Gravity Survey and Depth to Bedrock In Carson Valley, Nevada-California

By Douglas K. Maurer

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ILLUSTRATIONS

[Plates are in pocket at back of the report]

CONVERSION FACTORS AND ABBREVIATIONS

"Inch-pound" units of measure used in this report may be converted to International System (metric) units by using the following factors:

Multiply	*By*	*To obtain*
Acre-feet (acre-ft)	1,233	Cubic meters (m^3)
Feet (ft)	0.3048	Meters (m)
Miles (mi)	1.609	Kilometers (km)

Geophysical and related units used in this report are as follows:

For gravity, milliGals (mGal).
For density, grams per cubic centimeter (g/cm^3).

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 datum is derived from a general adjustment of the first-order leveling networks of both the United States and Canada. For convenience in this report, the datum also is referred to as "sea level."

GRAVITY SURVEY AND DEPTH TO BEDROCK IN CARSON VALLEY, NEVADA-CALIFORNIA

By Douglas K. Maurer

ABSTRACT

Gravity data were obtained from 460 stations in Carson Valley, Nevada and California. The data have been interpreted to obtain a map of approximate depth to bedrock for use in a ground-water model of the valley. This map delineates the shape of the alluvium-filled basin and shows that the maximum depth to bedrock exceeds 5,000 feet, on the west side of the valley. A north-south trending offset in the bedrock surface shows that the Carson-Valley/Pine-Nut-Mountain block has not been tilted to the west as a simple unit, but is comprised of several smaller blocks.

INTRODUCTION

Carson Valley is the major storage reservoir of high-quality ground water in the Carson River basin (Glancy and Katzer, 1975, page 15). Ground water is a source of supply for the rapidly expanding urban population and for agricultural production--a major economic base of the area. To assess the impact of these demands on the ground-water system in Carson Valley, data on the size and configuration of the reservoir are needed. Glancy and Katzer (1975, page 13) note that several wells as deep as 1,000 feet fail to penetrate basement beneath the valley fill; thus, the depth to bedrock is unknown throughout most of the valley.

The purpose of this study, made during the period from April 1980 through March 1981, was to determine the thickness of valley fill in Carson Valley using gravimetric geophysical methods. A gravity survey measures differences in the Earth's gravitational field over the study area, and depth to bedrock can be calculated from these measurements.

GEOLOGIC SETTING

Carson Valley is bounded on the west by a steep, normal fault scarp with 5,000 feet of relief from the valley floor to the crest of the Carson Range (plate 1). The east side of the valley rises gently toward the crest of the Pine Nut Range through a fault system as much as 6 miles in width. The valley narrows to the north where the Carson River drains the valley and to the south where the West Fork of the Carson River enters.

The mountain blocks bounding the valley to the east and west are westward-tilted structural units (Stewart, 1980, page 113), with Carson Valley occupying the downdropped western edge of the Pine Nut block (Moore, 1969, page 18). Recent westward tilting of the Pine Nut block is shown by faulting

along the east scarp of the Carson Range (Pease, 1979, page 15) and by displacement of the Carson River to the west side of Carson Valley (Moore, 1969, page 18).

The Carson Range is composed mainly of Cretaceous granodiorite (Pease, 1979, page 2). The crest of the Pine Nut Range is also composed of granodiorite, probably similar to that found in the Carson Range (Moore, 1969, page 18). In both ranges, some Triassic-Jurassic metavolcanic and medasedimentary rocks are exposed (Moore, 1969, page 16; Armin and others, 1983). Lower on the western flanks of the Pine Nut Range, Tertiary lake and stream deposits crop out and dip westward beneath the alluvial fill of Carson Valley (Moore, 1969, page 19).

In the north and south ends of the valley, the granodiorite and metavolcanic rocks form isolated bedrock knobs in the hills east of Jacks Valley, at Hot Springs Mountain, and in the hills south of Dresslerville (Moore, 1969). A large exposure of Tertiary volcanic rocks, mostly andesitic flows and breccia (Moore, 1969; Stewart and Noble, 1979), is located near the southeast end of the valley.

The Tertiary lake and stream deposits are variable in their degree of induration (Pease, 1979, page 4). They are described as soft sediments by Moore (1969, page 19), and as shales, siltstones, and sandstones by Stewart and Noble (1979). They are predominantly fine grained and similar in composition to the Pliocene Truckee Formation near Virginia City, Nev., 20 miles north of Carson Valley (Moore, 1969, page 13). Thus, these deposits probably form a hydrologic unit underlying Carson Valley. Moore (1969, page 19) suggests a total thickness of several hundred feet for the Tertiary sediments, and Robert C. Pease (1981, Nevada Bureau of Mines Geology, written communication) stated that 600 feet of Tertiary sediments are exposed in the hills east of Jacks Valley.

Sediments of Quaternary and Tertiary age probably form the major hydrologic unit in Carson Valley. The sediments range in lithology from fine-grained, flood-plain deposits of the Carson River on the valley floor to coarse Tertiary gravel, capping the semiconsolidated Tertiary sediments on the west flank of the Pine Nut Range.

Because water wells are drilled in both the Tertiary lake and stream deposits and in the unconsolidated Quaternary sediments, both will be treated as valley fill for purposes of gravity modeling.

METHODS OF DATA COLLECTION AND REDUCTION

The gravity measured by the gravity meter is in part determined by the density of materials which lie beneath it. A reading taken over a section of low density valley-fill deposits that overlie more dense crystalline bedrock is less than if the bedrock composed the entire section. This difference is referred to as a gravity anomaly. Corrections are made for altitude, latitude, earth curvature, and terrain roughness; and a value is computed for the measurement called a Bouguer anomoly. Measurements made over bedrock stations

reflect differences in the bedrock densities and the same corrections are applied to obtain a Bouguer anomoly for these stations. Bedrock stations on both sides of a valley define a regional gravity gradient. Subtracting the regional gradient from Bouguer anomolies measured over the valley fill gives a residual anomoly which is proportional to the thickness of the valley-fill material.

Gravity readings were taken at 460 stations (plate 1) in the study area at approximately a half-mile spacing. Most of the stations were located using topographic maps at a scale of 1:4,800 with a 5-foot contour interval. These maps, prepared for the Carson Valley Conservation District by Genge Aerial Surveys, Sacramento, Calif., permitted a location accuracy of 25 feet and a station altitude accuracy of ±1.5 feet. Sixty of the station altitudes were taken from preliminary U.S. Geological Survey topographic sheets (scale, 1:24,000), where altitudes of road intersections and hilltops were photogrammetrically determined within ±6 feet. Four of the station altitudes on the east side of the valley were interpolated from contours on U.S. Geological Survey topographic maps (scale, 1:62,500) where altitudes were determined to an accuracy of ±12 feet.

A Texas Instruments Model-III[1] gravity meter, with a scale constant of 0.0965 mGal (milliGal) per scale division, was used for the survey. This scale constant allowed readings to the nearest 0.01 mGal. A gravity base station used in this study, ACIC-2358-1, is located at the Douglas County Airport. The observed gravity of 979,606.24 mGal (Chapman's [1966] datum by Plouff, 1982), was used to tie in all stations. This base was read three times a day to provide corrections for tide and instrument drift.

The gravity readings were reduced to observed gravity and then converted to Bouguer anomalies using a computer program written by Plouff (1977). The program uses the International Gravity Formula of 1930 to calculate the anomaly, and applies corrections to the readings for altitude, latitude, earth curvature, and terrain from 1.42 to 103.6 miles from the station. A geographic grid interval of 1 minute was used for the digital terrain model. Terrain corrections from 0 to 1.42 miles were estimated by hand, using the Hayford-Bowie (1912, page 43) template. Hand terrain corrections were a maximum of 20 mGal along the crest of the Carson Range. The section titled "Gravity Data" lists the observed gravity and Bouguer gravity anomolies for the stations. The observed gravity data are also included in a regional gravity survey by Oliver and others (1982).

A computer program was then used to grid and contour the anomalies on a half-mile grid spacing. Nineteen readings were taken at stations on bedrock and Bouguer anomalies at these stations were contoured separately, by hand, to delineate the regional gradient of the gravity field. Lines of equal Bouguer gravity and the regional gradient are shown on plate 1. The regional gradient was then subtracted from the Bouguer anomolies to obtain residual anomalies, which should reflect the thickness of valley fill.

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[1] The use of brand names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

Densities of 2.67, 2.00, and 1.70 g/cm^3 (grams per cubic centimeter) were then assigned to bedrock, alluvium, and Tertiary sediments, respectively. A bedrock density of 2.67 g/cm^3 is the standard value used for gravity surveys (Zohdy and others, 1979, page 90) and is an average of density values obtained by Pease (1979) for metamorphic and granitic rocks in the Carson Range. A density of 2.00 g/cm^3 is used for valley-fill sediments by other authors in the Great Basin (Gimlett, 1967, page 18; Healey, 1970, page B52; Eaton and Watkins, 1970, page 545). The 1.70 g/cm^3 value for Tertiary sediments was obtained from Pease (1979, page 19), who measured the density of sediments in Carson Valley, and from Gimlett (1967, page 18), who measured the density of sediments of the Truckee Formation which, as discussed previously, are similar to the Tertiary sediments found in Carson Valley.

The densities and residual gravity anomalies on a half-mile grid spacing were used as input to a three-dimensional inversion program from Cordell (1970). Using this program, depth to bedrock was calculated on a half-mile grid throughout the valley. The program was run once using a density contrast of 0.67 g/m^3 and again with a density contrast of 0.97 g/m^3 to obtain estimates of depths to bedrock on the east side of the valley where the less dense Tertiary sediments probably compose the entire valley-fill section. Depths obtained were then hand-contoured to obtain a depth-to-bedrock map (plate 2).

ERRORS IN GRAVITY MEASUREMENTS AND METHODS

Measurement Errors

The accuracy of the Bouguer gravity anomalies is limited by accuracy of the station altitudes and their horizontal positioning, and by repeatability of the readings.

Repeat readings were taken at 40 stations. Fifteen percent agreed within 0.03 mGal of the original reading, 60 percent agreed within 0.10 mGal, 98 percent agreed within 0.25 mGal, and 100 percent were within 0.49 mGal. Most station altitudes are known to the nearest 3 feet, giving a 0.18-mGal error; positions are known to within 25 feet, giving a 0.01-mGal error. Thus, the total error of each anomaly can be approximately 0.20 mGal. The maximum repeat error of 0.49 mGal occuring within the 0.20-mGal error possible for each anomaly gives a total "worst case" error of 0.69 mGal in observed gravity.

As a check on the accuracy of the calculated depths, the "worst case" error of 0.69 mGal was added to and subtracted from the values of the residual anomalies along a profile through the deepest part of the valley. The resultant depths differed from those calculated using the actual residuals by an average of 107 feet and by a maximum of 180 feet out of a total depth of about 5,000 feet.

Interpretive Errors

Errors in the interpretation of gravity data can occur as a result of (1) the assumed density assignments, (2) the assumption that densities of alluvial fill and basement are uniform, and (3) the validity of regional gravity contouring.

The computer program used to calculate depth to bedrock does not take into account varying densities with depth that might be significant if the less dense Tertiary sediments underlie the valley-fill materials. A thick section of less dense material would, in effect, increase the density contrast between bedrock and valley-fill materials, resulting in shallower calculated depths to bedrock. On the other hand, densities of valley fill probably increase with depth of burial, causing a decrease in density contrast. These two factors would tend to compensate for each other on the west side of the valley, where a thick section of unconsolidated valley-fill probably overlies less dense Tertiary sediments. In either case, the change in calculated depth to bedrock is relatively small. If the entire section consisted of less dense Tertiary sediments on the west side of the valley, the difference in calculated depths to bedrock is less than 30 percent. Drillers' logs show that valley-fill materials are at least 1,000 feet thick on the west side of the valley. Thus, errors in calculated depths to bedrock due to unknown horizontal density variations are significantly less than 30 percent. Known lateral variations in density are corrected as described in the section, "Methods of Data Collection and Reduction."

Errors in contouring the regional gravity gradient are related to the uncertainty of large hand terrain corrections required for bedrock stations taken on mountain peaks and to estimation of the regional gradient over the center of the valley where no bedrock reading can be taken. Hand terrain correction errors may be as large as 2 mGal, and the error of estimating the regional gradient may approach 10 mGal. The latter could result in an error of 20 percent in calculated depth to bedrock. Estimating the regional gradient over large valleys is a problem inherent in all gravity studies. If calculated depths correspond closely to known depths, this error is probably small.

INTERPRETATION OF GRAVITY DATA

The distribution of Bouguer anomalies in Carson Valley follows the general trends shown by Erwin and Berg (1977) and Oliver and others (1982). Lines of equal depth to bedrock are shown on plate 2. The most conspicuous feature is a deep, elongate basin beneath the western half of Carson Valley. The depth of fill beneath Carson Valley exceeds 5,000 feet at a location about 2 miles southeast of Walleys Hot Springs. North of this basin, a bedrock high extends under Hobo Hot Springs to just south of Stewart, forming a separate basin beneath Jacks Valley up to 1,400 feet deep.

The steep gravity gradient on the east side of the basin implies offset of the basement. The offset extends from the west margin of Hot Springs Mountain to the Minden-Gardnerville area, with about 2,000 feet of relief. This north-trending scarp and the mapped zone of faulting on the east side of the valley imply that the Carson-Valley/Pine-Nut-Mountain block has not been tilted as a unit but is composed of at least two separate parts.

Depth to bedrock in the east half of the valley averages about 1,000 feet. A bedrock high extends south from Hot Springs Mountain about 3 miles. A basin with a maximum depth of 2,900 feet occurs east of this bedrock high. Bedrock beneath Fish Spring Flat appears to be relatively flat

and varies from 600 to 800 feet in depth. Two smaller basins occur between Fish Spring Flat and Gardnerville; the northern basin is 1,900 feet deep and the southern one 1,600 feet deep. These basins are separated from the main western basin by a ridge with 200 to 300 feet of relief.

The depth-to-bedrock configuration in plate 2 is consistent with well logs in the valley. Wells penetrating more than 20 feet of bedrock are plotted on plate 2 along with the depth where bedrock was first encountered. The depths correspond with calculated depths, and no wells were found to exceed calculated depths. The well penetrating bedrock at 750 feet was drilled after this interpretation was completed and tends to confirm the density contrasts assigned to valley-fill and bedrock materials.

SUMMARY

Data from 460 gravity stations in Carson Valley have been interpreted to obtain a map of approximate depth to bedrock, and the shape of the buried basin. The data show that the Carson-Valley/Pine-Nut-Mountain block has been tilted as two or more separate blocks. A structural scarp trends north-south near the center of the valley creating a deep, elongate basin under the west half of the valley and a relatively flat bench on the east.

Interpreted maximum depths show about 5,000 feet of fill on the west side of the basin and a thickness of over 2,000 feet for Tertiary sediments on the east side of the basin.

PRINCIPAL FACTS FOR GRAVITY STATIONS

Terrain correction: "Hand" indicates manual correction within a radius of 1.42 miles, at a bedrock density of 2.67 g/cm^3 (grams per cubic centimeter). "Comp" indicates computer correction between radii of 1.42 and of 103.6 miles, at a bedrock density of 2.67 g/cm^3. "Total" indicates manual plus computer terrain correction in milliGals.

Bouguer anomaly: Complete Bouguer anomaly at a bedrock density of 2.67 g/cm^3.

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction Hand	Comp	Total	Bouguer anomaly (mGal)
CUSCV 01	39 0.18	119 45.46	4700.0	979604.49	-45.78	0.01	1.55	1.56	-205.89
CUSCV 02	39 2.65	119 46.60	4654.0	979612.23	-46.00	0.01	1.98	1.99	-204.11
CUSCV 03	39 4.21	119 46.66	4648.0	979620.75	-40.34	0.23	2.10	2.33	-197.91
CUSCV 04	39 5.16	119 46.43	4743.0	979615.97	-37.59	0.50	1.91	2.41	-198.32
CUSCV 05	39 6.11	119 46.36	4911.0	979605.26	-33.90	0.07	1.72	1.79	-201.02
CUSCV 06	39 6.83	119 46.88	4836.0	979610.48	-36.79	1.36	2.22	3.58	-199.54
CUSCV 07	39 6.78	119 51.41	5938.0	979543.77	0.15	4.92	3.96	8.88	-194.99
CUSCV 08	39 6.73	119 50.50	5665.0	979559.94	-9.27	1.35	3.77	5.12	-198.84
CUSCV 09	39 7.06	119 46.00	4740.0	979617.43	-39.20	0.24	2.00	2.24	-200.01
CUSCV 10	39 7.01	119 45.28	4713.0	979621.41	-37.69	0.05	1.78	1.83	-197.98
CUSCV 11	39 1.13	119 50.05	4734.0	979614.10	-34.37	1.38	5.96	7.34	-189.87
CUSCV 12	39 0.28	119 50.58	4789.0	979606.78	-35.27	3.92	6.56	10.48	-189.51
CUSCV 13	38 59.78	119 47.23	4687.0	979599.58	-51.33	0.01	2.13	2.14	-210.42
CUSCV 14	38 59.80	119 48.10	4673.0	979601.08	-51.17	0.01	2.68	2.69	-209.23
CUSCV 15	38 59.81	119 48.70	4670.0	979603.06	-49.49	0.01	3.25	3.26	-206.88
CUSCV 16	38 59.90	119 49.41	4670.0	979607.36	-45.32	0.19	4.35	4.54	-201.43
CUSCV 17	39 0.15	119 50.13	4676.0	979612.03	-40.45	0.96	5.90	6.86	-194.45
CUSCV 18	38 58.76	119 49.98	4694.0	979602.39	-46.36	4.96	5.23	10.19	-197.64
CUSCV 19	38 57.85	119 50.28	4725.0	979599.10	-45.40	2.22	5.82	8.04	-199.89
CUSCV 20	38 57.45	119 50.31	4741.0	979599.10	-43.31	2.68	5.98	8.66	-197.72
CUSCV 21	38 56.93	119 50.43	4759.0	979593.16	-46.79	2.64	6.44	9.08	-201.40
CUSCV 22	38 55.91	119 50.36	4705.0	979588.97	-54.56	0.01	7.32	7.33	-209.07
CUSCV 23	38 55.05	119 49.98	4794.0	979585.10	-48.80	0.42	6.82	7.24	-206.45
CUSCV 24	38 58.25	119 47.90	4688.0	979592.61	-55.95	0.01	2.60	2.61	-214.61
CUSCV 25	38 58.26	119 49.01	4678.0	979595.05	-54.47	0.16	3.66	3.82	-211.57
CUSCV 26	38 58.26	119 49.83	4676.0	979598.86	-50.85	0.97	5.03	6.00	-205.70
CUSCV 27	38 57.36	119 46.70	4705.0	979593.90	-51.76	0.01	2.06	2.07	-211.53
CUSCV 28	38 56.21	119 46.70	4716.0	979573.18	-69.75	0.01	2.23	2.24	-211.37
CUSCV 29	38 55.95	119 46.70	4718.0	979592.94	-49.42	0.01	2.28	2.29	-209.42
CUSCV 30	38 54.86	119 46.70	4718.0	979591.43	-49.33	0.01	2.57	2.58	-209.04
CUSCV 31	38 54.63	119 46.70	4720.0	979590.86	-49.37	0.01	2.65	2.66	-209.07
CUSCV 32	38 54.61	119 47.80	4715.0	979589.79	-50.88	0.01	3.55	3.56	-209.51
CUSCV 33	38 54.63	119 48.80	4707.0	979591.18	-50.28	0.04	4.93	4.97	-207.22
CUSCV 34	38 54.18	119 46.70	4729.0	979589.51	-49.22	0.01	2.80	2.81	-209.08
CUSCV 35	39 5.93	119 47.03	4900.0	979603.68	-36.25	0.14	2.01	2.15	-202.63

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction Hand	Comp	Total	Bouguer anomaly (mGal)
CUSCV 36	39 5.60	119 47.07	4970.0	979599.99	-32.88	0.24	1.87	2.11	-201.69
CUSCV 37	39 5.35	119 47.60	4993.0	979605.07	-25.27	3.31	2.09	5.40	-191.57
CUSCV 38	39 5.77	119 47.52	4905.0	979602.91	-36.32	0.34	2.25	2.59	-202.42
CUSCV 39	39 5.57	119 48.17	5004.0	979597.88	-31.75	0.95	2.45	3.40	-200.43
CUSCV 40	39 5.33	119 48.83	5150.0	979590.21	-25.34	0.62	2.67	3.29	-199.12
CUSCV 41	39 5.40	119 49.53	5173.0	979588.58	-24.91	1.60	3.39	4.99	-197.79
CUSCV 42	39 4.93	119 49.08	5053.0	979594.82	-29.26	0.38	3.12	3.50	-199.52
CUSCV 43	39 4.43	119 49.22	4954.0	979600.23	-32.42	0.34	3.64	3.98	-198.81
CUSCV 44	39 4.01	119 49.20	4960.0	979601.54	-29.93	0.29	3.67	3.96	-196.54
CUSCV 45	39 3.47	119 49.23	4953.0	979602.96	-28.37	0.55	3.87	4.42	-194.29
CUSCV 46	39 2.65	119 49.52	4810.0	979610.96	-32.61	2.24	4.90	7.14	-190.90
CUSCV 47	39 2.17	119 49.77	4753.0	979613.09	-35.13	3.29	5.57	8.86	-189.76
CUSCV 48	39 0.07	119 46.15	4694.0	979601.85	-48.83	0.01	1.71	1.72	-208.57
CUSCV 49	39 0.07	119 46.72	4684.0	979600.79	-50.83	0.01	1.91	1.92	-210.03
CUSCV 50	38 59.80	119 46.72	4684.0	979599.45	-51.77	0.01	1.91	1.92	-210.97
CUSCV 51	39 0.63	119 50.48	4771.0	979610.41	-33.85	1.99	6.63	8.62	-189.33
CUSCV 52	39 1.48	119 50.12	4774.0	979612.52	-32.71	2.86	6.18	9.04	-187.83
CUSCV 53	39 0.43	119 50.03	4677.0	979613.24	-39.56	0.47	5.79	6.26	-194.19
CUSCV 54	39 0.18	119 48.90	4669.0	979607.21	-45.98	0.01	3.52	3.53	-203.06
CUSCV 55	38 59.78	119 50.43	4727.0	979607.21	-39.94	4.53	6.15	10.68	-191.85
CUSCV 56	38 59.43	119 50.17	4698.0	979606.07	-33.89	7.09	5.26	12.35	-186.57
CUSCV 57	38 59.13	119 49.93	4685.0	979604.81	-45.33	3.08	5.18	8.26	-198.23
CUSCV 58	38 56.48	119 50.62	4762.0	979586.86	-52.15	3.35	7.26	10.61	-205.33
CUSCV 59	38 55.50	119 50.25	4794.0	979587.89	-46.67	0.66	7.03	7.69	-203.87
CUSCV 60	38 55.50	119 50.72	4921.0	979577.93	-44.69	2.40	7.96	10.36	-203.57
CUSCV 61	38 54.63	119 49.85	4810.0	979583.31	-48.46	0.61	7.04	7.65	-206.25
CUSCV 62	38 54.10	119 49.53	4825.0	979582.04	-47.55	0.57	7.06	7.63	-205.86
CUSCV 63	38 53.87	119 49.30	4805.0	979582.94	-48.19	0.49	6.88	7.37	-206.09
CUSCV 64	38 53.55	119 49.10	4800.0	979582.52	-48.61	0.59	6.94	7.53	-206.18
CUSCV 65	38 53.15	119 49.08	4790.0	979580.81	-50.67	1.26	7.65	8.91	-206.51
CUSCV 66	38 52.75	119 49.00	4775.0	979578.57	-53.73	2.45	8.27	10.72	-207.25
CUSCV 67	38 52.92	119 48.43	4724.0	979583.83	-53.52	0.32	6.40	6.72	-209.29
CUSCV 68	38 53.02	119 48.07	4732.0	979585.17	-51.57	0.03	5.31	5.34	-209.00
CUSCV 69	38 52.33	119 48.58	4806.0	979576.94	-51.83	1.45	7.53	8.98	-208.16
CUSCV 70	38 52.03	119 48.06	4837.0	979580.12	-45.30	0.32	6.15	6.47	-205.19
CUSCV 71	38 52.02	119 47.52	4791.0	979584.59	-45.14	0.09	5.02	5.11	-204.82
CUSCV 72	38 51.57	119 47.28	4912.0	979584.74	-32.95	0.08	4.56	4.64	-197.24
CUSCV 73	38 52.02	119 47.05	4776.0	979586.98	-44.16	0.02	4.24	4.26	-204.17
CUSCV 74	38 51.98	119 46.63	4790.0	979587.35	-42.41	0.01	3.66	3.67	-203.50
CUSCV 75	38 52.45	119 46.63	4766.0	979588.73	-43.98	0.01	3.46	3.47	-204.44

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction Hand	Comp	Total	Bouguer anomaly (mGal)
CUSCV 76	38 52.90	119 46.68	4750.0	979588.68	-46.19	0.01	3.31	3.32	-206.26
CUSCV 77	38 53.33	119 46.70	4745.0	979588.29	-47.68	0.01	3.13	3.14	-207.76
CUSCV 78	38 53.72	119 46.70	4736.0	979588.78	-48.61	0.01	2.97	2.98	-208.54
CUSCV 79	38 54.62	119 47.23	4718.0	979589.48	-50.93	0.01	3.03	3.04	-210.17
CUSCV 80	38 54.62	119 48.12	4709.0	979590.50	-50.75	0.01	3.92	3.93	-208.81
CUSCV 81	38 54.62	119 49.48	4734.0	979588.89	-50.01	0.23	6.34	6.57	-206.28
CUSCV 82	38 55.85	119 49.75	4720.0	979593.85	-48.18	0.09	5.65	5.74	-204.80
CUSCV 83	38 55.95	119 49.33	4699.0	979595.13	-49.02	0.01	4.79	4.80	-205.85
CUSCV 84	38 55.93	119 48.72	4699.0	979593.81	-50.31	0.01	3.88	3.89	-208.06
CUSCV 85	38 55.93	119 48.15	4700.0	979592.75	-51.27	0.01	3.26	3.27	-209.68
CUSCV 86	38 55.77	119 48.13	4705.0	979592.76	-50.56	0.01	3.31	3.32	-209.09
CUSCV 87	38 55.93	119 47.55	4706.0	979592.14	-51.32	0.01	2.79	2.80	-210.40
CUSCV 88	38 55.93	119 47.05	4714.0	979592.20	-50.51	0.01	2.48	2.49	-210.17
CUSCV 89	38 55.95	119 46.17	4728.0	979595.63	-45.79	0.01	2.07	2.08	-206.34
CUSCV 90	38 55.50	119 46.17	4736.0	979594.91	-45.10	0.01	2.15	2.16	-205.85
CUSCV 91	38 55.07	119 46.15	4733.0	979594.07	-45.59	0.01	2.24	2.25	-206.14
CUSCV 92	38 55.50	119 45.67	4792.0	979598.09	-36.66	0.01	1.92	1.93	-199.55
CUSCV 93	38 55.52	119 45.17	4745.0	979600.09	-39.10	0.01	1.84	1.85	-200.46
CUSCV 94	38 55.50	119 44.75	4766.0	979601.37	-35.82	0.01	1.74	1.75	-198.00
CUSCV 95	38 55.08	119 44.75	4772.0	979602.14	-33.87	0.10	1.79	1.89	-196.11
CUSCV 96	38 54.63	119 45.58	4756.0	979596.79	-40.06	0.01	2.11	2.12	-201.53
CUSCV 97	38 54.63	119 46.12	4730.0	979593.78	-45.51	0.01	2.34	2.35	-205.86
CUSCV 98	38 55.23	119 46.73	4721.0	979591.95	-49.07	0.01	2.47	2.48	-208.98
CUSCV 99	38 56.37	119 46.75	4713.0	979593.18	-50.27	0.01	2.23	2.24	-210.14
CUSCV100	38 56.78	119 46.75	4716.0	979593.22	-50.55	0.01	2.15	2.16	-210.61
CUSCV101	38 58.98	119 46.77	4690.0	979596.35	-53.10	0.01	1.95	1.96	-212.47
CUSCV102	38 58.55	119 46.77	4685.0	979595.18	-54.11	0.01	2.00	2.01	-213.26
CUSCV103	38 58.23	119 46.75	4699.0	979594.65	-52.85	0.01	1.99	2.00	-212.49
CUSCV104	38 58.23	119 47.32	4690.0	979593.10	-55.25	0.01	2.26	2.27	-214.31
CUSCV105	38 58.27	119 48.50	4681.0	979593.23	-56.02	0.01	3.08	3.09	-213.95
CUSCV106	38 58.27	119 49.52	4676.0	979597.26	-52.46	0.16	4.45	4.61	-208.70
CUSCV107	38 58.27	119 50.30	4697.0	979601.74	-46.01	2.87	5.90	8.77	-198.81
CUSCV108	39 5.01	119 48.17	4943.0	979602.02	-32.52	0.49	2.48	2.97	-199.54
CUSCV109	39 4.82	119 47.63	5096.0	979595.88	-24.00	0.77	1.94	2.71	-196.52
CUSCV110	39 4.62	119 48.10	5212.0	979587.59	-21.09	0.54	2.12	2.66	-197.63
CUSCV111	39 4.03	119 48.33	5247.0	979585.55	-18.97	0.89	2.27	3.16	-196.20
CUSCV112	39 4.27	119 48.55	5314.0	979581.27	-17.31	0.70	2.36	3.06	-196.94
CUSCV113	39 4.65	119 48.72	5210.0	979586.07	-22.84	0.36	2.52	2.88	-199.09
CUSCV114	39 4.96	119 48.62	5245.0	979583.62	-22.46	0.38	2.39	2.77	-200.01
CUSCV115	39 6.42	119 47.25	4836.0	979607.05	-39.62	0.62	2.38	3.00	-202.95
CUSCV116	39 0.30	119 46.70	4680.0	979601.81	-50.52	0.01	1.91	1.92	-209.59
CUSCV117	39 0.72	119 46.72	4679.0	979603.67	-49.37	0.01	1.91	1.92	-208.40
CUSCV118	39 1.17	119 46.72	4672.0	979605.69	-48.67	0.01	1.93	1.94	-207.44

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV119	39 1.60	119 46.73	4666.0	979607.40	-48.16	0.01	1.96	1.97	-206.69
CUSCV120	39 1.60	119 46.18	4676.0	979607.38	-47.24	0.01	1.75	1.76	-206.32
CUSCV121	39 1.60	119 45.62	4679.0	979608.55	-45.79	0.01	1.62	1.63	-205.11
CUSCV122	39 1.60	119 45.06	4686.0	979609.92	-43.76	0.01	1.52	1.53	-203.42
CUSCV123	39 1.60	119 44.48	4707.0	979610.80	-40.90	0.01	1.43	1.44	-201.37
CUSCV124	39 1.60	119 43.93	4746.0	979611.44	-36.60	0.01	1.37	1.38	-198.47
CUSCV125	39 1.62	119 43.37	4810.0	979609.25	-32.80	0.01	1.28	1.29	-196.95
CUSCV126	39 1.60	119 42.82	4877.0	979609.30	-26.42	0.02	1.22	1.24	-192.92
CUSCV127	39 2.05	119 42.80	4833.0	979614.66	-25.86	0.15	1.30	1.45	-190.64
CUSCV128	39 2.43	119 42.82	4856.0	979614.56	-24.36	0.15	1.29	1.44	-189.93
CUSCV129	39 2.92	119 42.83	4910.0	979613.03	-21.53	0.72	1.23	1.95	-188.45
CUSCV130	39 2.03	119 43.38	4776.0	979613.61	-32.24	0.10	1.36	1.46	-195.06
CUSCV131	39 2.48	119 43.38	4793.0	979616.03	-28.88	0.16	1.36	1.52	-192.23
CUSCV132	39 2.92	119 43.38	4813.0	979617.17	-26.51	0.57	1.33	1.90	-190.16
CUSCV133	39 2.47	119 43.93	4726.0	979616.78	-34.42	0.06	1.44	1.50	-195.48
CUSCV134	39 2.03	119 43.95	4723.0	979614.42	-36.41	0.01	1.43	1.44	-197.44
CUSCV135	39 2.05	119 44.48	4698.0	979612.52	-40.69	0.01	1.48	1.49	-200.81
CUSCV136	38 59.53	119 45.63	4701.0	979603.37	-45.85	0.01	1.60	1.61	-205.95
CUSCV137	39 0.52	119 45.60	4691.0	979606.00	-45.62	0.01	1.58	1.59	-205.39
CUSCV138	39 0.95	119 45.60	4684.0	979606.91	-46.00	0.01	1.60	1.61	-205.52
CUSCV139	39 1.38	119 45.60	4681.0	979608.03	-45.79	0.01	1.61	1.62	-205.20
CUSCV140	39 2.05	119 45.62	4671.0	979610.06	-45.69	0.01	1.64	1.65	-204.72
CUSCV141	39 2.48	119 45.62	4665.0	979612.04	-44.91	0.01	1.67	1.68	-203.70
CUSCV142	39 2.93	119 45.60	4657.0	979613.89	-44.47	0.01	1.71	1.72	-202.95
CUSCV143	39 3.35	119 45.60	4655.0	979616.12	-43.05	0.01	1.74	1.75	-201.43
CUSCV144	39 2.47	119 46.17	4660.0	979611.60	-45.80	0.01	1.81	1.82	-204.28
CUSCV145	38 57.73	119 46.73	4701.0	979594.26	-52.32	0.01	2.03	2.04	-211.99
CUSCV146	38 59.52	119 46.70	4688.0	979597.80	-52.63	0.01	1.90	1.91	-211.98
CUSCV147	39 2.03	119 46.72	4666.0	979608.95	-47.24	0.01	1.97	1.98	-205.76
CUSCV148	39 2.47	119 46.72	4656.0	979611.40	-46.38	0.01	2.01	2.02	-204.52
CUSCV149	39 2.48	119 45.05	4674.0	979612.88	-43.22	0.01	1.58	1.59	-202.41
CUSCV150	39 2.47	119 44.47	4693.0	979614.70	-39.60	0.02	1.51	1.53	-199.50
CUSCV151	39 2.92	119 44.48	4696.0	979617.00	-37.68	0.16	1.52	1.68	-197.53
CUSCV152	39 2.92	119 45.05	4671.0	979614.59	-42.44	0.01	1.61	1.62	-201.50
CUSCV153	39 3.35	119 44.47	4705.0	979618.51	-35.96	0.44	1.52	1.96	-195.84
CUSCV154	39 2.87	119 43.93	4734.0	979619.61	-31.42	0.31	1.44	1.75	-192.51
CUSCV155	39 1.62	119 42.25	4941.0	979612.55	-17.19	0.35	1.18	1.53	-185.59
CUSCV156	39 1.03	119 42.73	4851.0	979609.21	-28.12	0.02	1.22	1.24	-193.72
CUSCV157	39 1.05	119 42.27	4949.0	979610.51	-17.64	0.01	1.15	1.16	-186.68
CUSCV158	39 0.73	119 42.50	4862.0	979609.76	-26.09	0.09	1.20	1.29	-192.02
CUSCV159	39 0.75	119 41.97	4946.0	979609.86	-18.13	0.09	1.14	1.23	-186.99
CUSCV160	39 0.32	119 42.15	4874.0	979609.57	-24.55	0.03	1.19	1.22	-190.96

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction Hand	Comp	Total	Bouguer anomaly (mGal)
CUSCV161	39 0.07	119 41.72	4912.0	979607.65	-22.53	0.03	1.16	1.19	-190.27
CUSCV162	38 59.67	119 41.98	4879.0	979605.51	-27.19	0.01	1.18	1.19	-193.80
CUSCV163	38 59.75	119 42.50	4837.0	979607.24	-29.52	0.01	1.21	1.22	-194.67
CUSCV164	38 59.79	119 43.13	4795.0	979610.05	-30.72	0.01	1.26	1.27	-194.38
CUSCV165	39 0.06	119 43.42	4793.0	979609.10	-32.25	0.01	1.27	1.28	-195.84
CUSCV166	39 0.70	119 43.53	4779.0	979610.33	-33.28	0.01	1.29	1.30	-196.36
CUSCV167	39 1.05	119 43.65	4779.0	979609.75	-34.38	0.01	1.29	1.30	-197.45
CUSCV168	39 1.17	119 44.37	4726.0	979608.45	-40.83	0.01	1.39	1.40	-202.00
CUSCV169	39 0.87	119 44.92	4706.0	979608.57	-42.15	0.01	1.46	1.47	-202.56
CUSCV170	39 1.33	119 45.02	4693.0	979608.54	-44.08	0.01	1.50	1.51	-204.00
CUSCV171	39 0.52	119 44.48	4731.0	979609.34	-38.52	0.01	1.38	1.39	-199.86
CUSCV172	39 0.85	119 44.02	4744.0	979608.70	-38.42	0.01	1.35	1.36	-200.25
CUSCV173	39 0.02	119 44.47	4724.0	979608.44	-39.34	0.01	1.40	1.41	-200.43
CUSCV174	38 59.65	119 44.48	4723.0	979607.26	-40.07	0.01	1.41	1.42	-201.11
CUSCV175	39 2.98	119 46.72	4650.0	979614.76	-44.33	0.01	2.05	2.06	-202.23
CUSCV176	39 3.25	119 46.73	4650.0	979616.74	-42.75	0.03	2.07	2.10	-200.61
CUSCV177	39 3.75	119 46.73	4650.0	979618.73	-41.49	0.10	2.09	2.19	-199.26
CUSCV178	39 4.73	119 46.63	4685.0	979620.24	-38.14	0.18	2.05	2.23	-197.06
CUSCV179	39 5.48	119 46.43	4795.0	979612.93	-36.21	0.01	1.85	1.86	-199.28
CUSCV180	39 5.47	119 47.07	4865.0	979607.11	-35.44	0.21	2.02	2.23	-200.53
CUSCV181	39 4.52	119 47.13	4816.0	979612.99	-32.76	0.51	2.02	2.53	-195.88
CUSCV182	39 5.12	119 47.25	4795.0	979612.66	-35.95	0.71	2.18	2.89	-197.99
CUSCV183	38 57.72	119 47.22	4694.0	979592.46	-54.76	0.01	2.26	2.27	-213.96
CUSCV184	38 57.28	119 46.07	4717.0	979597.53	-46.88	0.01	1.85	1.86	-207.27
CUSCV185	38 57.70	119 45.92	4713.0	979598.55	-46.85	0.01	1.78	1.79	-207.18
CUSCV186	38 56.57	119 45.95	4730.0	979601.19	-40.96	0.01	1.89	1.90	-201.75
CUSCV187	38 56.55	119 45.07	4743.0	979602.22	-38.67	0.01	1.69	1.70	-200.12
CUSCV188	38 56.38	119 44.48	4755.0	979603.36	-36.16	0.06	1.60	1.66	-198.05
CUSCV189	38 56.38	119 43.92	4776.0	979602.66	-34.88	0.01	1.51	1.52	-197.64
CUSCV190	38 56.38	119 43.37	4795.0	979601.33	-34.43	0.05	1.45	1.50	-197.86
CUSCV191	38 56.38	119 42.90	4826.0	979599.97	-32.87	0.06	1.38	1.44	-197.42
CUSCV192	38 56.96	119 42.48	4857.0	979599.55	-31.23	0.01	1.28	1.29	-196.99
CUSCV193	38 56.68	119 42.23	4874.0	979598.56	-30.21	0.11	1.28	1.39	-196.45
CUSCV194	38 56.37	119 41.95	4896.0	979597.55	-28.70	0.05	1.28	1.33	-195.75
CUSCV195	38 56.80	119 41.95	4883.0	979599.31	-28.79	0.07	1.26	1.33	-195.40
CUSCV196	38 57.23	119 41.95	4905.0	979597.37	-29.30	0.01	1.22	1.23	-196.76
CUSCV197	38 57.65	119 42.03	4889.0	979597.23	-31.56	0.01	1.21	1.22	-198.48
CUSCV198	38 57.57	119 41.43	4933.0	979595.60	-28.93	0.11	1.18	1.29	-197.29
CUSCV199	38 58.02	119 41.67	4897.0	979596.33	-32.25	0.03	1.19	1.22	-199.45
CUSCV200	38 58.43	119 41.67	4898.0	979596.40	-32.69	0.02	1.18	1.20	-199.94
CUSCV201	38 58.47	119 42.22	4864.0	979597.52	-34.82	0.02	1.20	1.22	-200.89
CUSCV202	38 58.07	119 42.23	4863.0	979597.28	-34.57	0.02	1.22	1.24	-200.58

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV203	38 58.93	119 42.23	4858.0	979599.88	-33.70	0.01	1.19	1.20	-199.58
CUSCV204	38 59.30	119 42.23	4855.0	979603.45	-30.96	0.01	1.19	1.20	-196.74
CUSCV205	38 55.95	119 44.52	4765.0	979601.96	-35.98	0.01	1.65	1.66	-198.23
CUSCV206	38 55.95	119 44.92	4755.0	979601.30	-37.58	0.04	1.74	1.78	-199.36
CUSCV207	38 55.95	119 43.92	4775.0	979601.64	-35.36	0.04	1.56	1.60	-198.00
CUSCV208	38 55.48	119 43.55	4791.0	979599.71	-35.10	0.04	1.56	1.60	-198.29
CUSCV209	38 55.08	119 43.07	4816.0	979597.46	-34.41	0.01	1.54	1.55	-198.51
CUSCV210	38 54.63	119 43.38	4852.0	979596.55	-31.28	0.03	1.57	1.60	-196.55
CUSCV211	38 54.65	119 43.90	4842.0	979597.79	-31.01	0.01	1.64	1.65	-195.89
CUSCV212	38 54.63	119 44.47	4809.0	979600.19	-31.68	0.01	1.76	1.77	-195.31
CUSCV213	38 54.23	119 44.47	4826.0	979598.89	-30.79	0.04	1.80	1.84	-194.94
CUSCV214	38 53.77	119 44.47	4845.0	979597.65	-29.57	0.05	1.86	1.91	-194.30
CUSCV215	38 54.23	119 45.12	4797.0	979597.09	-35.32	0.01	2.00	2.01	-198.31
CUSCV216	38 54.25	119 43.85	4864.0	979597.36	-28.78	0.02	1.67	1.69	-194.38
CUSCV217	38 54.27	119 43.37	4866.0	979596.29	-29.69	0.01	1.60	1.61	-195.44
CUSCV218	38 53.67	119 43.37	4880.0	979595.77	-28.01	0.02	1.67	1.69	-194.16
CUSCV219	38 53.80	119 43.87	4877.0	979597.13	-27.13	0.01	1.72	1.73	-193.14
CUSCV220	38 53.77	119 42.82	4893.0	979594.97	-27.74	0.04	1.60	1.64	-194.39
CUSCV221	38 54.28	119 42.83	4837.0	979598.24	-30.48	0.04	1.59	1.63	-195.21
CUSCV222	38 53.78	119 45.07	4804.0	979596.29	-34.80	0.01	2.07	2.08	-197.95
CUSCV223	38 53.78	119 45.82	4766.0	979593.47	-41.19	0.01	2.39	2.40	-202.72
CUSCV224	38 53.35	119 44.45	4852.0	979596.26	-29.69	0.01	1.94	1.95	-194.61
CUSCV225	38 52.88	119 44.45	4854.0	979596.05	-29.02	0.06	2.02	2.08	-193.88
CUSCV226	38 52.43	119 44.43	4868.0	979595.05	-28.04	0.04	2.09	2.13	-193.33
CUSCV227	38 52.88	119 43.32	4918.0	979594.64	-24.41	0.13	1.74	1.87	-191.68
CUSCV228	38 52.98	119 42.80	4949.0	979594.86	-21.42	0.16	1.64	1.80	-189.82
CUSCV229	38 53.08	119 42.12	4966.0	979591.37	-22.96	0.18	1.59	1.77	-191.97
CUSCV230	38 52.95	119 43.85	4890.0	979596.52	-25.27	0.03	1.83	1.86	-191.58
CUSCV231	38 53.35	119 43.37	4895.0	979595.05	-26.85	0.06	1.70	1.76	-193.44
CUSCV232	38 53.32	119 43.87	4882.0	979596.19	-26.89	0.05	1.78	1.83	-192.97
CUSCV233	38 53.37	119 42.58	4926.0	979593.86	-25.16	0.04	1.61	1.65	-192.93
CUSCV234	38 52.02	119 46.06	4787.0	979590.75	-39.35	0.01	3.12	3.13	-200.87
CUSCV235	38 52.02	119 45.53	4790.0	979594.55	-35.27	0.01	2.77	2.78	-197.24
CUSCV236	38 52.23	119 45.05	4825.0	979595.37	-31.47	0.01	2.42	2.43	-194.99
CUSCV237	38 51.55	119 45.23	4844.0	979594.06	-29.99	0.01	2.64	2.65	-193.94
CUSCV238	38 51.57	119 46.62	4800.0	979587.10	-41.12	0.01	3.85	3.86	-202.36
CUSCV239	38 51.20	119 46.67	4822.0	979585.61	-40.00	0.02	4.07	4.09	-201.75
CUSCV240	38 55.87	119 43.05	4817.0	979599.00	-33.94	0.01	1.45	1.46	-198.16
CUSCV241	38 55.43	119 42.87	4822.0	979598.09	-33.73	0.01	1.48	1.49	-198.09
CUSCV242	38 55.95	119 42.42	4856.0	979598.02	-31.37	0.05	1.36	1.41	-196.97
CUSCV243	38 55.28	119 42.45	4862.0	979596.35	-31.49	0.07	1.43	1.50	-197.21
CUSCV244	38 56.32	119 41.43	4936.0	979595.21	-27.20	0.06	1.22	1.28	-195.68
CUSCV245	38 55.90	119 40.57	4986.0	979591.15	-25.95	0.26	1.26	1.52	-195.89

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV246	38 55.58	119 41.02	4958.0	979591.56	-27.70	0.08	1.30	1.38	-196.83
CUSCV247	38 55.88	119 41.50	4940.0	979592.93	-28.46	0.25	1.28	1.53	-196.82
CUSCV248	38 55.90	119 41.95	4912.0	979594.17	-29.88	0.01	1.30	1.31	-197.50
CUSCV249	38 55.27	119 41.67	4898.0	979593.62	-30.82	0.01	1.38	1.39	-197.89
CUSCV250	38 54.83	119 41.48	4945.0	979589.57	-29.81	0.07	1.37	1.44	-198.43
CUSCV251	38 54.85	119 40.67	5038.0	979585.60	-25.07	0.09	1.32	1.41	-196.90
CUSCV252	38 54.67	119 41.08	4980.0	979588.88	-26.97	0.05	1.37	1.42	-196.81
CUSCV253	38 54.45	119 40.58	5059.0	979584.41	-23.70	0.04	1.35	1.39	-196.27
CUSCV254	38 54.35	119 41.17	5003.0	979587.21	-26.01	0.05	1.39	1.44	-196.62
CUSCV255	38 54.38	119 41.67	4945.0	979589.06	-29.66	0.06	1.44	1.50	-198.22
CUSCV256	38 53.90	119 40.78	4973.0	979589.66	-25.72	0.16	1.52	1.68	-195.06
CUSCV257	38 53.55	119 40.78	4981.0	979589.46	-24.65	0.04	1.57	1.61	-194.33
CUSCV258	38 53.10	119 40.78	4983.0	979591.13	-22.14	0.19	1.65	1.84	-191.66
CUSCV259	38 53.12	119 41.42	4949.0	979593.54	-22.95	0.05	1.64	1.69	-191.46
CUSCV260	38 53.55	119 41.40	4936.0	979592.53	-25.81	0.02	1.59	1.61	-193.96
CUSCV261	38 58.57	119 46.18	4703.0	979597.58	-50.04	0.01	1.79	1.80	-210.02
CUSCV262	38 58.55	119 45.58	4713.0	979600.74	-45.91	0.01	1.63	1.64	-206.39
CUSCV263	38 58.12	119 45.58	4716.0	979600.64	-45.10	0.01	1.67	1.68	-205.64
CUSCV264	38 58.12	119 46.18	4706.0	979597.25	-49.43	0.01	1.82	1.83	-209.48
CUSCV265	38 58.12	119 45.05	4726.0	979603.57	-41.23	0.01	1.56	1.57	-202.22
CUSCV266	38 58.13	119 44.50	4746.0	979604.97	-37.96	0.06	1.46	1.52	-199.69
CUSCV267	38 57.68	119 44.50	4745.0	979605.14	-37.23	0.03	1.50	1.53	-198.92
CUSCV268	38 56.82	119 44.48	4749.0	979605.09	-35.64	0.02	1.56	1.58	-197.41
CUSCV269	38 57.12	119 44.87	4737.0	979604.46	-37.84	0.01	1.60	1.61	-199.16
CUSCV270	38 57.68	119 45.05	4728.0	979603.35	-40.62	0.01	1.60	1.61	-201.64
CUSCV271	38 57.68	119 45.57	4717.0	979600.74	-44.26	0.01	1.70	1.71	-204.80
CUSCV272	38 57.48	119 43.93	4766.0	979605.92	-34.18	0.01	1.43	1.44	-196.68
CUSCV273	38 56.82	119 43.63	4780.0	979603.64	-34.17	0.01	1.44	1.45	-197.14
CUSCV274	38 57.27	119 43.35	4790.0	979604.02	-33.51	0.01	1.36	1.37	-196.90
CUSCV275	38 57.68	119 43.37	4803.0	979602.68	-34.24	0.02	1.32	1.34	-198.09
CUSCV276	38 58.07	119 42.83	4832.0	979599.03	-35.73	0.01	1.26	1.27	-200.66
CUSCV277	38 57.97	119 43.92	4779.0	979604.32	-35.28	0.03	1.37	1.40	-198.25
CUSCV278	38 58.57	119 43.92	4767.0	979604.60	-37.01	0.01	1.36	1.37	-199.61
CUSCV279	38 58.57	119 43.37	4794.0	979602.27	-36.80	0.01	1.29	1.30	-200.39
CUSCV280	38 58.57	119 42.87	4824.0	979600.09	-36.16	0.02	1.25	1.27	-200.81
CUSCV281	38 57.45	119 42.68	4849.0	979601.86	-30.39	0.10	1.26	1.36	-195.80
CUSCV282	38 59.43	119 43.13	4789.0	979607.82	-32.98	0.01	1.27	1.28	-196.43
CUSCV283	38 59.43	119 43.68	4754.0	979607.47	-36.62	0.01	1.33	1.34	-198.81
CUSCV284	38 59.97	119 43.85	4756.0	979608.64	-36.06	0.01	1.32	1.33	-198.32
CUSCV285	38 58.57	119 44.47	4741.0	979606.61	-37.44	0.03	1.43	1.46	-199.06
CUSCV286	38 58.57	119 45.03	4725.0	979604.20	-41.36	0.01	1.52	1.53	-202.35
CUSCV287	38 58.98	119 45.03	4719.0	979605.27	-41.45	0.01	1.50	1.51	-202.26
CUSCV288	38 59.43	119 45.03	4711.0	979606.40	-41.74	0.01	1.49	1.50	-202.28

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV289	38 59.02	119 45.57	4710.0	979601.27	-46.36	0.01	1.60	1.61	-206.76
CUSCV290	39 3.78	119 45.52	4649.0	979617.95	-42.41	0.01	1.76	1.77	-200.57
CUSCV291	39 4.22	119 45.43	4646.0	979618.91	-42.38	0.01	1.77	1.78	-200.42
CUSCV292	39 4.65	119 45.33	4641.0	979619.09	-43.30	0.01	1.79	1.80	-201.16
CUSCV293	39 5.03	119 45.25	4639.0	979619.71	-43.43	0.01	1.78	1.79	-201.22
CUSCV294	39 3.92	119 44.70	4653.0	979620.95	-39.24	0.46	1.66	2.12	-197.19
CUSCV295	39 4.37	119 44.67	4644.0	979622.40	-39.30	0.42	1.74	2.16	-196.89
CUSCV296	39 5.10	119 44.48	4636.0	979623.31	-40.22	0.26	1.70	1.96	-197.73
CUSCV297	39 3.75	119 45.98	4650.0	979617.58	-42.64	0.01	1.84	1.85	-200.75
CUSCV298	39 4.23	119 45.83	4646.0	979618.64	-42.67	0.01	1.85	1.86	-200.63
CUSCV299	39 4.50	119 46.28	4654.0	979620.43	-40.52	0.05	1.97	2.02	-198.60
CUSCV300	39 5.03	119 46.02	4656.0	979620.53	-41.01	0.13	1.93	2.06	-199.12
CUSCV301	39 5.75	119 45.55	4670.0	979620.39	-40.90	0.53	1.81	2.34	-199.20
CUSCV302	39 6.20	119 45.62	4719.0	979619.29	-38.05	0.47	1.78	2.25	-198.13
CUSCV303	39 6.15	119 44.85	4657.0	979622.00	-41.10	0.04	1.73	1.77	-199.53
CUSCV304	39 6.27	119 43.97	4807.0	979616.03	-33.14	1.78	1.41	3.19	-195.29
CUSCV305	38 52.80	119 41.85	4906.0	979597.53	-22.53	0.26	1.74	2.00	-189.26
CUSCV306	38 52.63	119 41.08	5026.0	979590.26	-18.27	0.36	1.64	2.00	-189.10
CUSCV307	38 53.85	119 41.37	4954.0	979590.17	-26.92	0.03	1.52	1.55	-195.75
CUSCV308	38 53.75	119 42.01	4871.0	979595.66	-29.09	0.02	1.62	1.64	-194.98
CUSCV309	38 54.30	119 42.30	4845.0	979596.89	-31.11	0.03	1.57	1.60	-196.15
CUSCV310	38 54.70	119 42.62	4840.0	979598.03	-31.03	0.10	1.53	1.63	-195.87
CUSCV311	38 54.85	119 42.10	4870.0	979594.36	-32.10	0.04	1.47	1.51	-198.09
CUSCV312	39 0.97	119 47.93	4665.0	979608.58	-46.14	0.01	2.64	2.65	-203.97
CUSCV313	39 0.23	119 48.13	4668.0	979604.37	-48.98	0.01	2.72	2.73	-206.83
CUSCV314	39 2.08	119 48.88	4660.0	979614.48	-42.35	0.09	4.05	4.14	-198.51
CUSCV315	39 2.46	119 48.31	4658.0	979615.65	-41.92	0.03	3.26	3.29	-198.87
CUSCV317	39 1.81	119 48.35	4660.0	979612.21	-44.22	0.01	3.20	3.21	-201.31
CUSCV318	39 1.53	119 48.90	4863.0	979613.46	-23.48	0.01	3.36	3.37	-187.36
CUSCV319	39 1.15	119 48.91	4663.0	979612.91	-42.27	0.01	3.79	3.80	-198.87
CUSCV320	39 1.36	119 47.78	4661.0	979609.78	-45.89	0.01	2.55	2.56	-203.67
CUSCV321	39 0.71	119 48.91	4666.0	979610.94	-43.31	0.01	3.65	3.66	-200.15
CUSCV322	39 0.85	119 49.63	4666.0	979615.17	-39.28	0.04	5.07	5.11	-194.68
CUSCV323	39 0.71	119 47.21	4672.0	979604.48	-49.20	0.02	2.16	2.18	-207.74
CUSCV324	39 5.60	119 44.46	4632.0	979623.69	-40.95	0.33	1.74	2.07	-198.22
CUSCV325	39 3.58	119 47.56	4679.0	979619.75	-37.50	0.37	2.51	2.88	-195.57
CUSCV326	39 3.43	119 48.16	4708.0	979617.92	-36.38	0.22	2.98	3.20	-195.13
CUSCV327	39 3.13	119 47.68	4667.0	979618.38	-39.33	0.09	2.62	2.71	-197.17
CUSCV328	39 2.95	119 47.98	4654.0	979616.60	-42.07	0.01	2.92	2.93	-199.24
CUSCV329	38 58.98	119 47.21	4686.0	979595.54	-54.28	0.01	2.14	2.15	-213.33
CUSCV330	38 58.96	119 47.68	4677.0	979596.47	-54.17	0.05	2.42	2.47	-212.59
CUSCV331	38 58.63	119 48.31	4681.0	979594.46	-55.32	0.01	2.89	2.90	-213.44
CUSCV332	38 59.10	119 48.66	4676.0	979597.26	-53.68	0.02	3.22	3.24	-211.29
CUSCV333	38 59.46	119 49.35	4668.0	979602.51	-49.71	0.25	4.19	4.44	-205.85

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV334	38 58.60	119 49.30	4674.0	979597.35	-53.04	0.21	4.08	4.29	-209.54
CUSCV335	38 57.38	119 49.01	4683.0	979593.68	-54.07	0.04	3.77	3.81	-211.35
CUSCV336	38 57.80	119 49.75	4670.0	979596.67	-52.92	0.41	4.95	5.36	-208.20
CUSCV337	38 57.36	119 47.86	4686.0	979591.50	-55.94	0.09	2.69	2.78	-214.35
CUSCV338	38 57.36	119 48.48	4685.0	979592.29	-55.25	0.05	3.17	3.22	-213.18
CUSCV339	38 56.90	119 47.28	4699.0	979592.01	-53.53	0.03	2.42	2.45	-212.72
CUSCV340	38 56.60	119 48.13	4693.0	979592.28	-53.39	0.04	3.04	3.08	-211.74
CUSCV341	38 56.50	119 45.96	4721.0	979597.19	-45.70	0.04	1.92	1.96	-206.13
CUSCV342	38 56.93	119 46.08	4722.0	979596.77	-46.66	0.01	1.90	1.91	-207.18
CUSCV343	38 55.63	119 44.23	4778.0	979600.92	-35.33	0.01	1.63	1.64	-198.04
CUSCV344	38 54.96	119 43.61	4804.0	979599.36	-33.46	0.01	1.61	1.62	-197.07
CUSCV345	38 55.26	119 44.28	4783.0	979601.43	-33.81	0.01	1.68	1.69	-196.64
CUSCV346	38 57.16	119 49.55	4682.0	979595.80	-51.72	0.14	4.72	4.86	-207.92
CUSCV347	38 56.36	119 49.68	4685.0	979596.38	-49.69	0.19	5.29	5.48	-205.37
CUSCV348	38 56.80	119 49.53	4681.0	979595.97	-51.12	0.26	4.81	5.07	-207.08
CUSCV349	38 56.35	119 48.90	4692.0	979594.66	-50.73	0.01	3.93	3.94	-208.19
CUSCV350	38 55.36	119 48.11	4706.0	979592.65	-49.97	0.01	3.47	3.48	-208.37
CUSCV351	38 54.90	119 48.01	4708.0	979591.14	-50.62	0.01	3.62	3.63	-208.94
CUSCV352	38 54.80	119 50.51	4940.0	979573.33	-45.98	2.74	8.31	11.05	-204.82
CUSCV353	38 55.21	119 47.20	4713.0	979591.55	-50.19	0.01	2.78	2.79	-209.52
CUSCV354	38 55.06	119 45.30	4752.0	979599.74	-38.12	0.01	1.94	1.95	-199.62
CUSCV355	38 53.68	119 47.20	4726.0	979586.95	-51.32	0.01	3.44	3.45	-210.44
CUSCV356	38 54.18	119 47.41	4717.0	979588.34	-51.52	0.01	3.41	3.42	-210.35
CUSCV357	38 53.30	119 48.30	4724.0	979586.25	-51.65	0.02	5.48	5.50	-208.65
CUSCV358	38 51.18	119 47.40	4865.0	979581.31	-40.23	0.21	5.24	5.45	-202.10
CUSCV354	38 50.20	119 47.58	5039.0	979570.53	-33.21	2.04	5.62	7.66	-198.83
CUSCV360	38 48.81	119 46.75	5070.0	979565.83	-32.96	0.49	4.26	4.75	-202.55
CUSCV361	39 2.73	119 42.41	4938.0	979613.19	-18.46	0.33	1.23	1.56	-186.73
CUSCV363	39 2.51	119 41.65	5102.0	979607.21	-8.70	0.33	1.13	1.46	-182.68
CUSCV365	39 3.65	119 39.28	5918.0	979558.70	17.80	1.08	1.50	2.58	-182.95
CUSCV366	39 2.30	119 40.05	5296.0	979584.59	-12.78	0.09	1.13	1.22	-193.64
CUSCV367	39 1.63	119 39.08	5275.0	979576.23	-22.13	0.06	1.18	1.24	-202.24
CUSCV368	39 2.46	119 37.50	5726.0	979556.37	-0.82	0.68	1.31	1.99	-195.60
CUSCV369	39 1.21	119 41.13	5063.0	979606.01	-11.66	0.12	1.10	1.22	-184.54
CUSCV370	39 1.55	119 40.25	5611.0	979567.45	0.79	2.54	1.30	3.84	-188.22
CUSCV371	39 1.86	119 41.06	5213.0	979600.86	-3.66	0.51	1.07	1.58	-181.31
CUSCV372	39 0.56	119 41.06	5064.0	979601.04	-15.58	0.14	1.08	1.22	-188.49
CUSCV373	39 1.13	119 40.08	5191.0	979593.00	-12.52	0.34	1.08	1.42	-189.57
CUSCV374	39 1.08	119 37.80	5402.0	979564.15	-21.46	0.11	1.26	1.37	-205.79
CUSCV375	39 0.38	119 38.38	5403.0	979556.83	-27.66	0.61	1.12	1.73	-211.66
CUSCV376	39 0.41	119 39.25	5198.0	979578.56	-25.24	0.11	1.12	1.23	-202.74
CUSCV377	39 0.10	119 39.91	5096.0	979586.77	-26.16	0.01	1.11	1.12	-200.27
CUSCV378	39 1.00	119 38.85	5394.0	979563.33	-22.92	0.50	1.11	1.61	-206.73

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV379	38 59.86	119 41.63	4916.0	979605.79	-23.71	0.03	1.16	1.19	-191.59
CUSCV380	38 59.85	119 40.56	5061.0	979591.65	-24.21	0.06	1.08	1.14	-197.10
CUSCV381	38 59.35	119 40.03	5166.0	979580.50	-24.75	0.32	1.05	1.37	-201.01
CUSCV382	38 59.36	119 39.23	5067.0	979586.28	-28.29	0.05	1.18	1.23	-201.30
CUSCV383	38 59.81	119 39.25	5107.0	979583.09	-28.38	0.07	1.15	1.22	-202.76
CUSCV384	38 59.55	119 38.01	5282.0	979567.22	-27.42	0.07	1.16	1.23	-207.78
CUSCV385	38 59.83	119 34.28	6304.0	979527.03	28.03	2.32	1.76	4.08	-184.41
CUSCV386	38 58.83	119 37.70	5205.0	979575.34	-25.48	0.23	1.25	1.48	-202.96
CUSCV387	38 58.26	119 37.73	5388.0	979567.66	-15.12	0.31	1.12	1.43	-198.91
CUSCV388	38 57.75	119 37.61	5409.0	979569.91	-10.15	0.98	1.14	2.12	-193.97
CUSCV389	38 57.25	119 38.33	5177.0	979584.60	-16.53	0.02	1.19	1.21	-193.32
CUSCV390	38 56.88	119 38.33	5173.0	979583.70	-17.26	0.03	1.21	1.24	-193.88
CUSCV391	38 56.88	119 37.76	5226.0	979581.23	-14.75	0.22	1.24	1.46	-192.96
CUSCV392	38 56.18	119 37.80	5222.0	979582.03	-13.30	0.08	1.30	1.38	-191.46
CUSCV393	38 56.38	119 38.35	5152.0	979583.66	-18.54	0.14	1.27	1.41	-194.28
CUSCV394	38 58.88	119 41.03	4930.0	979597.98	-28.76	0.02	1.16	1.18	-197.13
CUSCV395	38 59.35	119 41.23	4923.0	979601.49	-26.60	0.27	1.16	1.43	-194.48
CUSCV396	38 58.56	119 40.55	4962.0	979595.42	-27.84	0.32	1.15	1.47	-197.02
CUSCV397	38 58.20	119 40.76	4950.0	979595.12	-28.74	0.03	1.16	1.19	-197.79
CUSCV398	38 57.15	119 39.81	5062.0	979589.44	-22.35	0.61	1.15	1.76	-194.65
CUSCV399	38 57.23	119 38.90	5166.0	979583.30	-18.83	0.04	1.14	1.18	-195.28
CUSCV400	38 57.71	119 38.90	5133.0	979586.27	-19.67	0.04	1.14	1.18	-194.98
CUSCV401	38 58.93	119 39.06	5093.0	979586.27	-25.22	0.06	1.16	1.22	-199.13
CUSCV402	38 58.45	119 39.76	5280.0	979573.23	-19.98	1.20	1.06	2.26	-199.25
CUSCV403	38 57.83	119 39.55	5322.0	979571.68	-16.67	0.96	1.07	2.03	-197.60
CUSCV404	38 58.15	119 39.05	5230.0	979579.23	-18.24	0.36	1.08	1.44	-196.62
CUSCV405	38 57.45	119 40.81	5063.0	979588.92	-23.22	0.74	1.11	1.85	-195.47
CUSCV406	38 56.36	119 40.51	5146.0	979582.45	-20.29	0.31	1.14	1.45	-195.78
CUSCV407	38 55.96	119 40.00	5039.0	979589.67	-22.53	0.48	1.24	1.72	-194.09
CUSCV408	38 55.96	119 39.15	5097.0	979587.32	-19.43	0.29	1.26	1.55	-193.15
CUSCV409	38 55.95	119 38.43	5153.0	979582.94	-18.06	0.11	1.29	1.40	-194.01
CUSCV410	38 56.68	119 39.25	5147.0	979584.21	-18.90	0.31	1.16	1.47	-194.41
CUSCV411	38 55.08	119 39.51	5288.0	979563.46	-24.05	0.48	1.21	1.69	-204.15
CUSCV412	38 55.11	119 38.86	5274.0	979574.77	-14.10	0.82	1.25	2.07	-193.35
CUSCV413	38 55.16	119 38.00	5260.0	979579.71	-10.55	0.05	1.35	1.40	-189.99
CUSCV414	38 55.51	119 39.76	5322.0	979570.31	-14.63	0.45	1.19	1.64	-195.96
CUSCV415	38 54.25	119 39.48	5218.0	979577.42	-15.45	0.15	1.33	1.48	-193.37
CUSCV416	38 54.30	119 38.78	5254.0	979579.18	-10.38	0.13	1.38	1.51	-189.50
CUSCV417	38 54.26	119 38.31	5341.0	979573.38	-7.94	0.07	1.38	1.45	-190.10
CUSCV418	38 55.45	119 36.13	5862.0	979550.81	16.71	2.57	1.49	4.06	-180.65
CUSCV419	38 53.76	119 39.56	5444.0	979563.08	-7.83	1.39	1.33	2.72	-192.24
CUSCV420	38 51.58	119 46.06	4806.0	979589.46	-38.21	0.02	3.26	3.28	-200.24

Station	Latitude (deg min)	Longitude (deg min)	Altitude (feet above sea level)	Observed gravity (mGal)	Free-air anomaly (mGal)	Terrain correction			Bouguer anomaly (mGal)
						Hand	Comp	Total	
CUSCV421	38 51.13	119 46.08	4827.0	979588.28	-36.75	0.02	3.40	3.42	-199.36
CUSCV422	38 50.71	119 46.06	4862.0	979587.70	-33.43	0.02	3.46	3.48	-197.16
CUSCV423	38 50.35	119 46.08	4894.0	979587.16	-30.43	0.01	3.53	3.54	-195.20
CUSCV424	38 49.70	119 46.13	4943.0	979579.92	-32.11	0.01	3.65	3.66	-198.45
CUSCV425	38 49.18	119 46.65	5005.0	979571.27	-34.17	0.24	4.27	4.51	-201.77
CUSCV426	38 48.55	119 46.66	5105.0	979563.25	-31.87	0.28	4.03	4.31	-203.09
CUSCV427	38 48.63	119 47.48	5366.0	979545.97	-24.73	0.79	4.68	5.47	-203.73
CUSCV428	38 49.65	119 47.11	5072.0	979567.74	-32.09	0.66	4.74	5.40	-201.10
CUSCV429	38 52.66	119 42.91	5373.0	979567.91	-8.05	2.43	1.58	4.01	-188.74
CUSCV430	38 52.25	119 44.55	5055.0	979583.05	-22.20	1.32	1.94	3.26	-192.76
CUSCV431	38 51.13	119 45.25	4874.0	979593.48	-27.14	0.12	2.71	2.83	-191.94
CUSCV432	38 50.73	119 45.15	4881.0	979592.79	-26.58	0.23	2.76	2.99	-191.46
CUSCV433	38 49.80	119 45.13	4992.0	979584.64	-22.93	0.08	2.74	2.82	-191.78
CUSCV434	38 49.06	119 45.21	5072.0	979574.13	-24.84	0.10	2.76	2.86	-196.39
CUSCV435	38 48.93	119 45.55	5082.0	979570.66	-27.18	0.08	2.97	3.05	-198.88
CUSCV436	39 5.06	119 49.95	5069.0	979590.88	-31.89	0.48	4.38	4.86	-201.34
CUSCV437	39 5.06	119 50.60	5195.0	979583.22	-27.70	2.15	5.14	7.29	-199.03
CUSCV438	39 4.40	119 51.16	5917.0	979539.68	-2.42	9.17	4.42	13.59	-192.13
CUSCV439	39 4.43	119 50.45	5170.0	979584.45	-27.90	1.07	5.28	6.35	-199.31
CUSCV440	39 4.50	119 50.23	5096.0	979588.85	-30.56	0.72	5.07	5.79	-199.99
CUSCV441	39 4.55	119 50.03	5147.0	979592.01	-22.68	0.56	4.46	5.02	-194.62
CUSCV442	39 4.65	119 49.66	5004.0	979594.89	-33.38	0.19	4.20	4.39	-201.07
CUSCV443	39 4.70	119 49.46	4995.0	979593.54	-35.65	0.17	3.87	4.04	-203.39
CUSCV444	38 49.76	119 46.66	4945.0	979576.95	-34.98	0.16	4.34	4.50	-200.54
CUSCV445	38 50.07	119 46.65	4934.0	979581.49	-31.93	0.09	4.26	4.35	-197.27
CUSCV446	38 50.70	119 46.63	4865.0	979584.87	-35.96	0.06	4.16	4.22	-199.07
CUSCV447	38 50.13	119 44.51	5290.0	979568.88	-11.17	0.76	2.04	2.80	-190.24
CUSCV448	38 48.35	119 45.87	5591.0	979531.98	-17.16	2.17	2.50	4.67	-204.65
CUSCV449	38 52.61	119 45.48	4813.0	979594.21	-34.31	0.24	2.52	2.76	-197.10
CUSCV450	38 53.12	119 44.93	4834.0	979596.18	-31.12	0.05	2.13	2.18	-195.20
CUSCV451	39 3.95	119 43.27	5950.0	979544.65	6.32	7.89	2.68	10.57	-187.54
CUSCV452	38 51.00	119 37.15	6950.0	979472.31	46.99	4.61	3.85	8.46	-183.11
CUSCV453	39 1.90	119 34.58	7039.0	979484.92	51.94	4.65	3.65	8.30	-181.35
CUSCV454	38 51.45	119 54.05	10881.0	979191.89	135.19	18.73	26.02	44.75	-192.14
CUSCV455	38 48.98	119 50.53	9367.0	979290.22	94.95	12.84	16.78	29.62	-196.21
CUSCV456	38 51.47	119 51.77	10633.0	979195.50	115.48	20.11	29.74	49.85	-198.36
CUSCV457	38 55.37	119 39.81	10067.0	979247.16	108.25	15.60	48.87	64.47	-171.80
CUSCV458	38 58.60	119 53.55	7334.0	979455.28	54.87	0.95	4.82	5.77	-191.00
CUSCV459	39 2.58	119 52.82	9150.0	979335.83	100.18	12.32	17.53	29.85	-183.38
CUSCV460	38 59.77	119 53.30	8384.0	979386.95	83.48	7.14	10.91	18.05	-185.86

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