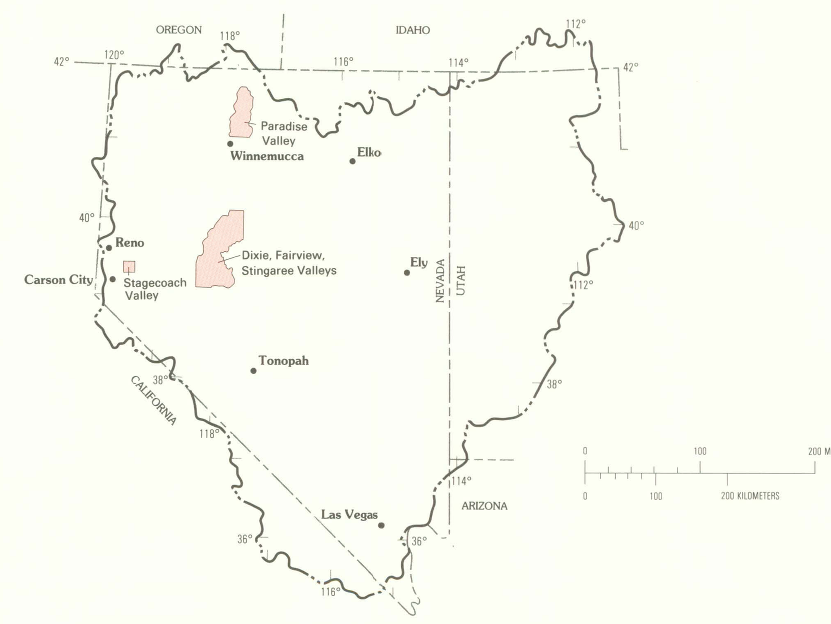

FIGURE 1.—Index map of Nevada and adjacent States showing study area boundary for the Great Basin Regional Aquifer-System Analysis and the five valleys for which Bouguer-gravity data are presented in this report.

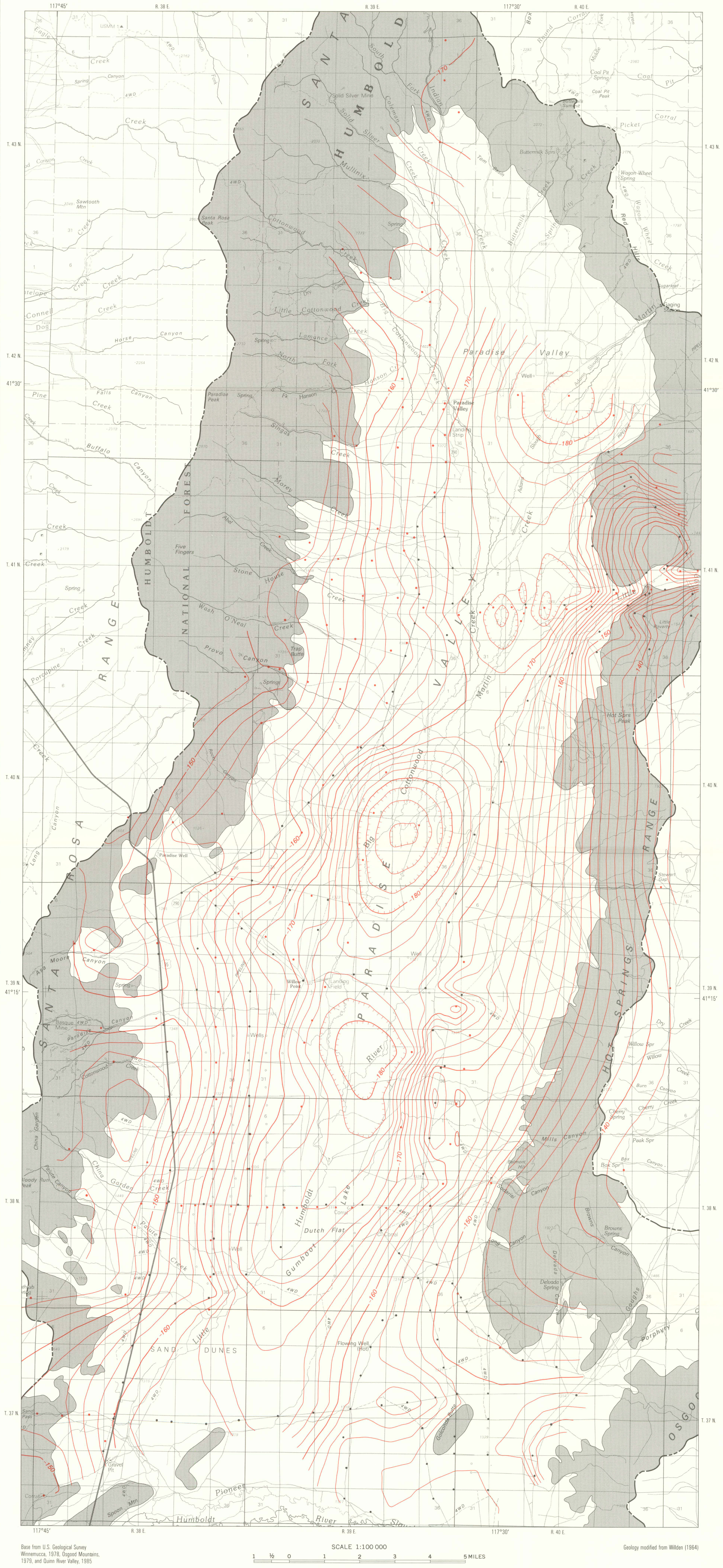

FIGURE 2.—BOUGUER GRAVITY ANOMALY MAP OF PARADISE VALLEY

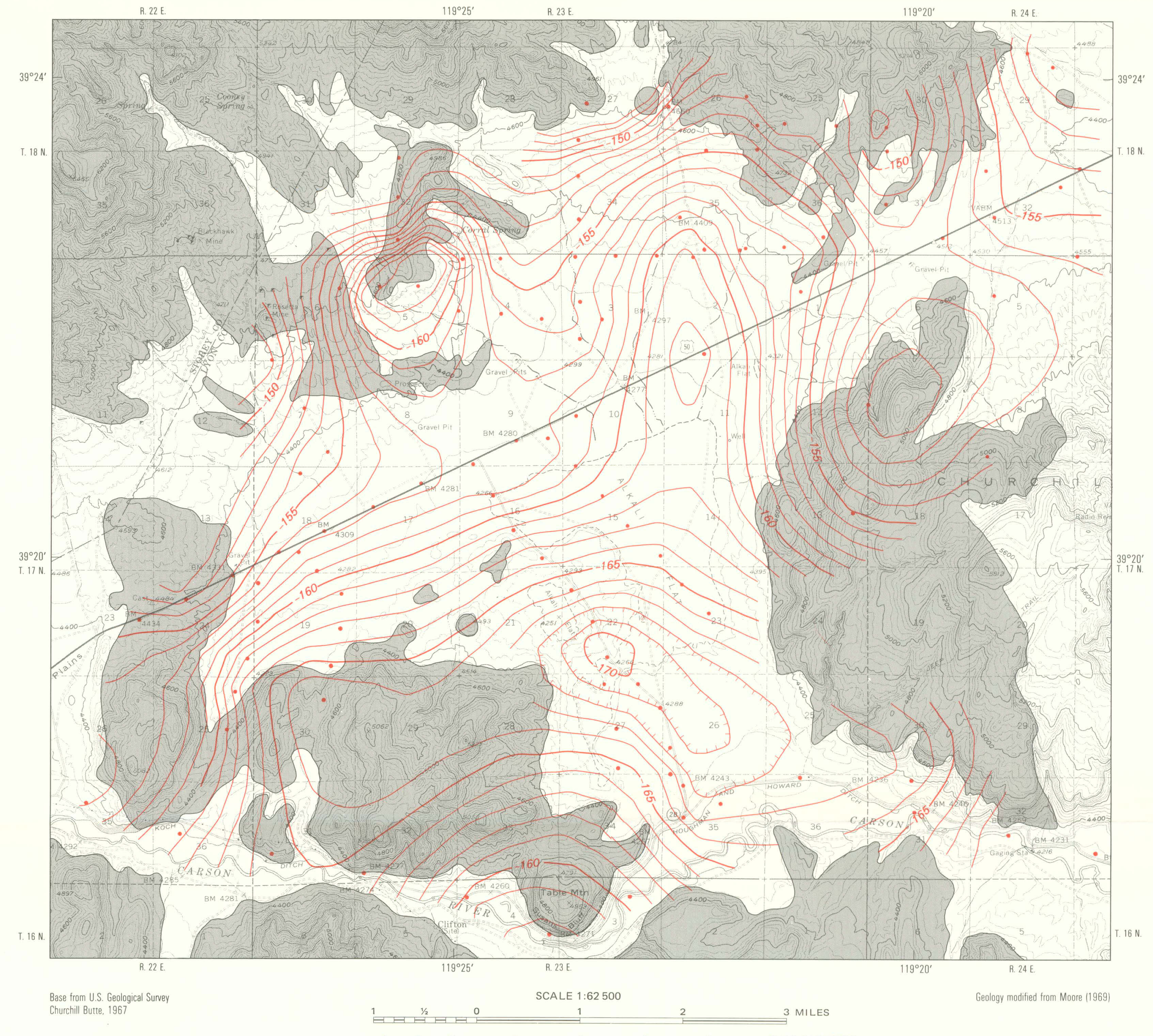

FIGURE 3.—BOUGUER GRAVITY ANOMALY MAP OF STAGECOACH VALLEY

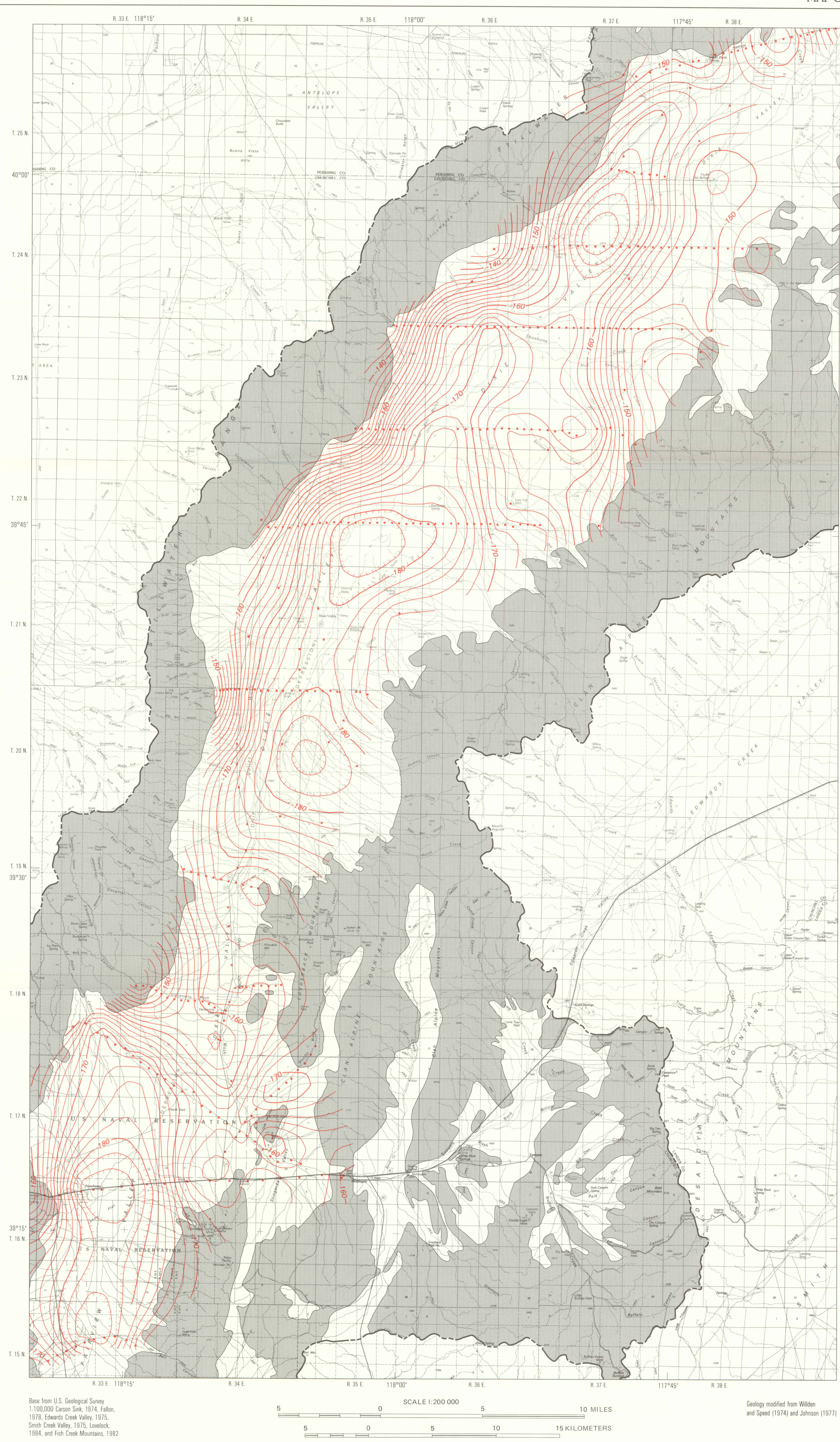

FIGURE 4.—BOUGUER GRAVITY ANOMALY MAP OF DIXIE, FAIRVIEW, AND STINGAREE VALLEYS

EXPLANATION FOR ALL FIGURES

- **Basin fill**
- **Consolidated rocks**
- –160 **Line of equal Bouguer gravity anomaly**—Interval 2 milliGals (Paradise and Dixie Valleys) and 1 milliGal (Stagecoach Valley). Hachured lines enclose areas of lower gravity
- **Basin boundary**
- **Gravity-measurement station**—Data collected by Schaefer and others (1984, 1986)
- **Gravity-measurement station**—Data from Flynn (1981)

INTRODUCTION

This report presents the results of gravity surveys of five valleys, which were made in support of the Great Basin Regional Aquifer-System Analysis (RASA) of the U.S. Geological Survey (Harrill and others, 1983). The work in Dixie Valley was done in cooperation with the U.S. Bureau of Land Management (Schaefer, 1983). The five valleys are shown in figure 1.

DATA AND CORRECTIONS

Data used to construct the Bouguer gravity anomaly maps shown in figures 2–4 include measurements at 438 stations in Paradise Valley, 140 stations in Stagecoach Valley, and 390 stations in Dixie, Fairview, and Stingaree Valleys. All gravity measurements were referenced to standard gravity base stations. These base stations are described as follows:

AREA	REFERENCE STATION
Paradise Valley	Station ACIC 474-1 (IGB 15607J) in Winnemucca, Nev. Adopted gravity value 979824.29 mGals (U.S. Air Force, written communication, 1969).
Stagecoach Valley	Station G-323 in Carson City, Nev. Adopted gravity value 979633.7 mGals (Chapman, 1966).
Dixie, Fairview, and Stingaree Valleys	Station ACIC 2351-1 (IGB 12098J) in Fallon, Nev. Adopted gravity value 979744.67 mGals (U.S. Air Force, written communication, 1969).

Principal facts for the gravity measurements made during this study are listed by Schaefer and others (1984, 1986).

Bouguer gravity anomalies were computed using the 1967 gravity formula (International Association of Geodesy, 1967) and a density of 2.67 grams per cubic centimeter was assumed for the average density of rocks to sea level. Terrain corrections for stations were computed manually to a radius of 2.3 kilometers (Hayford and Bowie, 1912) and by computer program from 2.3 to 166.7 kilometers (Plouff, 1977), also assuming a rock density of 2.67 grams per cubic centimeter.

Gravity data from Flynn (1981) in the Paradise Valley area in the form of already computed Bouguer gravity anomalies was recomputed to conform to Schaefer and others (1986) data. This was accomplished by determining common data points between the two data sets, computing an average difference and making the anomalies equal.

Bouguer gravity anomalies were gridded, on approximately 1-kilometer centers, using the minimum curvature interpolation program MINC (Webring, 1981). The maps were contoured using the program CONTOUR (Godson and Webring, 1982). The computer-generated contour lines were then manually adjusted to more realistically reflect areas of poor data control.

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ALTITUDE DATUM

The term "National Geodetic Vertical Datum of 1929" replaces the formerly used term "mean sea level" to describe the datum for altitude measurements. The geodetic datum is derived from a general adjustment of the first-order leveling networks of both the United States and Canada.

BOUGUER GRAVITY ANOMALY MAPS OF PARADISE, STAGECOACH, DIXIE, FAIRVIEW, AND STINGAREE VALLEYS, NORTHWESTERN NEVADA

By
Donald H. Schaefer

1988

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1988

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