 USGS-OFR-97-519

U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

PRINCIPAL FACTS FOR ABOUT 500 GRAVITY STATIONS IN PART OF THE HUMBOLDT RIVER BASIN, LOVELOCK AND WINNEMUCCA QUADRANGLES, NEVADA

By

E.B. Jewel, D.A. Ponce, and R.L. Morin

Open-File Report 97-519

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ABSTRACT

Gravity data collected in the Humboldt River basin in north-central Nevada are described. These data were collected as part of an interagency effort by the U.S. Geological Survey and the Bureau of Land Management to assess the mineral, environmental, water, and cultural resources of the Humboldt River basin.

INTRODUCTION

Gravity investigations of the Humboldt River basin were begun as part of an effort to help characterize the geology and hydrology of the Humboldt River ecosystem. These investigations are part of an interagency effort by the U.S. Geological Survey (USGS) and the Bureau of Land Management to assess the mineral, environmental, water, and cultural resources of the Humboldt River basin.

The study area is located between lat. 40° and 41° N. and long. 116° and 120° W., on the Winnemucca and Lovelock 1° by 2° quadrangles (fig. 1). This report documents recently collected gravity data and incorporates them with previously published data (Ponce, 1977) to establish a gravity database for the Humboldt River basin. The locations of the gravity stations collected as part of this investigation and an outline of the Humboldt River basin are shown in figure 2, and the locations of the complete set of gravity stations and an isostatic gravity map are shown in figure 3. Previously published gravity data were compiled from various sources and are available from the USGS on CD-ROM (Ponce, 1997).

ACKNOWLEDGMENTS

The authors wish to thank Donald Plouff for his help in collating the gravity database and for providing valuable assistance in preparing for the field work.

GRAVITY DATUM AND REDUCTION

Observed gravity values are referenced to the International Gravity Standardization Net 1971 (IGSN 71)gravity datum (Morelli, 1974, p. 18). The following three IGSN 71 base stations were used: Battle Mountain Airport (No. 2344-2), Elko Airport (No. 3899-2), and the Lovelock Courthouse (No. 2348-1) (Jablonsky, 1974).

All gravity data were reduced using standard gravity corrections including: (a) the Earth-tide correction, which corrects for tidal effects of the moon and sun; (b) instrument drift correction, which compensates for drift in the instrument's spring; (c) the latitude correction, which incorporates the variation of the Earth's gravity with latitude; (d) the free-air correction, which accounts for the difference in elevation between each station and sea-level; (e) the Bouguer correction, which corrects for the attraction of material between the station and sea-level; (f) the curvature correction, which corrects the Bouguer correction for the effect of the Earth's curvature to 166.7 km; (g) the terrain correction, which removes the effect of topography to a radial distance of 166.7 km; and (h) the isostatic correction, which removes long-wavelength variations in the gravity field inversely related to topography.

Observed gravity values were obtained from gravity meter readings using the factory calibration table for a LaCoste and Romberg meter (USGS meter G-17C). The calibration table values were modified with a secondary calibration factor (1.00078) based on repeated measurements made over the Mount Hamilton, Calif. calibration loop (Barnes and others, 1969). Observed gravity values at each station were then adjusted assuming a time-dependent linear drift between the first and last base station reading of each day. Free-air gravity anomalies were calculated using the Geodetic Reference System 1967 formula for the theoretical gravity on the ellipsoid (International Union of Geodesy and Geophysics, 1971, p. 60) and Swick's formula (1942, p. 65) for the free-air correction. Bouguer, curvature, and terrain corrections (discussed in the following section) were added to the free-air correction to determine the complete Bouguer anomaly. A standard reduction density of 2.67 g/cm^3 was used to determine the Bouguer anomaly. Finally, a regional isostatic gravity field was removed from the Bouguer field assuming an Airy-Heiskanen model for isostatic compensation of topographic loads (Simpson and others, 1983) with an assumed crustal thickness of 25 km, a crustal density of 2.67 g/cm^3, and a density contrast across the base of the model of 0.4 g/cm^3.

TERRAIN CORRECTIONS

Terrain corrections account for the variation of topography near a gravity station and may be calculated manually, digitally, or by a combination of both methods. Manual terrain correction systems involve dividing the terrain surrounding a gravity station into a series of zones and compartments. The average elevation of each compartment is manually estimated from a topographic map to derive the gravity effect of the terrain. There are two manual correction systems currently in general use. Hayford and Bowie (1912) devised a system dividing the terrain surrounding a gravity station into zones and equal area compartments. A system of subcompartments was devised based on Bowie's (1917, p. 9-18) subdivided zones to make the Hayford-Bowie system more accurate in areas of steep terrain. The second system, devised by Hammer (1939), was modeled after the Hayford-Bowie system, but relates the outer and inner radii of the zones to the width of the compartments to obtain equidimensional compartments.

Hammer believed this system maximized accuracy while minimizing the total number of compartments.

A number of systems exist for calculating terrain corrections using digital elevation data (Plouff, 1966; Plouff, 1977). Digital terrain correction systems use a scheme of digitizing topography on a grid to form a digital elevation model (DEM). The terrain correction is calculated by computing the distance and difference in elevation of each grid cell from the gravity station. The DEM used in the Humboldt River study was derived from USGS topographic elevation-contour plates at a scale of 1:250,000 and is available from the Department of the Interior, U.S. Geological Survey, National Cartographic Information Center, 507 National Center, Reston, VA 22092.

GRAVITY DATA

A total of 491 gravity stations were established as part of the study of the Humboldt River Basin between August 1996 and June 1997. The station names indicate the year the stations were established, the 1 by 2 degree quadrangle in which they are located, and a number reflecting the order in which they were collected. The gravity stations were established using LaCoste and Romberg gravity meter G-17C. Most of the stations were measured on bench marks, section corners, photogrammetric 'spot' elevations, or at points surveyed by a Global Positioning System (GPS). Bench mark elevations are usually considered accurate to about 0.3 m, whereas, spot elevations are generally accurate to 1/2 the topographic map contour interval or about 3 m. For stations established at locations where the elevation was not well-constrained, the elevation was determined using differential GPS. A comparison of GPS-determined elevations and local benchmarks or spot elevations indicate that GPS-determined elevations are accurate to about 3 m. The observed gravity measurements for all the stations are considered accurate to 0.02-0.05 milligals. Terrain corrections were calculated using a three-part process: the innermost or field terrain correction; the inner-zone or manual terrain correction; and the outer-zone terrain correction (Spielman and Ponce, 1984). The innermost terrain correction was estimated in the field to the outer radius of Hayford-Bowie zone B (68 m) using a system of tables and charts. The inner-zone terrain correction was estimated manually for Hayford-Bowie zones C and D with an outer radius of 0.59 km, using 7.5' topographic maps and a circular template based on the Hayford-Bowie system. Finally, the outer-zone terrain correction was calculated from the outer radius of zone D to 166.7 km using a DEM and a computer procedure by Plouff (1977).

REFERENCES

Barnes, D.F., Oliver, H.W. and Robbins, S.L., 1969, Standardization of Gravimeter Calibrations in the Geological Survey: EOS (Transactions, American Geophysical Union), v. 50, no. 10, p. 526-527.

Bowie, William, 1917, Investigation of gravity and isostasy: U.S. Coast and Geodetic Survey Special Publication no. 40, 196 p.

Hammer, Sigmund, 1939, Terrain corrections for gravimeter stations: Geophysics, v. 4, p. 184-194.

Hayford, J.F., and Bowie, William, 1912, The effect of topography and isostatic compensation upon the intensity of gravity: U.S. Coast and Geodetic Survey Special Publication no. 10, 132 p.

International Union of Geodesy and Geophysics, 1971, Geodetic reference system 1967: International Association of Geodesy Special Publication no. 3, 116 p.

Jablonsky, H.M., 1974, World relative gravity reference network North America, Parts 1 and 2: U.S. Defense Mapping Agency Aerospace Center Reference Publication no. 25, originally published 1970, revised 1974, with supplement of IGSN 71 gravity datum values, 1261 p.

Morelli, Carlo, ed., 1974, The International Gravity Standardization Net 1971: International Association of Geodesy Special Publication no. 4, 194 p.

Plouff, Donald, 1966, Digital terrain corrections based on geographic coordinates (abs.): Geophysics, v. 31, no. 6, p. 1208.

--- 1977, Preliminary documentation for a FORTRAN program to compute gravity terrain corrections based on topography digitized on a geographic grid: U.S. Geological Survey Open-File Report 77-535, 45 p.

Ponce, D.A., 1997, Gravity data of Nevada: U.S. Geological Survey Digital Data Series DDS-42, CD-ROM, 27 p.

Simpson, R.W., Jachens, R.C., and Blakely, R.J., 1983, Airyroot: a FORTRAN program for calculating the gravitational attraction of an Airy isostatic root out to 166.7 km: U.S. Geological Survey Open-File Report 83-883, 66 p.

Spielman, J.B., and Ponce, D.A., 1984, HANDTC, a FORTRAN program to calculate inner-zone terrain corrections: U.S. Geological Survey Open-file Report 84-777, 20 p.

Swick, C.H., 1942, Pendulum gravity measurements and isostatic reductions: U.S. Coast and Geodetic Survey Special Publication no. 232, 82 p.

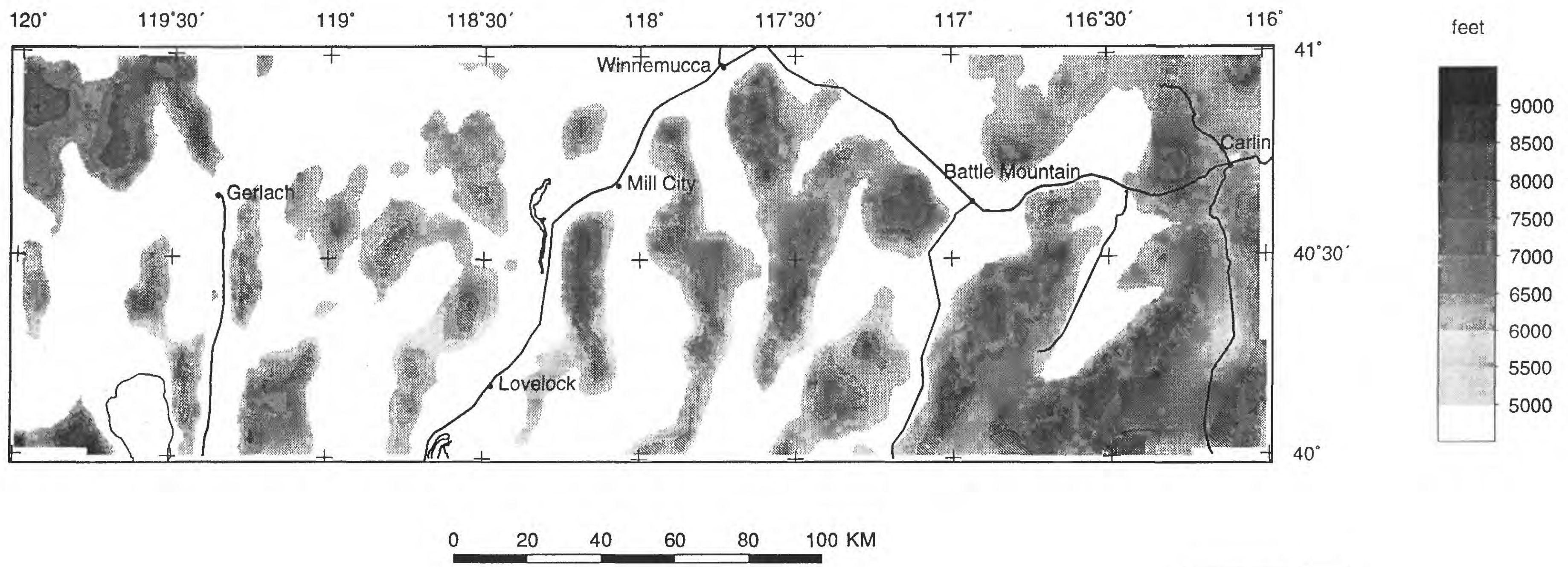
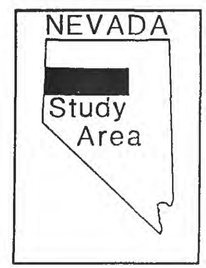


Figure 1.--Index and topographic map of the Lovelock and Winnemucca quadrangles.



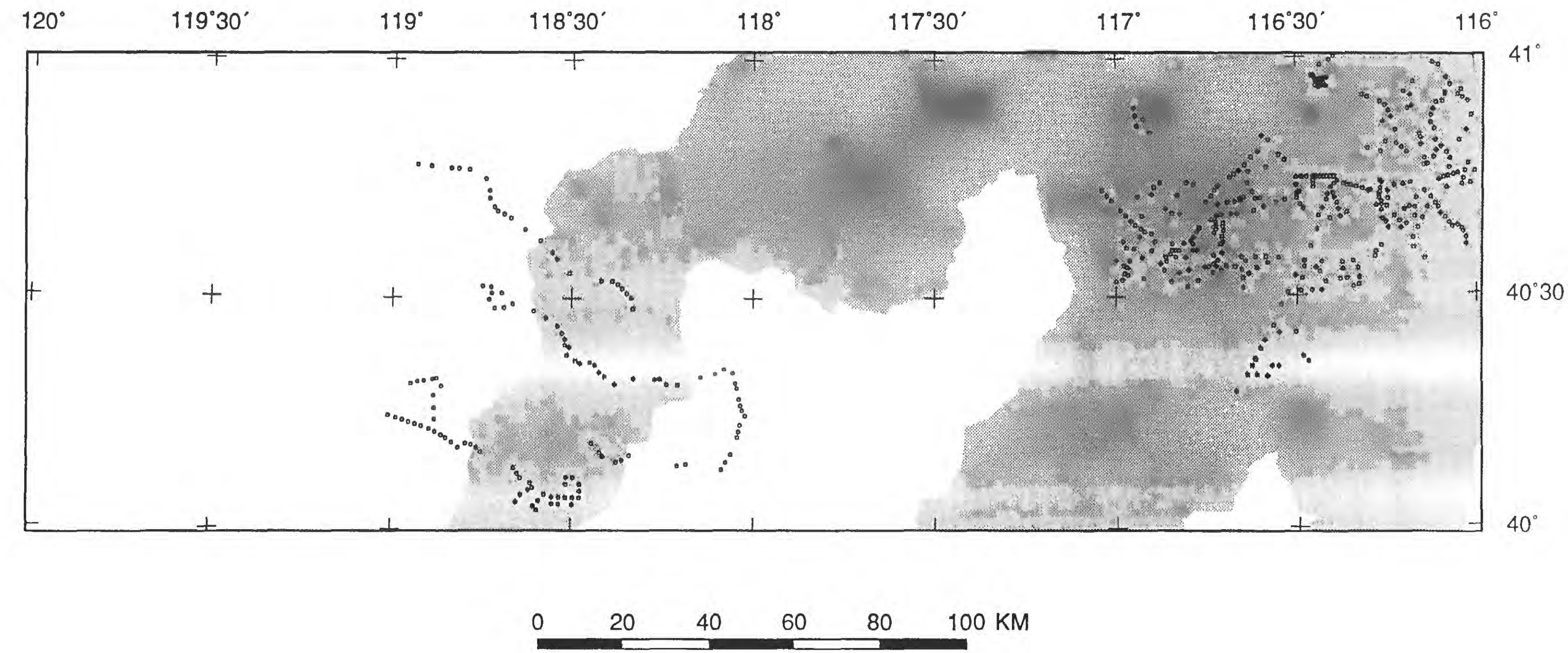


Figure 2.--Gravity station locations. o, gravity station; Shading, Humboldt River Basin.

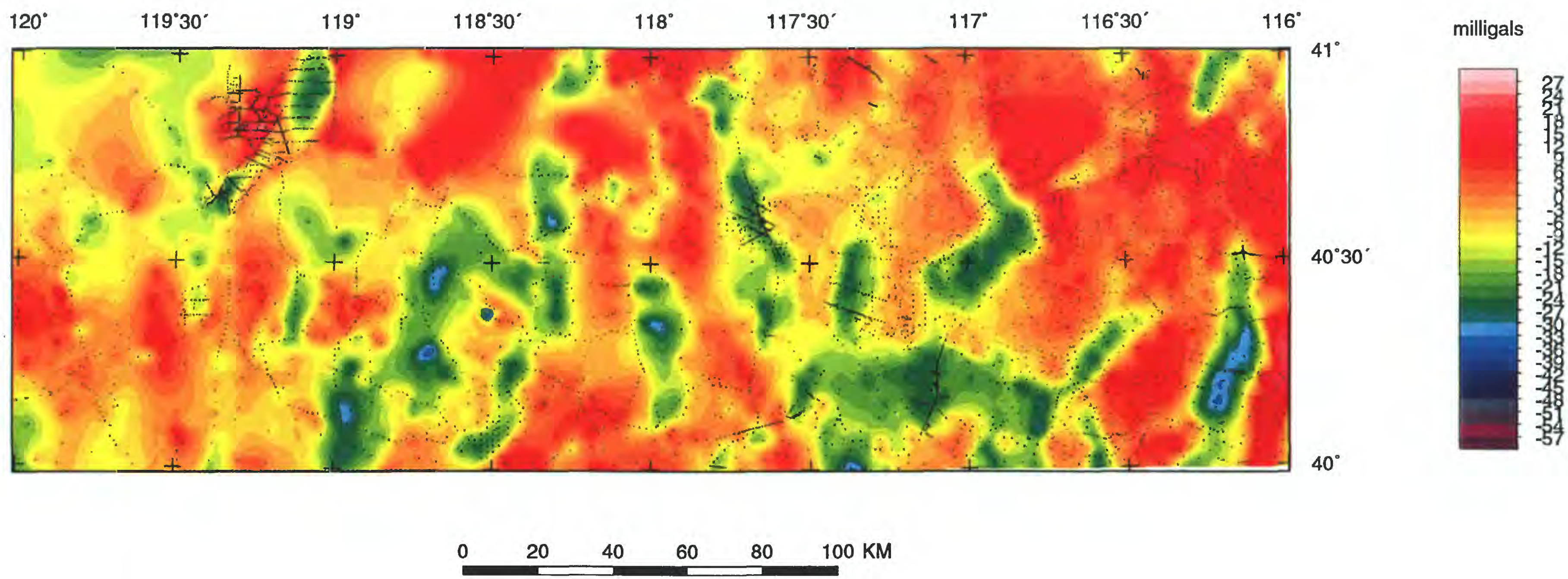


Figure 3.--Isostatic gravity map of the Lovelock and Winnemucca quadrangles. +, gravity station.

TABLE 1.--*Explanation of principal facts format for table 2*

Item	Explanation
STATION NAME	An alphanumeric combination of 8 characters used for station identification
LATITUDE	Latitude in degrees and minutes, to 0.01 minute
LONGITUDE	Longitude in degrees and minutes, to 0.01 minute
ELEV	Elevation, to 0.1 ft
OBS GRV	Observed gravity, to 0.01 mGal
FREE AIR	Free-air anomaly, to 0.01 mGal
TERRAIN--HAND	Inner-zone terrain correction for a density of 2.67 g/cm^3, to 0.01 mGal, followed by a letter denoting the extent of the correction. Upper case denotes Hayford-Bowie system of zones (Hayford and Bowie, 1912), lower case denotes Hammer system of zones (Hammer, 1939). D, 0.0 to 0.59 km.
TERRAIN--COMP	Complete or total terrain correction from the station to 166.7 km for a density of 2.67 g/cm^3, to 0.01 mGal
BOUGUER ANOM	Complete Bouguer anomaly reduced for a density of 2.67 g/cm^3, to 0.01 mGal
ISOST ANOM	Isostatic residual anomaly values assuming an Airy-Heiskanen model for isostatic compensation of topographic loads. This model assumes a crustal thickness of 25 km, a topographic density load of 2.67 g/cm^3 and a density contrast across the base of the model crust of 0.4 g/cm^3.

TABLE 2.—***Principal facts of gravity data***

STATION NAME	LATITUDE	LONGITUDE	ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
97LOV001	40 3.74	118 39.09	3969.0	979781.31	-20.0	0.0D	0.3	-156.3	-6.8
97LOV002	40 4.66	118 38.29	3954.0	979786.01	-18.1	0.0D	0.3	-153.9	-4.2
97LOV003	40 5.26	118 37.03	3968.0	979783.85	-19.8	0.0D	0.1	-156.2	-6.4
97LOV004	40 5.58	118 36.36	3951.0	979783.20	-22.5	0.0D	0.2	-158.4	-8.4
97LOV005	40 6.15	118 36.76	4090.8	979777.22	-16.2	0.0D	0.2	-156.8	-6.7
97LOV006	40 6.89	118 38.44	4232.0	979769.11	-12.1	0.0D	0.4	-157.4	-7.2
97LOV007	40 7.43	118 38.95	4346.3	979761.54	-9.8	0.0D	0.4	-158.9	-8.7
97LOV008	40 8.18	118 39.59	4517.0	979750.62	-5.8	0.0D	0.6	-160.6	-10.2
97LOV009	40 10.11	118 45.11	5170.0	979710.91	13.0	0.1D	1.5	-163.3	-12.7
97LOV010	40 10.66	118 45.83	4946.0	979730.21	10.5	0.1D	1.4	-158.2	-7.5
97LOV011	40 11.03	118 46.66	4770.0	979741.93	5.1	0.1D	1.4	-157.6	-6.8
97LOV012	40 11.19	118 47.63	4621.6	979748.59	-2.4	0.1D	1.1	-160.4	-9.5
97LOV013	40 10.65	118 48.88	4469.6	979757.55	-7.0	0.0D	0.6	-160.1	-9.3
97LOV014	40 11.32	118 49.96	4299.3	979768.37	-13.1	0.0D	0.5	-160.6	-9.7
97LOV015	40 11.86	118 50.94	4179.3	979770.30	-23.3	0.0D	0.3	-166.8	-15.7
97LOV016	40 12.21	118 51.74	4105.0	979772.61	-28.5	0.0D	0.3	-169.5	-18.4
97LOV017	40 12.63	118 52.77	4022.0	979781.14	-28.4	0.0D	0.2	-166.6	-15.4
97LOV018	40 12.97	118 53.78	3961.6	979793.46	-22.3	0.0D	0.2	-158.5	-7.2
97LOV019	40 13.32	118 55.06	3902.4	979793.76	-28.0	0.0D	0.2	-162.2	-10.9
97LOV020	40 13.55	118 56.12	3902.7	979783.64	-38.5	0.0D	0.2	-172.6	-21.2
97LOV021	40 13.80	118 57.19	3902.3	979779.12	-43.4	0.0D	0.3	-177.4	-26.0
97LOV022	40 14.07	118 58.26	3906.4	979783.67	-38.9	0.0D	0.6	-172.7	-21.2
97LOV023	40 14.33	118 59.31	3901.0	979789.82	-33.6	0.0D	1.3	-166.6	-15.1
97LOV024	40 14.71	119 0.62	4222.0	979779.74	-14.1	0.4D	4.4	-154.9	-3.5
97LOV025	40 14.18	118 52.87	3971.0	979790.46	-26.2	0.0D	0.2	-162.7	-11.2
97LOV026	40 15.62	118 52.96	3949.0	979794.14	-26.7	0.0D	0.2	-162.4	-10.8
97LOV027	40 17.25	118 53.07	3959.0	979797.06	-25.3	0.0D	0.2	-161.4	-9.5
97LOV028	40 18.48	118 51.73	4002.0	979807.91	-12.2	0.0D	0.3	-149.6	2.5
97LOV029	40 19.49	118 52.54	3981.0	979807.27	-16.3	0.0D	0.3	-153.0	-0.8
97LOV030	40 19.40	118 53.22	3950.0	979804.58	-21.8	0.0D	0.2	-157.5	-5.3
97LOV031	40 19.16	118 54.63	3929.0	979795.88	-32.1	0.0D	0.2	-167.1	-15.0
97LOV032	40 19.10	118 55.72	3943.3	979793.43	-33.1	0.0D	0.3	-168.6	-16.5
97LOV033	40 18.80	118 56.84	3909.3	979797.82	-31.5	0.0D	0.3	-165.7	-13.7
97LOV034	40 18.81	118 22.79	4116.0	979783.94	-26.0	0.0D	0.3	-167.3	-12.6
97LOV035	40 19.80	118 24.45	4258.0	979778.53	-19.5	0.0D	0.4	-165.6	-11.1
97LOV036	40 20.35	118 25.34	4430.0	979772.05	-10.6	0.0D	0.5	-162.5	-8.1
97LOV037	40 21.30	118 26.13	4648.0	979767.07	3.5	0.8D	1.5	-154.9	-0.4
97LOV038	40 21.69	118 26.97	4846.0	979758.89	13.3	0.5D	1.3	-152.0	2.3
97LOV039	40 21.60	118 28.56	5157.3	979742.51	26.4	0.1D	1.1	-149.8	4.3
97LOV040	40 21.93	118 29.34	5308.0	979731.39	28.9	0.2D	1.5	-152.1	2.0
97LOV041	40 22.70	118 30.80	4837.0	979697.87	-50.0	0.2D	9.8	-206.6	-52.4
97LOV042	40 23.75	118 30.45	5868.8	979696.19	43.7	0.2D	2.2	-155.8	-1.7
97LOV043	40 24.08	118 31.13	6057.4	979683.60	48.3	0.1D	2.4	-157.4	-3.3
97LOV044	40 24.79	118 31.13	5897.7	979693.77	42.5	0.1D	1.9	-158.3	-4.2
97LOV045	40 25.61	118 31.65	5788.8	979699.75	37.0	0.1D	1.5	-160.4	-6.2
97LOV046	40 26.49	118 32.41	5453.4	979718.90	23.3	0.1D	1.1	-163.1	-8.7
97LOV047	40 27.49	118 34.31	5029.5	979745.23	8.3	0.0D	0.6	-164.1	-9.6
97LOV048	40 28.37	118 36.38	4677.0	979759.44	-11.9	0.0D	0.4	-172.4	-18.0
97LOV049	40 29.28	118 39.91	4477.0	979759.77	-31.8	0.0D	0.4	-185.4	-31.0
97LOV050	40 28.81	118 41.30	4471.0	979761.98	-29.4	0.0D	0.5	-182.8	-28.5
97LOV051	40 30.63	118 41.73	4669.0	979759.91	-15.6	0.0D	0.8	-175.4	-21.2
97LOV052	40 31.39	118 43.53	5033.0	979747.16	4.7	0.0D	1.4	-166.9	-12.8
97LOV053	40 31.47	118 44.93	5383.8	979732.99	23.4	1.1D	3.7	-158.0	-4.2
97LOV054	40 30.64	118 43.44	4864.8	979755.12	-2.0	0.1D	1.4	-167.9	-13.8
97LOV055	40 29.81	118 43.82	4855.8	979754.76	-2.0	0.1D	1.3	-167.6	-13.6
97LOV056	40 28.72	118 42.87	4565.0	979761.86	-20.6	0.0D	0.7	-176.9	-22.8
97LOV057	40 28.73	118 19.89	4248.0	979782.71	-29.5	0.0D	0.6	-175.1	-18.9
97LOV058	40 30.08	118 20.20	4209.0	979791.56	-26.4	0.0D	0.6	-170.6	-14.4
97LOV059	40 30.63	118 20.89	4242.2	979799.99	-15.6	0.0D	0.6	-161.1	-4.9
97LOV060	40 31.22	118 21.62	4269.2	979802.41	-11.6	0.0D	0.5	-157.9	-1.9
97LOV061	40 31.76	118 22.36	4317.0	979799.72	-10.6	0.0D	0.4	-158.7	-2.7
97LOV062	40 32.13	118 23.33	4373.2	979797.72	-7.8	0.0D	0.4	-157.9	-2.0
97LOV063	40 32.14	118 25.11	4394.0	979797.74	-5.9	0.0D	0.5	-156.5	-0.9
97LOV064	40 33.14	118 30.44	4672.1	979765.52	-13.4	0.0D	0.4	-173.7	-18.5
97LOV065	40 34.92	118 32.50	4843.2	979760.19	-5.3	0.0D	0.5	-171.4	-16.4
97LOV066	40 35.71	118 33.26	4888.0	979756.18	-6.3	0.0D	0.5	-173.9	-19.0
97LOV067	40 37.27	118 35.32	4899.6	979758.66	-5.1	0.1D	0.5	-173.1	-18.4
97LOV068	40 38.69	118 37.90	4840.5	979771.65	0.3	0.1D	0.4	-165.8	-11.3
97LOV069	40 40.20	118 40.31	4606.0	979795.90	0.2	0.0D	0.4	-157.9	-3.6
97LOV070	40 40.68	118 41.44	4588.8	979802.35	4.3	0.0D	0.4	-153.1	1.0
97LOV071	40 41.05	118 42.54	4541.0	979810.81	7.8	0.1D	0.5	-147.9	6.1
97LOV072	40 41.57	118 43.11	4536.0	979812.95	8.6	0.0D	0.4	-147.0	6.9
97LOV073	40 42.65	118 43.91	4478.0	979820.04	8.7	0.0D	0.7	-144.7	9.1
97LOV074	40 43.62	118 43.88	4497.6	979821.47	10.5	0.2D	1.3	-142.9	10.7
97LOV075	40 45.07	118 44.54	4412.1	979832.76	11.6	0.0D	0.8	-139.4	14.0
97LOV076	40 46.21	118 47.33	4361.8	979827.44	-0.2	0.0D	0.3	-150.0	3.0
97LOV077	40 46.30	118 49.17	4309.6	979823.25	-9.4	0.0D	0.2	-157.5	-4.7
97LOV078	40 46.37	118 50.44	4284.2	979822.90	-12.2	0.0D	0.1	-159.5	-6.8
97LOV079	40 46.61	118 53.78	4301.0	979841.92	8.0	0.0D	0.1	-139.9	12.7
97LOV080	40 46.80	118 56.05	4314.0	979840.31	7.3	0.0D	0.1	-141.0	11.5

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE		LONGITUDE		ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
97LOV081	40	19.58	118	19.74	4151.0	979780.23	-27.5	0.1D	0.6	-169.8	-14.5
97LOV082	40	19.45	118	16.15	4378.0	979767.72	-18.5	0.1D	1.5	-167.7	-11.9
97LOV083	40	19.54	118	15.37	4509.0	979759.20	-14.8	0.1D	1.8	-168.2	-12.3
97LOV084	40	18.79	118	14.23	4861.6	979741.62	1.9	0.4D	2.4	-162.9	-7.0
97LOV085	40	18.74	118	12.50	5394.3	979712.19	22.6	0.7D	3.9	-159.0	-2.8
97LOV086	40	19.80	118	8.68	5535.0	979704.26	26.3	0.1D	2.9	-161.1	-4.0
97LOV087	40	20.20	118	6.28	4876.0	979745.38	4.9	0.3D	2.7	-160.1	-2.3
97LOV088	40	20.82	118	4.81	4521.8	979766.17	-8.6	0.1D	1.5	-162.6	-4.2
97LOV089	40	20.33	118	3.38	4284.0	979774.75	-21.6	0.0D	1.0	-168.0	-9.3
97LOV090	40	18.97	118	2.95	4194.0	979775.63	-27.2	0.0D	1.1	-170.4	-11.8
97LOV091	40	18.34	118	2.75	4243.5	979772.97	-24.2	0.0D	1.0	-169.2	-10.7
97LOV092	40	16.92	118	2.39	4276.0	979768.34	-23.7	0.0D	1.0	-169.9	-11.6
97LOV093	40	16.09	118	2.14	4228.0	979773.05	-22.3	0.0D	0.9	-166.8	-8.5
97LOV094	40	15.47	118	1.84	4197.0	979774.85	-22.5	0.0D	0.9	-166.0	-7.7
97LOV095	40	14.78	118	1.35	4114.0	979778.20	-25.9	0.0D	0.8	-166.7	-8.4
97LOV096	40	13.60	118	2.20	4156.0	979779.75	-18.6	0.0D	1.0	-160.6	-2.8
97LOV097	40	12.77	118	2.42	4091.0	979783.28	-20.0	0.0D	1.1	-159.6	-1.9
97LOV098	40	12.08	118	2.61	4112.0	979783.21	-17.0	0.0D	1.1	-157.5	0.1
97LOV099	40	9.90	118	3.74	4114.0	979783.61	-13.2	0.0D	1.0	-153.8	3.1
97LOV100	40	8.88	118	4.59	4146.0	979783.74	-8.6	0.0D	0.8	-150.5	6.0
97LOV101	40	7.98	118	5.28	4132.0	979784.98	-7.3	0.0D	0.5	-149.0	7.2
97LOV102	40	8.63	118	11.14	4522.6	979764.42	7.9	0.1D	0.7	-147.0	7.8
97LOV103	40	8.43	118	12.55	4344.0	979775.53	2.5	0.0D	0.4	-146.5	7.9
97LOV104	40	11.24	118	26.58	3984.0	979776.67	-34.4	0.0D	0.1	-171.4	-19.1
97LOV105	40	10.10	118	25.28	3982.0	979784.05	-25.5	0.0D	0.3	-162.2	-10.0
97LOV106	40	9.60	118	24.81	3983.0	979784.88	-23.8	0.0D	0.5	-160.4	-8.2
97LOV107	40	8.84	118	22.53	4362.0	979768.82	-3.1	0.1D	1.1	-152.1	0.2
97LOV108	40	9.11	118	21.59	4734.6	979753.70	16.4	0.6D	2.1	-144.4	8.1
97LOV109	40	9.75	118	20.43	5228.8	979724.78	33.0	0.3D	1.9	-144.9	7.7
97LOV110	40	6.91	118	29.66	3939.0	979780.84	-28.0	0.0D	0.0	-163.6	-12.8
97LOV111	40	6.90	118	30.79	3937.0	979781.46	-27.5	0.0D	0.0	-163.1	-12.4
97LOV112	40	6.03	118	30.79	3925.0	979781.46	-27.4	0.0D	0.0	-162.5	-12.0
97LOV113	40	4.28	118	30.80	3914.0	979768.30	-39.0	0.0D	0.0	-173.8	-23.7
97LOV114	40	4.29	118	31.93	3909.0	979770.45	-37.3	0.0D	-0.1	-171.9	-22.0
97LOV115	40	4.30	118	33.07	3904.0	979771.66	-36.6	0.0D	0.0	-171.0	-21.1
97LOV116	40	4.70	118	34.43	3901.5	979776.67	-32.4	0.0D	0.0	-166.7	-16.8
97LOV117	40	3.81	118	35.32	3899.0	979774.02	-34.0	0.0D	0.0	-168.2	-18.6
97LOV118	40	3.15	118	36.16	3901.0	979772.85	-34.0	0.0D	0.0	-168.3	-18.8
97LOV119	40	2.60	118	35.62	3901.0	979769.11	-36.9	0.0D	-0.1	-171.2	-21.9
97LOV120	40	3.41	118	31.95	3903.0	979766.44	-40.6	0.0D	-0.1	-175.0	-25.2
97LOV121	40	3.42	118	33.06	3902.0	979766.70	-40.4	0.0D	-0.1	-174.8	-25.1
97LOV122	40	3.39	118	29.70	3907.0	979771.44	-35.2	0.0D	-0.1	-169.7	-19.7
97LOV123	40	4.27	118	29.68	3913.0	979769.72	-37.6	0.0D	0.0	-172.4	-22.2
97LOV124	40	4.26	118	28.55	3915.0	979771.75	-35.4	0.0D	0.0	-170.2	-19.8
97LOV125	40	5.15	118	28.54	3917.0	979771.14	-37.2	0.0D	0.0	-172.0	-21.5
97LOV126	40	6.05	118	28.54	3924.0	979774.64	-34.3	0.0D	0.0	-169.4	-18.6
96WIN001	40	41.79	116	33.38	4637.0	979777.98	-17.2	0.0D	0.7	-176.0	2.8
96WIN002	40	42.11	116	31.91	4633.0	979784.03	-12.0	0.1D	0.5	-170.8	8.3
96WIN003	40	42.33	116	29.98	4669.0	979794.38	1.5	0.1D	0.1	-159.0	20.6
96WIN004	40	41.54	116	29.39	4681.5	979779.46	-11.1	0.0D	0.1	-172.1	7.9
96WIN005	40	44.94	116	29.97	4645.0	979781.74	-17.3	0.0D	0.0	-177.1	2.5
96WIN006	40	43.96	116	29.97	4637.0	979783.95	-14.4	0.0D	0.0	-173.9	5.7
96WIN007	40	44.95	116	29.09	4649.0	979782.61	-16.1	0.0D	0.0	-176.0	3.9
96WIN008	40	44.96	116	28.23	4658.0	979781.83	-16.1	0.0D	0.0	-176.3	4.0
96WIN009	40	44.97	116	27.13	4675.0	979782.39	-13.9	0.0D	0.1	-174.7	5.9
96WIN010	40	44.52	116	27.14	4678.0	979784.37	-11.0	0.0D	0.1	-171.8	8.7
96WIN011	40	44.08	116	27.14	4682.0	979785.08	-9.2	0.0D	0.1	-170.2	10.3
96WIN012	40	43.66	116	27.13	4743.0	979782.38	-5.6	0.1D	0.2	-168.5	12.0
96WIN013	40	44.96	116	26.55	4683.0	979780.57	-15.0	0.0D	0.1	-175.9	4.8
96WIN014	40	44.96	116	25.98	4694.0	979779.18	-15.3	0.0D	0.1	-176.6	4.3
96WIN015	40	44.96	116	25.39	4714.0	979777.94	-14.7	0.0D	0.2	-176.6	4.5
96WIN016	40	44.96	116	24.82	4743.0	979777.42	-12.5	0.0D	0.3	-175.4	6.0
96WIN017	40	44.96	116	24.25	4775.0	979777.60	-9.3	0.0D	0.4	-173.1	8.4
96WIN018	40	44.96	116	23.68	4809.0	979777.41	-6.3	0.0D	0.6	-171.1	10.6
96WIN019	40	44.09	116	23.69	4872.0	979774.23	-2.2	0.1D	0.6	-169.1	12.5
96WIN020	40	43.65	116	24.25	4791.0	979777.67	-5.8	0.1D	0.6	-169.9	11.5
96WIN021	40	42.78	116	24.84	4820.0	979774.35	-5.1	0.0D	0.5	-170.4	10.9
96WIN022	40	42.10	116	25.01	4873.0	979769.96	-3.5	0.1D	0.5	-170.5	10.7
96WIN023	40	41.02	116	25.63	5003.0	979758.14	-1.5	0.1D	0.4	-173.1	8.0
96WIN024	40	40.09	116	26.36	4986.0	979758.30	-1.5	0.1D	0.3	-172.7	8.2
96WIN025	40	39.58	116	15.66	5998.0	979692.73	28.8	0.1D	0.8	-176.4	7.8
96WIN026	40	40.72	116	15.83	5849.0	979707.09	27.5	0.3D	1.4	-172.1	12.0
96WIN027	40	41.31	116	16.62	5915.0	979706.33	32.0	1.4D	3.6	-167.6	16.2
96WIN028	40	41.20	116	14.91	5762.0	979712.02	23.5	0.3D	1.2	-173.2	11.2
96WIN029	40	42.10	116	14.76	6007.0	979699.72	32.9	0.2D	1.7	-171.8	12.6
96WIN030	40	43.05	116	14.75	5965.0	979707.59	35.4	0.5D	2.6	-167.0	17.4
96WIN031	40	43.77	116	13.58	5688.0	979721.28	22.0	0.1D	1.2	-172.3	12.5
96WIN032	40	43.89	116	12.15	5407.0	979729.75	3.9	0.1D	0.5	-181.5	3.9
96WIN033	40	44.06	116	10.89	5223.0	979737.19	-6.2	0.0D	0.3	-185.6	0.4
96WIN034	40	36.18	116	27.65	4745.0	979763.61	-13.0	0.3D	0.4	-175.8	5.2

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE	LONGITUDE	ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
96WIN035	40 38.38	116 26.59	4721.0	979768.02	-14.1	0.2D	0.5	-176.0	5.1
96WIN036	40 39.74	116 24.39	5074.0	979745.13	-5.9	0.0D	0.2	-180.2	1.3
96WIN037	40 39.95	116 22.67	5241.0	979731.82	-3.8	0.0D	0.3	-183.6	-1.6
96WIN038	40 40.47	116 21.65	5395.0	979726.30	4.4	0.1D	0.7	-180.4	1.9
96WIN039	40 40.90	116 22.99	5196.0	979741.86	0.6	0.0D	0.5	-177.6	4.3
96WIN040	40 41.72	116 23.25	5233.0	979743.70	4.7	0.2D	0.8	-174.4	7.4
96WIN041	40 42.38	116 23.72	5031.0	979760.86	1.9	0.1D	0.8	-170.3	11.3
96WIN042	40 42.89	116 23.91	4924.0	979769.48	-0.3	0.2D	1.0	-168.6	12.9
96WIN043	40 44.45	116 23.15	4948.0	979772.78	2.9	0.1D	0.8	-166.5	15.4
96WIN044	40 44.09	116 22.08	5129.0	979761.49	9.2	0.2D	1.5	-165.7	16.5
96WIN045	40 43.87	116 21.50	5259.0	979752.38	12.6	0.3D	2.1	-166.1	16.2
96WIN046	40 43.84	116 20.85	5431.0	979752.19	28.6	0.6D	2.6	-155.4	27.0
96WIN047	40 43.66	116 19.96	5663.0	979728.01	26.5	0.5D	2.8	-165.3	17.4
96WIN048	40 43.37	116 18.92	6025.0	979705.86	38.8	0.8D	2.9	-165.3	17.7
96WIN049	40 43.07	116 18.04	6482.0	979678.05	54.4	0.2D	2.0	-166.1	17.0
96WIN050	40 43.15	116 17.64	6464.0	979680.24	54.8	0.1D	1.9	-165.3	18.0
96WIN051	40 57.61	116 27.39	5050.0	979769.15	-10.8	0.0D	0.4	-184.0	-1.9
96WIN052	40 57.25	116 25.90	5242.0	979756.31	-5.0	0.3D	0.6	-184.6	-2.1
96WIN053	40 57.34	116 24.72	5304.0	979756.77	1.1	0.1D	0.4	-180.8	2.1
96WIN054	40 41.37	116 15.81	6121.0	979692.46	37.4	0.6D	2.2	-170.6	13.5
96WIN055	40 41.80	116 15.86	6682.0	979655.99	53.0	0.9D	4.6	-171.8	12.1
96WIN056	40 42.23	116 16.19	7043.0	979635.14	65.5	0.6D	5.9	-170.4	13.2
96WIN057	40 42.59	116 16.20	7213.0	979624.87	70.6	0.4D	6.8	-170.1	13.5
96WIN058	40 42.93	116 16.09	7507.0	979604.52	77.4	0.6D	10.4	-169.7	13.7
96WIN059	40 43.46	116 15.93	7090.0	979640.10	73.0	0.4D	5.4	-165.0	18.7
96WIN060	40 44.15	116 15.73	7699.0	979595.47	84.6	1.7D	14.0	-165.5	18.0
96WIN061	40 44.32	116 16.04	7638.0	979602.09	85.2	1.2D	11.9	-164.8	18.6
96WIN062	40 42.77	116 29.90	4738.0	979780.99	-6.1	0.1D	0.1	-169.0	10.6
96WIN063	40 42.95	116 29.87	4747.0	979781.08	-5.4	0.1D	0.1	-168.7	11.0
96WIN064	40 43.08	116 29.52	4953.0	979766.95	-0.4	1.0D	1.4	-169.4	10.3
96WIN065	40 41.01	116 28.84	4736.0	979774.15	-10.5	0.0D	0.1	-173.3	6.8
96WIN066	40 39.16	116 15.11	5973.0	979692.31	26.7	0.1D	0.7	-177.9	6.6
96WIN067	40 38.44	116 14.71	5908.0	979693.61	22.9	0.5D	1.1	-179.0	5.7
96WIN068	40 36.17	116 15.90	5192.0	979735.26	0.7	0.3D	1.7	-176.1	8.7
96WIN069	40 35.42	116 16.80	4977.0	979748.79	-4.9	0.2D	1.3	-174.7	10.0
96WIN070	40 34.82	116 17.06	4813.0	979757.55	-10.7	0.3D	1.4	-174.8	9.9
96WIN071	40 56.19	116 26.05	5292.0	979755.44	0.4	0.7D	1.0	-180.6	1.6
96WIN072	40 56.26	116 26.04	5224.0	979761.03	-0.5	0.3D	0.6	-179.6	2.7
96WIN073	40 56.35	116 26.03	5131.0	979766.86	-3.6	0.1D	0.4	-179.6	2.6
96WIN074	40 56.43	116 26.02	5094.0	979768.76	-5.3	0.1D	0.4	-180.0	2.3
96WIN075	40 56.51	116 26.00	5063.0	979769.72	-7.3	0.1D	0.4	-181.1	1.3
96WIN076	40 56.60	116 26.00	5051.0	979769.85	-8.5	0.1D	0.4	-181.7	0.6
96WIN077	40 56.68	116 25.98	5057.0	979769.40	-8.5	0.0D	0.4	-182.0	0.4
96WIN078	40 56.76	116 25.98	5057.0	979769.35	-8.6	0.1D	0.4	-182.1	0.3
96WIN079	40 56.84	116 25.99	5084.0	979768.36	-7.2	0.0D	0.3	-181.7	0.7
96WIN080	40 56.95	116 25.94	5094.0	979766.95	-7.8	0.0D	0.3	-182.7	-0.2
96WIN081	40 57.01	116 26.00	5116.0	979765.68	-7.1	0.0D	0.3	-182.8	-0.3
96WIN082	40 57.10	116 25.98	5138.0	979763.73	-7.2	0.1D	0.3	-183.5	-1.0
96WIN083	40 57.17	116 25.92	5177.0	979760.96	-6.4	0.1D	0.4	-184.0	-1.5
96WIN084	40 58.98	116 25.99	5178.0	979768.21	-1.7	0.0D	0.3	-179.4	3.5
96WIN085	40 59.59	116 24.35	5229.0	979770.97	4.9	0.0D	0.5	-174.3	9.3
96WIN086	41 0.03	116 23.60	5713.0	979739.97	18.8	1.3D	2.5	-175.1	8.7
96WIN087	41 1.50	116 24.60	5387.0	979757.48	3.4	0.1D	0.7	-181.0	2.9
96WIN088	41 0.56	116 25.51	5280.0	979766.22	3.5	0.1D	0.6	-177.4	6.1
96WIN089	40 57.33	116 25.10	5205.0	979762.39	-2.5	0.0D	0.3	-181.2	1.6
96WIN090	40 57.16	116 25.39	5175.0	979762.73	-4.8	0.0D	0.3	-182.4	0.2
96WIN091	40 56.33	116 24.87	5173.0	979767.08	0.6	0.0D	0.3	-176.9	5.7
96WIN092	40 56.36	116 25.13	5157.0	979766.94	-1.0	0.0D	0.3	-178.1	4.5
96WIN093	40 56.68	116 25.23	5210.0	979760.46	-3.0	0.1D	0.4	-181.8	0.8
96WIN094	40 56.44	116 25.50	5113.0	979767.44	-4.8	0.0D	0.3	-180.3	2.2
96WIN095	40 56.41	116 26.68	5184.0	979761.32	-4.2	0.2D	0.4	-182.0	0.0
96WIN096	40 57.63	116 27.09	5082.0	979768.02	-8.9	0.0D	0.3	-183.4	-1.1
96WIN097	40 57.40	116 26.92	5057.0	979769.72	-9.2	0.0D	0.3	-182.8	-0.6
96WIN098	40 57.18	116 26.75	5038.0	979770.69	-9.7	0.0D	0.3	-182.6	-0.4
96WIN099	40 56.91	116 26.54	5054.0	979771.13	-7.4	0.0D	0.3	-180.8	1.4
96WIN100	40 56.87	116 26.41	5102.0	979769.54	-4.4	0.0D	0.3	-179.6	2.7
96WIN101	40 47.07	116 31.95	4627.0	979781.42	-22.5	0.0D	0.0	-181.7	-2.5
96WIN102	40 47.72	116 32.87	4631.0	979783.25	-21.3	0.0D	0.1	-180.5	-1.7
96WIN103	40 46.17	116 34.99	4616.0	979783.28	-20.4	0.0D	0.1	-179.0	-0.9
96WIN104	40 45.67	116 37.92	4598.0	979785.24	-19.4	0.0D	0.5	-177.0	0.3
96WIN105	40 44.27	116 38.04	4591.0	979777.77	-25.4	0.0D	0.3	-183.0	-5.7
96WIN106	40 43.15	116 37.26	4585.0	979774.25	-27.8	0.0D	0.3	-185.2	-7.7
96WIN107	40 49.61	116 34.59	4676.0	979791.19	-11.9	0.0D	0.4	-172.4	6.1
96WIN108	40 48.17	116 36.31	4665.0	979792.52	-9.5	0.0D	0.6	-169.3	8.5
96WIN109	40 42.93	116 54.00	4502.0	979781.50	-28.0	0.0D	0.8	-182.1	-9.0
96WIN110	40 41.16	116 51.70	4518.0	979785.20	-20.2	0.0D	1.1	-174.5	-0.6
96WIN111	40 40.52	116 50.61	4529.0	979789.91	-13.5	0.0D	0.9	-168.4	5.9
96WIN112	40 40.51	116 49.30	4532.0	979791.36	-11.7	0.1D	1.2	-166.4	8.2
96WIN113	40 42.82	116 49.67	6977.0	979642.48	65.7	0.5D	11.1	-162.7	10.9
96WIN114	40 42.72	116 49.80	6988.0	979638.85	63.3	1.5D	13.5	-163.1	10.5

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE	LONGITUDE	ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
96WIN115	40 44.34	116 48.18	6735.0	979667.66	65.9	0.3D	4.1	-161.3	12.6
96WIN116	40 44.10	116 46.96	6712.0	979667.80	64.2	0.5D	5.0	-161.2	13.0
96WIN117	40 39.76	116 44.05	4554.0	979785.95	-14.0	0.0D	1.9	-168.7	7.4
96WIN118	40 40.30	116 42.46	4619.4	979778.70	-15.9	0.0D	1.1	-173.6	2.8
96WIN119	40 39.22	116 42.15	5104.0	979762.63	15.2	0.2D	2.0	-158.2	18.3
96WIN120	40 38.83	116 42.17	5295.0	979748.19	19.3	0.3D	2.4	-160.4	16.2
96WIN121	40 38.27	116 42.06	5743.0	979717.84	31.9	1.1D	3.7	-161.8	14.7
96WIN122	40 37.57	116 42.27	5988.0	979702.77	40.9	1.2D	4.4	-160.4	16.0
96WIN123	40 36.85	116 42.15	6592.0	979663.12	59.1	0.7D	4.7	-162.6	13.9
96WIN124	40 36.56	116 42.55	6395.0	979676.52	54.4	0.4D	3.5	-161.7	14.8
96WIN125	40 35.42	116 42.35	6075.0	979694.50	44.0	0.2D	2.2	-162.4	14.5
96WIN126	40 33.75	116 43.32	5464.0	979725.69	20.3	0.2D	1.3	-166.3	11.0
96WIN127	40 34.01	116 43.76	5238.0	979740.27	13.2	0.3D	1.5	-165.3	11.8
96WIN128	40 34.51	116 43.09	5664.0	979717.36	29.6	0.5D	1.7	-163.4	13.7
96WIN129	40 33.67	116 44.52	5219.0	979736.91	8.6	0.6D	1.5	-169.3	7.8
96WIN130	40 33.65	116 45.16	4989.0	979745.95	-4.0	0.4D	1.3	-174.2	2.8
96WIN131	40 35.16	116 43.75	5377.0	979735.75	20.0	0.6D	2.5	-162.3	14.6
96WIN132	40 35.83	116 46.43	4623.0	979768.40	-19.2	0.0D	1.1	-177.1	-0.8
96WIN133	40 37.02	116 47.49	4544.0	979767.43	-29.3	0.0D	0.6	-185.1	-9.4
96WIN134	40 36.68	116 50.50	4527.7	979753.22	-44.6	0.0D	0.2	-200.1	-25.1
96WIN135	40 35.81	116 50.56	4530.0	979750.16	-46.1	0.0D	0.2	-201.8	-26.5
96WIN136	40 35.81	116 49.42	4538.0	979751.67	-43.9	0.0D	0.2	-199.7	-24.2
96WIN137	40 34.92	116 48.29	4555.0	979752.57	-40.0	0.0D	0.4	-196.4	-20.3
96WIN138	40 33.25	116 47.88	4573.0	979750.09	-38.3	0.0D	0.6	-195.1	-18.5
96WIN139	40 32.95	116 49.37	4575.0	979748.29	-39.5	0.1D	0.6	-196.3	-20.0
96WIN140	40 34.38	116 51.56	4536.0	979746.96	-46.6	0.0D	0.2	-202.5	-27.1
96WIN141	40 41.92	116 44.98	4569.0	979790.10	-11.6	0.1D	1.5	-167.3	8.2
96WIN142	40 42.68	116 44.09	4564.0	979792.23	-11.1	0.0D	2.0	-166.1	9.7
96WIN143	40 43.44	116 43.50	4569.0	979795.31	-8.7	0.1D	2.8	-163.1	12.8
96WIN144	40 43.94	116 42.91	4574.0	979796.70	-7.6	0.2D	3.3	-161.6	14.4
96WIN145	40 44.93	116 40.97	4586.0	979793.05	-11.6	0.4D	3.0	-166.3	10.2
96WIN146	40 45.39	116 40.25	4597.0	979793.77	-10.5	0.0D	2.2	-166.4	10.2
96WIN147	40 45.81	116 39.47	4608.0	979792.21	-11.6	0.0D	1.9	-168.3	8.6
96WIN148	40 46.50	116 38.50	4610.0	979792.78	-11.9	0.0D	1.7	-168.8	8.3
96WIN149	40 47.49	116 37.38	4625.0	979793.03	-11.7	0.0D	1.2	-169.6	7.9
96WIN150	40 50.14	116 35.70	4682.0	979793.60	-9.8	1.5D	2.9	-167.9	10.2
96WIN151	40 41.27	116 35.37	4606.0	979779.64	-17.6	0.0D	1.4	-174.7	3.5
96WIN152	40 40.79	116 37.02	4602.0	979780.80	-16.1	0.0D	1.6	-172.9	4.9
96WIN153	40 42.33	116 36.84	4593.0	979772.10	-28.0	0.0D	0.3	-185.6	-7.9
96WIN154	40 42.40	116 35.99	4606.0	979771.73	-27.2	0.0D	0.3	-185.4	-7.4
96WIN155	40 41.95	116 40.19	4573.0	979772.25	-29.1	0.0D	0.5	-186.0	-9.1
96WIN156	40 41.83	116 41.44	4568.0	979773.54	-28.1	0.0D	0.6	-184.7	-8.2
96WIN157	40 41.67	116 42.96	4561.0	979776.32	-25.8	0.0D	0.7	-182.0	-5.8
96WIN158	40 38.65	116 46.09	4565.0	979784.88	-12.3	0.1D	1.8	-167.6	8.2
96WIN159	40 38.16	116 46.50	4543.0	979779.87	-18.7	0.0D	1.2	-173.8	2.0
96WIN160	40 37.51	116 47.03	4545.0	979771.62	-25.8	0.0D	0.8	-181.4	-5.7
96WIN161	40 36.74	116 48.61	4537.8	979759.90	-37.0	0.0D	0.3	-192.8	-17.3
96WIN162	40 36.95	116 53.38	4518.9	979759.62	-39.4	0.0D	0.1	-194.8	-20.4
96WIN163	40 37.97	116 54.01	4514.0	979762.55	-38.5	0.0D	0.1	-193.6	-19.7
96WIN164	40 38.27	116 55.12	4508.0	979767.09	-34.9	0.0D	0.1	-189.9	-16.2
96WIN165	40 39.11	116 56.71	4505.2	979773.57	-30.0	0.0D	0.2	-184.8	-11.7
96WIN166	40 42.63	116 56.35	4492.0	979775.03	-35.0	0.0D	0.2	-189.3	-16.7
96WIN167	40 35.82	116 53.98	4528.0	979758.91	-37.6	0.0D	0.1	-193.2	-18.7
96WIN168	40 34.91	116 55.61	4534.0	979760.36	-34.2	0.0D	0.1	-190.0	-15.7
96WIN169	40 32.24	116 55.31	4550.0	979741.56	-47.5	0.0D	0.3	-203.8	-28.6
96WIN170	40 32.68	116 58.02	4557.0	979750.92	-38.2	0.0D	0.3	-194.7	-20.3
96WIN171	40 31.91	116 59.95	4577.0	979749.24	-36.8	0.0D	0.3	-193.9	-19.8
96WIN172	40 33.84	116 58.69	4518.0	979763.13	-31.3	0.0D	0.4	-186.4	-12.4
96WIN173	40 34.57	116 59.88	4685.0	979766.16	-13.7	0.0D	0.5	-174.4	-1.0
97WIN001	40 46.20	116 8.63	5007.0	979755.91	-11.0	0.0D	0.2	-183.0	3.7
97WIN002	40 47.91	116 11.51	5086.0	979763.89	1.8	0.0D	0.7	-172.3	13.6
97WIN003	40 48.47	116 12.35	5102.0	979768.13	6.7	1.4D	3.2	-165.5	20.2
97WIN004	40 48.96	116 13.16	5120.0	979765.98	5.6	1.7D	3.3	-167.1	18.3
97WIN005	40 50.63	116 13.37	5172.0	979747.98	-10.1	0.1D	0.4	-187.5	-1.9
97WIN006	40 53.35	116 11.25	5243.0	979741.02	-14.4	0.0D	0.3	-194.3	-7.7
97WIN007	40 55.02	116 10.80	5304.0	979737.13	-15.1	0.0D	0.4	-197.0	-9.9
97WIN008	40 56.63	116 10.37	5352.0	979733.38	-16.7	0.0D	0.6	-200.1	-12.5
97WIN009	41 1.16	116 8.08	5509.0	979724.69	-17.4	0.1D	1.2	-205.6	-16.4
97WIN010	41 1.59	116 7.78	5531.0	979724.06	-16.6	0.2D	1.3	-205.4	-16.1
97WIN011	40 55.47	116 11.91	5390.2	979725.23	-19.5	0.2D	0.5	-204.3	-17.5
97WIN012	40 53.62	116 10.52	5233.4	979744.96	-11.8	0.1D	0.6	-191.1	-4.2
97WIN013	40 52.26	116 14.03	5258.0	979728.59	-23.8	0.0D	0.2	-204.3	-18.8
97WIN014	40 53.08	116 14.41	5295.0	979724.06	-26.1	0.0D	0.3	-207.8	-22.2
97WIN015	40 53.76	116 15.04	5375.0	979722.00	-21.6	0.0D	0.4	-206.0	-20.5
97WIN016	40 54.24	116 15.87	5517.0	979720.47	-10.5	0.1D	0.6	-199.6	-14.3
97WIN017	40 54.84	116 18.05	5950.0	979716.66	25.5	0.4D	1.7	-177.3	7.3
97WIN018	40 55.13	116 18.91	6245.0	979699.50	35.6	0.2D	1.5	-177.4	6.8
97WIN019	40 45.80	116 4.39	4983.0	979752.96	-15.6	0.0D	0.2	-186.8	1.2
97WIN019	40 45.80	116 4.39	4983.0	979752.96	-15.6	0.0D	0.2	-186.8	1.2
97WIN020	40 46.97	116 4.21	5011.4	979745.61	-22.1	0.0D	0.2	-194.2	-6.1

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE		LONGITUDE		ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
97WIN021	40	47.69	116	4.81	5045.9	979742.73	-22.8	0.0D	0.2	-196.1	-8.1
97WIN022	40	48.47	116	5.71	5117.0	979741.05	-18.9	0.1D	0.3	-194.6	-6.9
97WIN023	40	49.27	116	6.63	5220.6	979737.41	-14.0	0.2D	0.4	-193.1	-5.6
97WIN024	40	50.70	116	6.83	5245.9	979746.84	-4.3	0.3D	0.7	-184.0	3.6
97WIN025	40	51.45	116	7.33	5338.8	979744.56	1.0	0.2D	0.6	-181.9	5.6
97WIN026	40	52.37	116	7.26	5479.8	979736.04	4.3	0.4D	0.8	-183.2	4.4
97WIN027	40	53.16	116	6.91	5683.8	979725.14	11.4	0.1D	0.5	-183.4	4.4
97WIN028	40	54.01	116	6.41	5761.3	979717.70	10.0	0.1D	0.6	-187.3	0.7
97WIN029	40	54.11	116	5.31	5900.9	979709.44	14.7	0.1D	0.9	-187.1	1.1
97WIN030	40	55.02	116	4.83	6355.2	979680.34	27.0	0.3D	1.7	-189.6	-1.2
97WIN031	40	56.21	116	4.09	6914.1	979649.90	47.2	0.6D	3.4	-186.7	2.0
97WIN032	40	57.12	116	4.74	6521.6	979674.57	33.7	0.2D	1.7	-188.6	0.2
97WIN033	40	58.70	116	5.96	6537.1	979671.03	29.2	0.3D	2.1	-193.1	-4.3
97WIN034	40	59.05	116	6.94	6226.6	979683.63	12.1	0.5D	1.8	-200.0	-11.2
97WIN035	40	55.20	116	4.91	6333.4	979683.27	27.6	0.3D	1.7	-188.3	0.2
97WIN036	40	47.94	116	6.52	5164.1	979741.24	-13.5	0.2D	0.2	-190.8	-3.4
97WIN037	40	47.13	116	6.94	5075.4	979747.37	-14.5	0.0D	0.1	-188.9	-1.6
97WIN038	40	46.30	116	7.97	5007.0	979756.09	-11.0	0.0D	0.1	-183.0	3.9
97WIN039	40	47.03	116	8.52	5022.8	979753.92	-12.8	0.0D	0.2	-185.3	1.5
97WIN040	40	48.69	116	9.13	5218.0	979751.23	0.4	0.1D	0.5	-178.5	8.2
97WIN041	40	49.63	116	9.12	5420.0	979739.60	6.4	0.4D	0.8	-179.1	7.6
97WIN042	40	50.05	116	9.35	5487.0	979733.31	5.8	0.3D	0.7	-182.2	4.5
97WIN043	40	44.79	116	4.59	4957.7	979754.46	-15.0	0.0D	0.2	-185.3	2.5
97WIN044	40	44.98	116	3.68	5084.4	979751.92	-5.9	0.1D	0.2	-180.5	7.6
97WIN045	40	45.13	116	2.91	5173.3	979739.14	-10.6	0.2D	0.3	-188.2	0.2
97WIN046	40	45.40	116	1.65	5051.5	979750.79	-10.8	0.0D	0.4	-184.1	4.7
97WIN047	40	45.36	115	60.00	5620.5	979716.93	8.9	0.8D	1.5	-182.8	6.2
97WIN048	40	44.45	116	1.94	4982.8	979757.75	-8.9	0.1D	0.6	-179.6	9.0
97WIN049	40	46.33	116	1.17	5096.3	979753.37	-5.4	0.2D	0.6	-179.9	8.9
97WIN050	40	44.35	116	6.09	4943.0	979759.60	-10.6	0.0D	0.2	-180.4	7.1
97WIN051	40	44.64	116	5.30	5098.3	979745.47	-10.6	0.2D	0.4	-185.5	2.2
97WIN052	40	49.23	116	2.66	5190.8	979746.51	-7.7	0.1D	0.4	-185.8	2.8
97WIN053	40	50.47	116	1.43	5155.3	979750.31	-9.1	0.1D	0.8	-185.5	3.5
97WIN054	40	52.34	116	0.48	5563.8	979721.19	-2.6	0.2D	0.7	-193.1	-3.8
97WIN055	40	54.13	116	1.07	6042.1	979690.02	8.5	0.3D	1.0	-198.0	-8.7
97WIN056	40	54.62	116	1.93	6325.1	979685.19	29.6	0.2D	1.4	-186.2	2.8
97WIN057	40	54.99	116	2.72	6580.1	979670.73	38.5	0.7D	3.1	-184.4	4.5
97WIN058	40	55.58	116	2.18	6479.7	979677.91	35.4	1.1D	3.4	-183.7	5.4
97WIN059	40	51.73	116	15.44	5264.3	979729.69	-21.3	0.0D	0.4	-201.9	-16.9
97WIN060	40	49.17	116	15.01	5232.3	979748.01	-2.2	0.2D	0.7	-181.4	3.4
97WIN061	40	47.94	116	15.84	5506.3	979743.15	20.5	0.6D	1.5	-167.1	17.2
97WIN062	40	48.37	116	18.03	5441.1	979746.70	17.3	0.3D	1.2	-168.5	15.1
97WIN063	40	31.14	116	48.08	4645.9	979747.79	-30.6	0.0D	1.2	-189.3	-12.2
97WIN063	40	31.14	116	48.08	4645.9	979747.82	-30.6	0.0D	1.2	-189.2	-12.1
97WIN064	40	32.92	116	43.83	5183.0	979737.85	7.2	0.2D	1.2	-169.7	7.8
97WIN065	40	33.16	116	42.47	5740.5	979701.87	23.3	0.7D	2.3	-171.7	5.9
97WIN066	40	33.73	116	41.67	6103.5	979683.91	38.6	0.4D	2.5	-168.6	8.9
97WIN067	40	33.61	116	40.24	5380.9	979729.05	16.0	0.2D	1.3	-167.7	10.4
97WIN068	40	34.39	116	38.52	5174.3	979736.75	3.1	0.1D	0.9	-173.8	4.5
97WIN069	40	34.89	116	36.87	4853.9	979757.17	-7.3	0.0D	0.8	-173.4	5.3
97WIN070	40	34.90	116	35.14	4750.0	979761.79	-12.5	0.0D	0.5	-175.3	3.8
97WIN071	40	34.81	116	33.09	4681.0	979766.78	-13.8	0.1D	0.7	-174.1	5.6
97WIN072	40	34.12	116	34.83	4766.7	979758.40	-13.1	0.0D	1.0	-176.1	3.3
97WIN073	40	33.48	116	36.64	4868.7	979753.89	-7.1	0.1D	0.9	-173.7	5.4
97WIN074	40	32.74	116	37.96	5021.0	979743.69	-1.9	0.0D	0.9	-173.6	5.3
97WIN075	40	32.19	116	38.91	5128.0	979737.46	2.8	0.1D	1.2	-172.4	6.4
97WIN076	40	30.97	116	38.85	5353.0	979720.86	9.1	0.1D	1.4	-173.5	5.6
97WIN077	40	33.27	116	39.02	5227.7	979732.53	5.6	0.1D	0.7	-173.4	5.1
97WIN078	40	34.87	116	39.15	5563.9	979715.90	18.2	0.1D	1.2	-171.8	6.2
97WIN079	40	36.63	116	47.09	4570.0	979768.19	-25.5	0.0D	0.7	-182.1	-6.1
97WIN080	40	35.83	116	47.13	4581.0	979763.15	-28.4	0.0D	0.7	-185.3	-9.2
97WIN081	40	35.82	116	50.01	4533.0	979750.81	-45.2	0.0D	0.2	-200.9	-25.5
97WIN082	40	35.00	116	50.00	4527.5	979748.28	-47.0	0.0D	0.3	-202.5	-26.9
97WIN083	40	35.33	116	50.84	4531.0	979749.02	-46.5	0.0D	0.2	-202.1	-26.8
97WIN084	40	34.95	116	51.71	4532.0	979748.58	-46.2	0.0D	0.2	-202.0	-26.7
97WIN085	40	34.04	116	52.55	4538.0	979746.63	-46.3	0.0D	0.2	-202.2	-26.9
97WIN086	40	33.25	116	51.94	4543.0	979744.57	-46.7	0.0D	0.3	-202.7	-27.0
97WIN087	40	31.81	116	50.74	4581.0	979743.51	-42.0	0.0D	0.6	-199.0	-22.6
97WIN088	40	31.90	116	46.30	4676.9	979751.22	-25.4	0.1D	1.1	-185.2	-7.9
97WIN089	40	42.10	116	39.22	4583.0	979771.95	-28.7	0.0D	0.4	-186.0	-8.9
97WIN090	40	42.36	116	39.39	4577.0	979772.36	-29.3	0.0D	0.4	-186.3	-9.3
97WIN091	40	42.51	116	38.71	4582.7	979772.41	-28.9	0.0D	0.4	-186.2	-9.0
97WIN092	40	40.42	116	39.82	4586.2	979777.68	-20.2	0.0D	1.5	-176.4	0.6
97WIN093	40	40.42	116	40.82	4583.0	979781.38	-16.8	0.0D	1.4	-173.1	3.8
97WIN094	40	40.17	116	43.27	4577.2	979782.60	-15.7	0.0D	1.3	-171.9	4.3
97WIN095	40	39.49	116	43.35	4843.6	979774.95	2.7	1.8D	3.6	-160.3	16.0
97WIN096	40	39.08	116	43.30	5115.8	979760.49	14.4	1.0D	3.0	-158.5	17.8
97WIN097	40	38.51	116	43.30	5441.5	979739.59	25.0	0.9D	3.2	-158.9	17.4
97WIN098	40	38.82	116	43.73	5751.8	979718.60	32.7	1.3D	4.4	-160.6	15.4
97WIN099	40	38.10	116	43.63	5968.8	979704.60	40.1	0.6D	3.2	-161.7	14.4

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE	LONGITUDE	ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
97WIN100	40 37.59	116 55.97	4515.0	979770.15	-30.2	0.0D	0.1	-185.4	-11.8
97WIN101	40 36.99	116 58.67	4543.0	979781.37	-15.4	0.0D	0.5	-171.3	1.9
97WIN102	40 36.18	116 58.13	4569.0	979777.46	-15.7	0.4D	0.8	-172.1	1.4
97WIN103	40 36.08	116 56.94	4535.0	979770.76	-25.5	0.0D	0.2	-181.3	-7.5
97WIN104	40 34.51	116 57.71	4568.5	979763.52	-27.2	0.0D	0.2	-184.1	-10.2
97WIN105	40 33.64	116 58.12	4563.7	979759.24	-30.6	0.0D	0.2	-187.4	-13.3
97WIN106	40 32.89	116 58.50	4565.0	979753.92	-34.7	0.0D	0.3	-191.5	-17.3
97WIN107	40 32.05	116 58.89	4563.1	979747.49	-40.1	0.0D	0.3	-196.8	-22.4
97WIN108	40 34.31	116 28.79	4721.0	979757.80	-18.3	0.0D	0.1	-180.6	0.4
97WIN109	40 32.42	116 30.35	4722.0	979757.55	-15.6	0.0D	0.2	-177.9	3.1
97WIN110	40 30.39	116 31.58	4785.4	979749.97	-14.2	0.0D	0.1	-178.7	2.5
97WIN111	40 28.85	116 32.63	4745.8	979741.13	-24.5	0.0D	0.2	-187.6	-6.2
97WIN112	40 26.23	116 34.04	4766.0	979739.38	-20.5	0.0D	0.2	-184.1	-2.3
97WIN113	40 24.38	116 35.41	4876.0	979730.90	-15.8	0.0D	0.3	-183.2	-1.1
97WIN114	40 23.22	116 36.12	4887.0	979729.98	-14.0	0.0D	0.4	-181.7	0.6
97WIN115	40 21.77	116 36.99	4929.0	979723.55	-14.3	0.0D	0.4	-183.5	-0.8
97WIN116	40 20.89	116 37.53	4908.1	979720.96	-17.6	0.0D	0.4	-185.9	-3.0
97WIN117	40 19.69	116 38.27	4976.0	979714.35	-16.0	0.0D	0.4	-186.7	-3.6
97WIN118	40 17.50	116 40.17	4974.0	979708.79	-18.5	0.0D	0.6	-188.9	-5.3
97WIN119	40 19.69	116 36.73	4869.0	979716.87	-23.5	0.0D	0.3	-190.7	-7.2
97WIN120	40 19.52	116 34.99	4755.8	979716.71	-34.1	0.0D	0.3	-197.3	-13.3
97WIN121	40 20.89	116 34.27	4758.0	979720.91	-31.7	0.0D	0.3	-195.1	-11.4
97WIN122	40 20.89	116 33.16	4732.0	979717.42	-37.7	0.0D	0.3	-200.2	-16.2
97WIN123	40 25.32	116 33.07	4744.0	979734.95	-25.6	0.0D	0.2	-188.6	-6.2
97WIN124	40 25.35	116 30.29	4719.0	979739.52	-23.4	0.0D	0.3	-185.4	-2.4
97WIN125	40 22.17	116 29.07	4745.9	979721.75	-33.9	0.0D	0.3	-196.8	-12.4
97WIN126	40 21.49	116 28.22	4767.7	979715.64	-37.0	0.0D	0.5	-200.4	-15.5
97WIN127	40 34.14	116 25.90	4727.0	979761.74	-13.5	0.0D	0.1	-176.1	5.9
97WIN128	40 33.41	116 26.87	4831.0	979751.16	-13.2	0.0D	0.0	-179.4	2.3
97WIN129	40 32.91	116 26.21	4887.0	979744.26	-14.1	0.0D	0.0	-182.2	-0.1
97WIN130	40 31.63	116 25.23	4830.3	979742.74	-19.1	0.1D	0.1	-185.1	-2.5
97WIN131	40 30.60	116 25.94	4852.0	979743.89	-14.4	0.0D	0.1	-181.2	1.5
97WIN132	40 30.60	116 27.53	4759.2	979749.39	-17.6	0.0D	0.1	-181.2	1.0
97WIN133	40 30.57	116 29.37	4717.0	979753.43	-17.5	0.0D	0.1	-179.6	2.1
97WIN134	40 32.13	116 29.16	4713.0	979754.93	-18.7	0.0D	0.1	-180.7	0.7
97WIN135	40 33.58	116 28.80	4711.0	979756.39	-19.6	0.0D	0.1	-181.5	-0.3
97WIN136	40 34.09	116 22.45	4749.2	979756.82	-16.3	0.0D	0.2	-179.4	3.7
97WIN137	40 33.23	116 22.36	4892.0	979746.16	-12.2	0.1D	0.2	-180.2	3.0
97WIN138	40 31.96	116 22.72	5023.0	979738.74	-5.5	0.0D	0.3	-177.9	5.4
97WIN139	40 32.02	116 21.69	5238.0	979726.29	2.2	0.1D	0.4	-177.5	6.1
97WIN140	40 31.03	116 20.63	5585.0	979705.09	15.1	0.1D	0.7	-176.1	7.9
97WIN141	40 31.25	116 19.75	5652.1	979698.85	14.8	0.2D	0.9	-178.5	5.7
97WIN142	40 32.08	116 19.67	5296.5	979721.66	3.0	0.8D	1.4	-177.8	6.5
97WIN143	40 33.29	116 19.83	4974.0	979741.96	-8.8	0.5D	1.0	-178.8	5.2
97WIN144	40 34.19	116 20.72	4760.2	979754.80	-17.4	0.0D	0.4	-180.8	2.8
97WIN145	40 42.18	116 7.53	4891.7	979768.70	-3.1	0.0D	0.5	-170.8	16.4
97WIN146	40 40.94	116 8.11	4892.0	979765.00	-4.9	0.1D	1.0	-172.2	14.8
97WIN147	40 39.56	116 8.98	4886.3	979759.49	-8.9	0.1D	1.6	-175.3	11.5
97WIN148	40 38.37	116 9.73	4887.0	979754.86	-11.7	0.4D	2.3	-177.4	9.3
97WIN149	40 37.08	116 10.54	5091.7	979736.76	-8.6	0.1D	0.9	-182.8	3.8
97WIN150	40 35.80	116 10.51	4892.0	979748.25	-14.0	0.3D	1.6	-180.6	6.2
97WIN151	40 34.37	116 8.69	4966.0	979737.49	-15.7	0.2D	1.5	-184.9	2.7
97WIN152	40 43.38	116 4.80	4911.6	979759.71	-12.0	0.0D	0.3	-180.6	7.3
97WIN153	40 43.77	116 2.19	4931.0	979760.38	-10.1	0.1D	0.6	-179.1	9.6
97WIN154	40 43.94	116 0.79	4957.0	979758.90	-9.4	0.7D	1.9	-177.9	11.1
97WIN155	40 41.41	116 6.78	5145.4	979750.41	3.6	0.3D	0.6	-172.6	14.7
97WIN156	40 40.94	116 6.30	5326.2	979735.74	6.7	0.2D	0.6	-175.9	11.6
97WIN157	40 40.09	116 5.93	5635.7	979713.55	14.8	0.1D	0.8	-178.1	9.4
97WIN158	40 39.63	116 5.14	5811.2	979706.66	25.1	0.2D	0.9	-173.7	14.0
97WIN159	40 38.92	116 4.52	6095.7	979686.09	32.3	0.4D	1.4	-175.7	12.2
97WIN160	40 38.44	116 3.98	6370.4	979670.58	43.3	0.3D	1.8	-173.6	14.5
97WIN161	40 38.58	116 3.08	6588.4	979655.01	48.0	0.3D	2.4	-175.8	12.5
97WIN162	40 38.22	116 2.39	6585.0	979655.67	48.9	0.4D	2.1	-175.1	13.5
97WIN163	40 37.83	116 2.13	6857.7	979638.08	57.5	0.7D	3.3	-174.5	14.0
97WIN164	40 37.04	116 1.65	6843.7	979638.55	57.9	0.3D	2.4	-174.7	14.2
97WIN165	40 36.21	116 1.64	6824.5	979636.32	55.1	1.1D	3.3	-175.9	13.1
97WIN166	40 41.07	116 11.16	5201.7	979737.40	-3.6	0.2D	0.6	-181.8	4.1
97WIN167	40 39.95	116 13.70	5800.9	979702.49	19.5	0.2D	0.8	-179.1	5.9
97WIN168	40 39.27	116 12.83	5796.0	979701.59	19.1	0.2D	0.8	-179.2	6.1
97WIN169	40 38.40	116 12.52	6000.0	979686.34	24.4	0.1D	1.2	-180.6	4.9
97WIN170	40 38.90	116 11.71	5876.0	979693.90	19.5	0.1D	1.0	-181.4	4.3
97WIN171	40 40.72	116 12.00	5284.1	979734.26	1.5	0.1D	0.6	-179.6	6.0
97WIN172	40 42.15	116 9.95	5059.0	979751.02	-5.0	0.1D	0.4	-178.5	7.8
97WIN173	40 42.97	116 8.59	5008.9	979761.31	-0.6	0.1D	0.2	-172.6	14.1
97WIN174	40 40.93	116 10.23	5428.0	979728.03	8.5	0.3D	0.8	-177.3	8.9
97WIN175	40 39.80	116 10.25	5745.0	979705.47	17.4	0.1D	1.4	-178.6	7.6
97WIN176	40 40.96	116 59.11	4498.7	979778.54	-28.4	0.0D	0.3	-182.9	-10.6
97WIN177	40 42.18	117 0.69	4506.7	979782.97	-25.0	0.0D	0.3	-179.7	-8.0
97WIN178	40 42.81	117 1.49	4508.5	979786.50	-22.2	0.0D	0.4	-177.0	-5.5
97WIN179	40 43.46	117 2.31	4520.4	979789.31	-19.3	0.0D	0.3	-174.4	-3.3

TABLE 2.—*Principal facts of gravity data*—Continued

STATION NAME	LATITUDE	LONGITUDE	ELEV (ft)	OBS GRAV (mGal)	FREE AIR	TERRAIN HAND	TERRAIN COMP	BOUG ANOM	ISOST ANOM
97WIN180	40 40.31	116 58.31	4508.6	979777.40	-27.6	0.0D	0.2	-182.5	-9.9
97WIN181	40 39.64	116 57.45	4512.4	979775.59	-28.0	0.0D	0.2	-183.1	-10.2
97WIN182	40 38.63	116 55.78	4506.0	979769.76	-33.0	0.0D	0.1	-187.9	-14.4
97WIN183	40 40.29	116 55.64	4506.0	979769.50	-35.7	0.0D	0.2	-190.6	-17.4
97WIN184	40 44.37	116 52.55	5256.7	979762.06	21.3	0.9D	4.0	-155.4	17.8
97WIN185	40 43.88	116 53.51	4757.0	979782.49	-4.5	0.1D	1.7	-166.4	6.6
97WIN186	40 50.65	116 54.11	4678.0	979803.41	-1.1	0.0D	0.6	-161.4	11.1
97WIN187	40 51.53	116 56.39	4562.0	979804.81	-11.9	0.0D	0.1	-168.8	3.0
97WIN188	40 52.78	116 56.66	4581.0	979807.11	-9.7	0.0D	0.0	-167.2	4.4
97WIN189	40 53.80	116 56.87	4586.0	979805.05	-12.8	0.0D	0.0	-170.6	1.1
97WIN190	40 52.39	116 55.26	4646.0	979806.70	-3.4	0.0D	0.1	-163.1	8.9