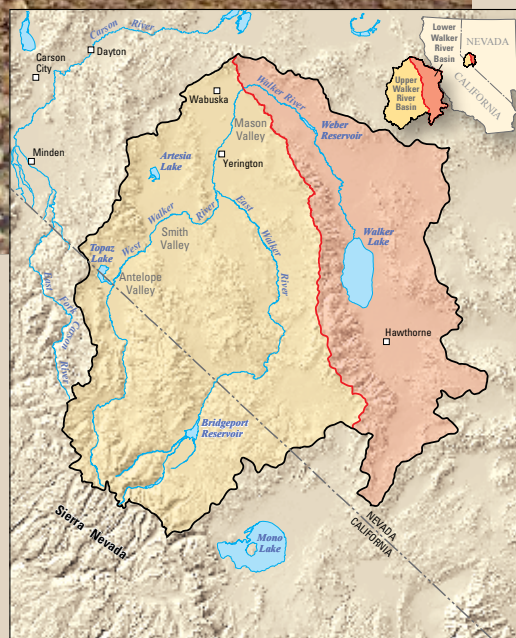


Prepared in cooperation with the Bureau of Reclamation

Hydrologic Data for the Walker River Basin, Nevada and California, Water Years 2010–14



Data Series 967

Hydrologic Data for the Walker River Basin, Nevada and California, Water Years 2010–14

By Michael T. Pavelko and Erin L. Orozco

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Data Series 967

**U.S. Department of the Interior
U.S. Geological Survey**

U.S. Department of the Interior

SALLY JEWELL, Secretary

U.S. Geological Survey

Suzette M. Kimball, Acting Director

U.S. Geological Survey, Reston, Virginia: 2015

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Suggested citation:

Pavelko, Michael T., and Orozco, Erin L., 2015, Hydrologic data for the Walker River Basin, Nevada and California, water years 2010–14: U.S. Geological Survey Data Series 967, 17 p., plus appendixes, <http://dx.doi.org/10.3133/ds967>.

ISSN 2327–638 (online)

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Conversion Factors, Datums, and Water-Quality Units

International System of Units to Inch/Pound

Multiply	By	To obtain
	Length	
meter (m)	0.3048	foot (ft)

Temperature in degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) as follows:

$$^{\circ}\text{F} = (1.8 \times ^{\circ}\text{C}) + 32$$

Temperature in degrees Fahrenheit (°F) can be converted to degrees Celsius (°C) as follows:

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.8$$

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L).

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Altitude, as used in this report, refers to distance above the vertical datum.

Abbreviations

USGS	U.S. Geological Survey
NWIS	National Water Information System
NWISWeb	National Water Information System web portal

Hydrologic Data for the Walker River Basin, Nevada and California, Water Years 2010–14

By Michael T. Pavelko and Erin L. Orozco

Abstract

Walker Lake is a threatened and federally protected desert terminal lake in western Nevada. To help protect the desert terminal lake and the surrounding watershed, the Bureau of Reclamation and U.S. Geological Survey have been studying the hydrology of the Walker River Basin in Nevada and California since 2004. Hydrologic data collected for this study during water years 2010 through 2014 included groundwater levels, surface-water discharge, water chemistry, and meteorological data. Groundwater levels were measured in wells, and surface-water discharge was measured in streams, canals, and ditches. Water samples for chemical analyses were collected from wells, streams, springs, and Walker Lake. Chemical analyses included determining physical properties; the concentrations of major ions, nutrients, trace metals, dissolved gases, and radionuclides; and ratios of the stable isotopes of hydrogen and oxygen. Walker Lake water properties and meteorological parameters were monitored from a floating platform on the lake. Data collection methods followed established U.S. Geological Survey guidelines, and all data are stored in the National Water Information System database. All of the data are presented in this report and accessible on the internet, except multiple-depth Walker Lake water-chemistry data, which are available only in this report.

Introduction

The Walker River Basin is a hydrologically closed surface-water drainage basin encompassing about 3,950 square miles in Nevada and California (fig. 1). Much of the surface-water flow in the basin is used for irrigation and originates as snow-melt in the adjacent Sierra Nevada. Surface water not used for irrigation flows through several valleys, joins the Walker River, and then discharges into Walker Lake (fig. 1). Walker Lake is a desert terminal lake that is a remnant of Lake Lahontan, which extended over much of western Nevada during the Pleistocene (Reheis, 1999). As a terminal lake, there is no surface-water discharge. Evaporation and evapotranspiration (ET) account for about 99 percent of Walker Lake discharge; diverted local runoff and pumping, combined, account for about 1 percent of lake discharge (Lopes and Allander, 2009a).

The water level and chemistry of Walker Lake are sensitive to inflow from the Walker River. The lake level has been declining since the late 1800s, when diversions for irrigation began (Dilts and others, 2012). Based on 2015 lake levels at the U.S. Geological Survey (USGS) Walker Lake, near Hawthorne, Nevada, monitoring station (fig. 1), the lake level has declined more than 160 feet since the diversions began, which is equivalent to a loss of about 7,850,000 acre-feet of stored water (Lopes and Smith, 2007). Because evaporation accounts for the vast majority of discharge from the lake, most dissolved solids that enter the lake remain in the lake. Evaporation has increased the concentrations of dissolved solids in the lake and has affected the lake ecosystem, including the disappearance of the Lahontan Cutthroat trout (*Oncorhynchus clarkii henshawi*), which is listed as a threatened species under the Endangered Species Act (Allander and others, 2009).

In response to the 2002 Farm Bill (Section 2507 of Public Law 107–171 and Section 207 of Public Law 108–7), the Bureau of Reclamation and the USGS began the Walker River Basin study in 2004. The primary goals of the laws are to provide water to at-risk natural desert terminal lakes, including Walker Lake, and to restore the fish, wildlife, and associated habitats of the lake's watersheds. To help accomplish the Walker River Basin study goals, the USGS has been tasked with (1) quantifying the volume of streamflow in the Walker River Basin and determining how much of the flow is from each valley, (2) determining ET losses from vegetation and evaporation from the lake surface, (3) developing an improved water budget for Walker Lake, and (4) determining how water-use changes in the Walker River Basin will affect streamflows to Walker Lake (U.S. Geological Survey, 2005). For this study, the Walker River Basin is divided into an upper and lower basin, relative to the USGS Walker River, near Wabuska, Nevada, streamgaging station (fig. 1). Hydrologic data collected by the USGS were focused on the lower basin from water years 2004 through 2009, and data collected for the present study are focused on the upper basin from water years 2010 through 2014.

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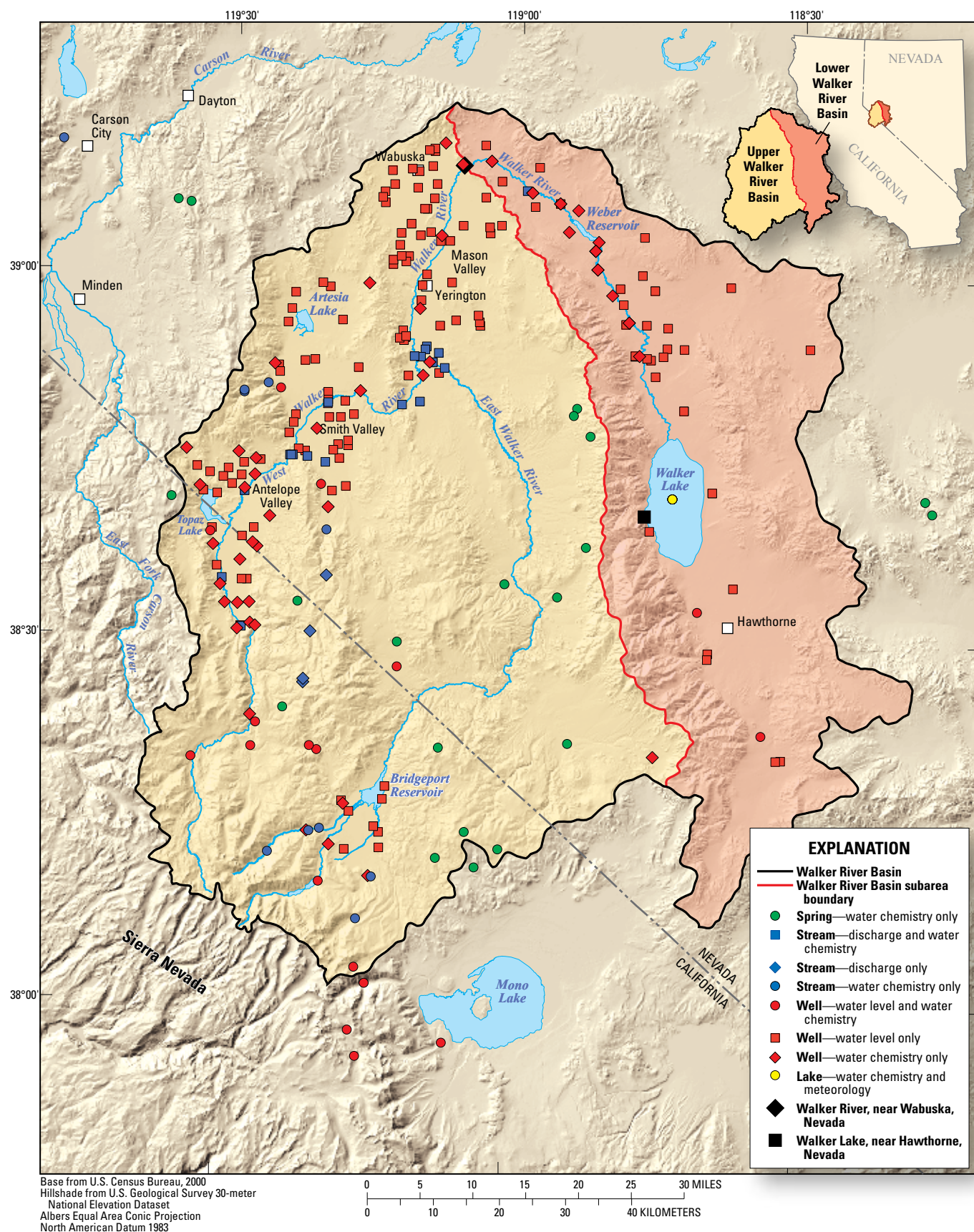


Figure 1. Data-collection sites for the Walker River Basin study, water years 2010–14.

Hydrologic data collected by the USGS for the Walker River Basin study are stored in the USGS National Water Information System (NWIS) database and are documented in several USGS interpretive reports. Lopes and Smith (2007) describes the bathymetry of Walker Lake. Allander and others (2009) quantifies ET from the lower Walker River Basin for water years 2005–07, including evaporation from Walker Lake. Lopes and Allander (2009a) describes the hydrologic setting and conceptual hydrologic model of the Walker River Basin, and Lopes and Allander (2009b) describes the water budget of the lower Walker River Basin and Walker Lake. Allander and others (2014) documents numerical hydrologic models, and surface-water and groundwater simulations of the lower Walker River Basin.

Purpose and Scope

The purpose of this report is to document hydrologic data and data-collection methods for the Walker River Basin study for water years 2010–14 (October 1, 2009–September 30, 2014). During that time, data were collected for 212 wells, 34 surface-water sites, 20 springs, and 12 sites on Walker Lake (table 1 and fig. 1). Four wells, one stream, and six springs outside of the Walker River Basin (table 1 and fig. 1) were monitored to gain information from adjacent basins and to determine if trends in the Walker River Basin occur outside the study area boundary. Hydrologic data collected during water years 2010–14 included groundwater levels, surface-water discharge, water chemistry, and meteorological data. Water-chemistry data included physical properties; concentrations of major ions, nutrients, trace metals, dissolved gases, and radionuclides; and ratios of the stable isotopes of hydrogen and oxygen. Meteorological data included air temperature, barometric pressure, wind speed, relative humidity, and solar radiation. Walker Lake water-chemistry data and meteorological data were collected from a floating platform near the center of the lake. Walker Lake water-chemistry data include data from near the lake surface and from multiple depths below the surface. All of the data are presented in this report and accessible from the NWIS web portal (NWISWeb; U.S. Geological Survey, 2015), except multiple-depth Walker Lake water-chemistry data, which are available only in this report.

Data-Collection Methods

Data-collection methods for the Walker River Basin study followed established USGS guidelines, and all hydrologic data are stored in the NWIS database. Groundwater levels in wells were measured with electronic or steel tapes (Cunningham and Schalk, 2011). Periodic surface-water discharge in streams and irrigation canals and ditches was measured with a FlowTracker acoustic Doppler velocimeter (Turnipseed and Sauer, 2010). Water-chemistry samples from wells, streams, springs, and near the surface of Walker Lake were collected following standard USGS protocols (U.S. Geological Survey, variously dated), and water-chemistry data from multiple depths of Walker Lake were obtained following methods established from previous USGS studies (Rowland and others, 2006; Wagner and others, 2006; Veley and Moran, 2012).

Water temperature, pH, specific conductance, dissolved oxygen, and turbidity were measured with a calibrated multi-sensor water-chemistry sonde in a flow-through chamber. Alkalinity and concentrations of carbonate and bicarbonate were determined in the field by using the inflection point, incremental titration method (U.S. Geological Survey, variously dated). Concentrations of dissolved solids, major ions, nutrients, trace metals, and radionuclides were determined at the USGS National Water Quality Laboratory (NWQL); concentrations of dissolved gases were determined at the USGS Reston Groundwater Dating Laboratory; and ratios of the stable isotopes of hydrogen and oxygen were determined at the USGS Reston Stable Isotope Laboratory (table 2).

Groundwater samples were collected from wells with a pump and filtration system. Most wells were sampled with dedicated submersible pumps, and wells without dedicated pumps were sampled with a Bennett pump. Groundwater samples for laboratory analyses were collected only after water temperature, pH, specific conductance, and dissolved oxygen values were considered stable (U.S. Geological Survey, variously dated). Stream-water samples were collected by dipping a bottle along the stream bank where the water was well mixed. Stream-water samples were collected from five continuous streamgaging sites about every 2 weeks and from nine periodically measured streams once or twice during the study. Spring-water samples were collected by dipping a bottle into the spring as near to the orifice as possible.

Walker Lake water-chemistry data are from a floating platform near the center of the lake (fig. 1). Near-surface samples were collected by dipping a bottle just below the lake surface. Water chemistry at multiple depths was monitored with an automated variable-depth profiling system. The profiling system, equipped with a winch and a sonde, collected data at depths of 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19 meters (m) below the lake surface every 4 hours. During site visits, sonde sensors were cleaned and calibrated, and the water depth was measured to verify that the lake was deeper than 19 m.

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Meteorological data were recorded hourly with sensors installed on the Walker Lake floating platform. Air temperature and relative humidity were measured 2.2 m above the lake surface, wind speed was measured 2.9 m above the lake surface, barometric pressure was measured 1.3 m above the lake surface, and solar radiation was measured 2.8 m above the lake surface. The meteorological sensors were factory calibrated before and after data collection to determine and ensure accuracy. In the field, routine visual inspections and maintenance ensured the sensors were clean and free of debris. When necessary, sensors were cleaned with a cotton swab and deionized water.

Hydrologic Data

Groundwater levels were measured in 195 wells, totaling 2,070 measurements, from October 2, 2009, to March 18, 2014 (appendix 1). Surface-water discharge was measured in 11 streams, 9 irrigation ditches, and 4 irrigation canals, totaling 104 measurements, from January 6, 2011, to October 29, 2012 (appendix 2).

Groundwater-chemistry samples were collected from 70 wells, totaling 107 samples, from September 15, 2010, to September 21, 2012 (appendix 3). The samples were analyzed for water temperature, pH, specific conductance, dissolved oxygen, alkalinity, bicarbonate, and carbonate; concentrations of dissolved solids, major ions, nutrients, trace metals, radio-nuclides, and dissolved gases; and ratios of the stable isotopes of hydrogen and oxygen (table 2).

Stream water-chemistry samples were collected from 14 streams, totaling 359 samples, from October 21, 2010, to September 27, 2013 (appendix 4). The samples were analyzed for water temperature, pH, specific conductance, concentrations of chloride and bromide, and ratios of the stable isotopes of hydrogen and oxygen. Bromide analyses were discontinued after analyzing 25 samples from four streams because bromide concentrations were below detectable levels.

Spring water-chemistry samples were collected from 20 springs, totaling 20 samples, from August 18, 2011, to August 15, 2012 (appendix 5). The samples were analyzed for water temperature, pH, specific conductance, chloride concentration, and ratios of the stable isotopes of hydrogen and oxygen.

Walker Lake water-chemistry samples from near the lake surface were collected on November 2, 2010, and January 14, 2014 (appendix 6). The near-surface samples were analyzed for water temperature, pH, specific conductance, and dissolved-solids concentration. Walker Lake water-chemistry data from 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19 m below the lake surface were collected near continuously from May 3, 2011, to June 9, 2013 (appendix 6). Data collected at multiple depths were water temperature, pH, specific conductance, dissolved oxygen, turbidity, and water depth.

Meteorological data were collected on the Walker Lake floating platform from March 30, 2011, to September 30, 2013, (appendix 6) and included air temperature, barometric pressure, wind speed, relative humidity, and solar radiation.

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
390550119360301	103 N14 E21 11BBC 1 UNAMED SPG NR S BRUNSWICK	spring*	no	no	NWISWeb/Appendix 5	no
390539119344101	103 N14 E21 12BDC 1 ERASTRA SPG	spring*	no	no	NWISWeb/Appendix 5	no
384123119355501	105 N10 E22 30AACAI 010N022E30A001M BIG SPRING	spring*	no	no	NWISWeb/Appendix 5	no
3820011193331101	106 N06 E22 27CCADI	well	no	no	NWISWeb/Appendix 3	no
382335119270801	106 N06 E23 04DACBI	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
382257119263101	106 N06 E23 10BDC 1 006N023E10F001M BURCHAM FL	well	no	no	NWISWeb/Appendix 3	no
382059119265701	106 N06 E23 21DADB1 006N023E21J001M	well	no	no	NWISWeb/Appendix 3	no
383414119303501	106 N08 E22 01ACAB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383245119300301	106 N08 E23 07CCCD1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383249119272901	106 N08 E23 09CDDBI	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383243119284401	106 N08 E23 17BABA1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383107119272201	106 N08 E23 21DCBC1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383054119264901	106 N08 E23 27BBBC1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383051119282201	106 N08 E23 29ABDB1 008N023E29F01	well	NWISWeb/Appendix 1	no	no	no
383037119284201	106 N08 E23 29BDCA1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383852119313601	106 N09 E22 02DDDD1 RR	well	NWISWeb/Appendix 1	no	no	no
383835119314501	106 N09 E22 11ACBD1	well	no	no	NWISWeb/Appendix 3	no
383814119282501	106 N09 E22 13CCDA1	well	NWISWeb/Appendix 1	no	no	no
383731119312601	106 N09 E22 14DAAB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383547119305901	106 N09 E22 25CABB1	well	NWISWeb/Appendix 1	no	no	no
383956119253401	106 N09 E23 05DDBD1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383858119271301	106 N09 E23 18BABA1	well	NWISWeb/Appendix 1	no	no	no
383744119271701	106 N09 E23 19BDCC1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383725119265001	106 N09 E23 19DCAB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383617119283401	106 N09 E23 20CDDD1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383441119282001	106 N09 E23 32DCAA1	well	NWISWeb/Appendix 1	no	no	no
383441119274701	106 N09 E23 33CCAB1	well	NWISWeb/Appendix 1	no	no	no
384522119342901	106 N10 E21 01DACBI	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384512119285901	106 N10 E22 02DDCB1 Bald Mountain	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384418119282401	106 N10 E22 12CDCC1	well	NWISWeb/Appendix 1	no	no	no
384348119300101	106 N10 E22 15ADCD1	well	NWISWeb/Appendix 1	no	no	no
384327119315701	106 N10 E22 16CCCA1	well	NWISWeb/Appendix 1	no	no	no
384356119331901	106 N10 E22 18ADBD1	well	NWISWeb/Appendix 1	no	no	no
384241119303401	106 N10 E22 22BDBB1	well	NWISWeb/Appendix 1	no	no	no
384232119293401	106 N10 E22 23CCDD1	well	NWISWeb/Appendix 1	no	no	no
384249119283501	106 N10 E22 24BB 1	well	NWISWeb/Appendix 1	no	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
384147119282201	106 N10 E22 25BDAC1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384144119310501	106 N10 E22 28DD 2 Douglas County - Marina	well	NWISWeb/Appendix 1	no	no	no
384220119325801	106 N10 E22 29BBDC1 GEM	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384156119323301	106 N10 E22 29CADA2	well	NWISWeb/Appendix 1	no	no	no
384440119271001	106 N10 E23 07CAAB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384433119264101	106 N10 E23 07DACA1	well	NWISWeb/Appendix 1	no	no	no
384320119271301	106 N10 E23 19BABA1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383259119222501	107 N08 E24 08CCBC1 008N024E08N001M JACKASS	spring	no	no	NWISWeb/Appendix 5	no
384522119220101	107 N10 E23 01BCA2 DP2	well	NWISWeb/Appendix 1	no	no	no
384532119224301	107 N10 E23 02BDDDI ABANDONED RANCH	well	NWISWeb/Appendix 1	no	no	no
384553119173101	107 N10 E24 03BBAB1 HUDSON AURORA 2	well	NWISWeb/Appendix 1	no	no	no
384530119190401	107 N10 E24 05ACDD1 SARONI	well	NWISWeb/Appendix 1	no	no	no
384459119174401	107 N10 E24 09BACC1	well	NWISWeb/Appendix 1	no	no	no
384239119201501	107 N10 E24 19DBDC1 Deer Pass	well	no	no	NWISWeb/Appendix 3	no
384232119174001	107 N10 E24 21DDAD1 HATCHERY	well	NWISWeb/Appendix 1	no	no	no
384208119190601	107 N10 E24 29ACAC1 DESERT CREEK 1	well	NWISWeb/Appendix 1	no	no	no
384047119192801	107 N10 E24 32CDBC1 DESERT CREEK 2	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385030119244301	107 N11 E23 04DCBB1 Red Canyon	well	no	no	NWISWeb/Appendix 3	no
384820119230000	107 N11 E23 22ADAA1	well	NWISWeb/Appendix 1	no	no	no
384741119231801	107 N11 E23 22DDCC1 VACANT SANTA SOPHIA	well	NWISWeb/Appendix 1	no	no	no
384650119234501	107 N11 E23 27CDDC1 COLONY 91769	well	NWISWeb/Appendix 1	no	no	no
385024119162101	107 N11 E24 02CCCB1 RESORT	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385015119194501	107 N11 E24 07AAAA1 WASTE MANAGEMENT	well	NWISWeb/Appendix 1	no	no	no
384935119194001	107 N11 E24 08CCBC1	well	NWISWeb/Appendix 1	no	no	no
384933119175601	107 N11 E24 09DCBD1 NEW RANCH	well	NWISWeb/Appendix 1	no	no	no
394918119194601	107 N11 E24 18AADA1 NDOW1	well	NWISWeb/Appendix 1	no	no	no
384811119193101	107 N11 E24 20BCDC1	well	NWISWeb/Appendix 1	no	no	no
384812119182201	107 N11 E24 21BCDA1 BMM	well	NWISWeb/Appendix 1	no	no	no
384828119165901	107 N11 E24 22BAAD1 79932 GRANT	well	NWISWeb/Appendix 1	no	no	no
384714119204701	107 N11 E24 30CBBI	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
384558119183101	107 N11 E24 33CCCC1 HIRED HANDS	well	NWISWeb/Appendix 1	no	no	no
384618119173201	107 N11 E24 33DAAD1 HUDSON AURORA	well	NWISWeb/Appendix 1	no	no	no
385557119240801	107 N12 E23 04DAAA1 14 FLOWING	well	NWISWeb/Appendix 1	no	no	no
385256119211201	107 N12 E23 24DCDC1	well	NWISWeb/Appendix 1	no	no	no
385249119221401	107 N12 E23 26ABAD1 85471	well	NWISWeb/Appendix 1	no	no	no
385225119245901	107 N12 E23 28CABC1 ARTESIA	well	NWISWeb/Appendix 1	no	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
385231119252101	107 N12 E23 29ADDC1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385151119245201	107 N12 E23 33BADC1 HAZEL	well	NWISWeb/Appendix 1	no	no	no
385614119182401	107 N12 E24 04BDD1	well	NWISWeb/Appendix 1	no	no	no
385222119154601	107 N12 E24 27DACB1 USBLM - HUDSON WELL	well	NWISWeb/Appendix 1	no	no	no
385825119232401	107 N13 E23 22DBCD1 STOCK 35931	well	NWISWeb/Appendix 1	no	no	no
385704119234501	107 N13 E23 34BACC1 25374	well	NWISWeb/Appendix 1	no	no	no
385916119202901	107 N13 E24 18CACC1	well	NWISWeb/Appendix 1	no	no	no
385857119194601	107 N13 E24 19AAAD1 A-2 8091	well	NWISWeb/Appendix 1	no	no	no
390848119112501	107 N15 E25 21CADD2 H-3	well	NWISWeb/Appendix 1	no	no	no
385556119080901	108 N12 E25 01BDDDD1	well	NWISWeb/Appendix 1	no	no	no
385451119122201	108 N12 E25 08DCA 1 BLM MASON WELL	well	NWISWeb/Appendix 1	no	no	no
385528119120101	108 N12 E25 09BBB81	well	NWISWeb/Appendix 1	no	no	no
385500119114201	108 N12 E25 09CABC1	well	NWISWeb/Appendix 1	no	no	no
385455119114501	108 N12 E25 09CACC4	well	NWISWeb/Appendix 1	no	no	no
385439119115401	108 N12 E25 09CCCD1	well	NWISWeb/Appendix 1	no	no	no
385255119090501	108 N12 E25 23DCC 1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385201119080901	108 N12 E25 25CDDDD1	well	NWISWeb/Appendix 1	no	no	no
385142119111301	108 N12 E25 33ACBD1	well	NWISWeb/Appendix 1	no	no	no
385148119094801	108 N12 E25 34ADAA1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385616119035901	108 N12 E26 03BBAD1	well	NWISWeb/Appendix 1	no	no	no
385551119031001	108 N12 E26 03BDCC1	well	NWISWeb/Appendix 1	no	no	no
390108119114801	108 N13 E25 04CBAB1	well	NWISWeb/Appendix 1	no	no	no
390116119131301	108 N13 E25 06ADB 1	well	NWISWeb/Appendix 1	no	no	no
390054119131301	108 N13 E25 06DDB 1	well	NWISWeb/Appendix 1	no	no	no
390008119093801	108 N13 E25 11CBDA1	well	NWISWeb/Appendix 1	no	no	no
385912119100501	108 N13 E25 15DBDD1 MT VIEW SHALLOW	well	NWISWeb/Appendix 1	no	no	no
385759119101001	108 N13 E25 27ABDB1 GOLF	well	NWISWeb/Appendix 1	no	no	no
385718119101301	108 N13 E25 27DCCD2	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385929119065901	108 N13 E26 18ACCB1	well	NWISWeb/Appendix 1	no	no	no
385623119062801	108 N13 E26 31DDDD1	well	NWISWeb/Appendix 1	no	no	no
385651119031301	108 N13 E26 34BCCD1	well	NWISWeb/Appendix 1	no	no	no
390625119142801	108 N14 E24 01ACDD1	well	NWISWeb/Appendix 1	no	no	no
390558119141101	108 N14 E25 01DDDD1	well	NWISWeb/Appendix 1	no	no	no
390624119090101	108 N14 E25 02ACDC1 MVWMA B-11	well	NWISWeb/Appendix 1	no	no	no
390531119100101	108 N14 E25 10ACDD1	well	NWISWeb/Appendix 1	no	no	no
390530119094501	108 N14 E25 10ADDD1	well	NWISWeb/Appendix 1	no	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
390416119112401	108 N14 E25 16DCCB1 CMPBL SHALLOW	well	NWISWeb/Appendix 1	no	no	no
390416119112402	108 N14 E25 16DCCB2 CMPBL DEEP	well	NWISWeb/Appendix 1	no	no	no
390329119122701	108 N14 E25 20DCBA1	well	NWISWeb/Appendix 1	no	no	no
390336119091901	108 N14 E25 23CADB1	well	NWISWeb/Appendix 1	no	no	no
390320119081001	108 N14 E25 25BAAA1 MVWMA B-01	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390253119081601	108 N14 E25 25BDCD1	well	NWISWeb/Appendix 1	no	no	no
390319119102401	108 N14 E25 27CDDC1	well	NWISWeb/Appendix 1	no	no	no
390230119123301	108 N14 E25 29DCCB1	well	NWISWeb/Appendix 1	no	no	no
390135119122201	108 N14 E25 32DCDC1 LUZIER	well	NWISWeb/Appendix 1	no	no	no
390135119113501	108 N14 E25 33CDDC1	well	NWISWeb/Appendix 1	no	no	no
390606119032901	108 N14 E26 03DCBC1	well	NWISWeb/Appendix 1	no	no	no
3904161191015201	108 N14 E26 13CCCD YELLOW TWIN	well	NWISWeb/Appendix 1	no	no	no
390411119055401	108 N14 E26 20BAAA1 NFG3.070	well	NWISWeb/Appendix 1	no	no	no
390406119030601	108 N14 E26 22AADA1	well	NWISWeb/Appendix 1	no	no	no
390336119030201	108 N14 E26 23CBCC1	well	NWISWeb/Appendix 1	no	no	no
390255119071701	108 N14 E26 30BCDD1	well	NWISWeb/Appendix 1	no	no	no
390653119141401	108 N15 E24 36DDDA1	well	NWISWeb/Appendix 1	no	no	no
391021119094001	108 N15 E25 11CCCC1	well	NWISWeb/Appendix 1	no	no	no
391004119093201	108 N15 E25 11DCAC1 USBLM	well	NWISWeb/Appendix 1	no	no	no
391058119075801	108 N15 E25 12ABCD1 WABUSKA 2	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
391017119090301	108 N15 E25 14ABBA1 GADDA	well	NWISWeb/Appendix 1	no	no	no
390837119133101	108 N15 E25 19DCCD1 RUINS	well	NWISWeb/Appendix 1	no	no	no
390829119112901	108 N15 E25 21CADD1	well	NWISWeb/Appendix 1	no	no	no
390836119104201	108 N15 E25 22CCDC1	well	NWISWeb/Appendix 1	no	no	no
390903119091601	108 N15 E25 23BDDB1	well	NWISWeb/Appendix 1	no	no	no
390729119131501	108 N15 E25 31AACD1 RALPHS BEND	well	NWISWeb/Appendix 1	no	no	no
390714119104801	108 N15 E25 34CBBB1	well	NWISWeb/Appendix 1	no	no	no
390712119070101	108 N15 E25 35AA 2	well	NWISWeb/Appendix 1	no	no	no
390914119060601	108 N15 E26 20BDDBB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
380258119153801	109 N02 E25 07BDDA1	well	no	no	NWISWeb/Appendix 3	no
381408119205501	109 N04 E24 05ACCD1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
381302119183401	109 N04 E24 10DDBB1 004N024E10R001M	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
381239119165601	109 N04 E24 13BBDD1	well	NWISWeb/Appendix 1	no	no	no
380958119193301	109 N04 E24 33ADBA1	well	no	no	NWISWeb/Appendix 3	no
381407119132401	109 N04 E25 04CAAA1	well	NWISWeb/Appendix 1	no	no	no
381251119132001	109 N04 E25 09DCCC1	well	NWISWeb/Appendix 1	no	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
381030119142201	109 N04 E25 29DBCA1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
381416119042601	109 N04 E26 02ACAC1 004N026E02G001M	spring	no	no	NWISWeb/Appendix 5	no
381422119032001	109 N04 E26 24DBA 1 004N026E24KS01M	spring*	no	no	NWISWeb/Appendix 5	no
381254119005401	109 N04 E27 08DDBD1 004N027E08R001M	spring	no	no	NWISWeb/Appendix 5	no
381639119172001	109 N05 E24 23DABD1	well	NWISWeb/Appendix 1	no	no	no
381624119170901	109 N05 E24 24CCCB1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
381547119163201	109 N05 E24 25DDBD1	well	NWISWeb/Appendix 1	no	no	no
381754119125101	109 N05 E25 09AADA1	well	NWISWeb/Appendix 1	no	no	no
381650119130401	109 N05 E25 21ADBC1	well	NWISWeb/Appendix 1	no	no	no
381435119135501	109 N05 E25 32DDDD1	well	NWISWeb/Appendix 1	no	no	no
382107119205001	109 N06 E24 21DDBC1 006N024E21K001M	well	no	no	NWISWeb/Appendix 3	no
382048119200301	109 N06 E24 22CCD 1 006N024E22N001M	well	no	no	NWISWeb/Appendix 3	no
382110119072001	109 N06 E26 21DAB 1 006N026E021J001M MASONIC	spring	no	no	NWISWeb/Appendix 5	no
3821421185534701	109 N06 E28 19CDD 1 Spring	spring	no	no	NWISWeb/Appendix 5	no
382043118445501	109 N06 E29 28DCBA1 Borealis	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
382949119115401	109 N07 E25 04BDBC1 LONG DOCTOR SPRING	spring	no	no	NWISWeb/Appendix 5	no
382746119115101	109 N07 E25 16CACAI Silverado	well	no	no	NWISWeb/Appendix 3	no
383444119004601	109 N08 E27 06CAB 1 PARALDE SPRING	spring	no	no	NWISWeb/Appendix 5	no
3833451185551201	109 N08 E27 12CDC 1 DICKIE SPRING	spring	no	no	NWISWeb/Appendix 5	no
3837521185521701	109 N09 E28 20AAA 1 CHIPMUNK SPRING	spring	no	no	NWISWeb/Appendix 5	no
3849191185333001	109 N11 E28 18ABB 1 SUMMIT SPRING	spring	no	no	NWISWeb/Appendix 5	no
384842118535001	109 N11 E28 18CAC 1 ABRAHAM SPRING	spring	no	no	NWISWeb/Appendix 5	no
3847021185520201	109 N11 E28 28BDB 1 TWILIGHT SPRING	spring	no	no	NWISWeb/Appendix 5	no
385918119154001	109 N13 E24 14DBD 1	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385619118483201	110A N12 E28 01BBBA1 SES	well	NWISWeb/Appendix 1	no	no	no
385605118440601	110A N12 E29 03BCBA1 SAND DUNE	well	NWISWeb/Appendix 1	no	no	no
385637118463501	110A N12 E29 05BBBD1 HEARTFALLS WELL C	well	NWISWeb/Appendix 1	no	no	no
385450118425301	110A N12 E29 14ACAB1 OLD RR GRADE	well	NWISWeb/Appendix 1	no	no	no
385423118440801	110A N12 E29 15BBCC1 GREASEWOOD	well	NWISWeb/Appendix 1	no	no	no
385345118473001	110A N12 E29 18CCCC1 POWERLINE RD OBSERVATION 3	well	NWISWeb/Appendix 1	no	no	no
385344118470301	110A N12 E29 18CDDC2 POWERLINE RB DS	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385342118473101	110A N12 E29 19BBBB1 POWERLINE RD W 1	well	NWISWeb/Appendix 1	no	no	no
385343118473101	110A N12 E29 19BBBB2 POWERLINE RD OBSERVATION 1	well	NWISWeb/Appendix 1	no	no	no
385343118473102	110A N12 E29 19BBBB3 POWERLINE RD OBSERVATION 2	well	NWISWeb/Appendix 1	no	no	no
385325118455001	110A N12 E29 20ACBC1 FEEDLOT WRPT	well	NWISWeb/Appendix 1	no	no	no
385333118461601	110A N12 E29 20BBC 1 RABBIT BRUSH	well	NWISWeb/Appendix 1	no	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal; *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
385342118443201	110A N12 E29 21ABAB1 AGAI PAH	well	NWISWeb/Appendix 1	no	no	no
385203118452001	110A N12 E29 29DDDA1 SOLAR STOCK	well	NWISWeb/Appendix 1	no	no	no
385430118290401	110A N12 E31 14ABCA1 KOEGEL HILLS	well	NWISWeb/Appendix 1	no	no	no
390047118513801	110A N13 E28 04CDC 1 LITTLE DAM DEEP	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390047118513802	110A N13 E28 04CDC 2 LITTLE DAM SHALLOW	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385915118491301	110A N13 E28 14CADA1 SCHURZ NW	well	NWISWeb/Appendix 1	no	no	no
385840118500101	110A N13 E28 22ADBC1 RED EARTH	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
385756118485001	110A N13 E28 26AACA1 WRPT WELL A SUNSET	well	NWISWeb/Appendix 1	no	no	no
390049118464801	110A N13 E29 07ACCA1 CALICO HILLS	well	NWISWeb/Appendix 1	no	no	no
385908118453201	110A N13 E29 17DDBB1 SCHURZ NE SHALLOW	well	NWISWeb/Appendix 1	no	no	no
385908118453202	110A N13 E29 17DDBB2 SCHURZ NE DEEP	well	NWISWeb/Appendix 1	no	no	no
385930118373101	110A N13 E30 15BCBC1 AQUADUCT	well	NWISWeb/Appendix 1	no	no	no
390610118554301	110A N14 E27 02DBCD1 COW CAMP LB US	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390610118554201	110A N14 E27 02DBCD2 COW CAMP LB DS	well	NWISWeb/Appendix 1	no	no	no
390610118554202	110A N14 E27 02DBCD4 COW CAMP RB DS	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390527118581901	110A N14 E27 09BABB1 USGS	well	NWISWeb/Appendix 1	no	no	no
390350118544401	110A N14 E27 24ACCB1 WEBER SOUTH	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390538118534701	110A N14 E28 07BDBD1 WEBER NORTH	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390303118513401	110A N14 E28 28BDAB1 WEBER	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390219118515301	110A N14 E28 33BBBD1 WEBER DAM NESTED INTERMED	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390219118515302	110A N14 E28 33BBBD2 WEBER DAM NESTED SHALLOW	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390219118515303	110A N14 E28 33BBBD3 WEBER DAM DEEP	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390343118465001	110A N14 E29 19DCAA1 WELL B LONG VALLEY	well	NWISWeb/Appendix 1	no	no	no
391052119034101	110A N15 E26 10BDCD2 USBLM - JULIAN WELL	well	NWISWeb/Appendix 1	no	no	no
390933119030301	110A N15 E26 15DDDA1 JULIAN POWERLINE DEEP	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390933119030302	110A N15 E26 15DDDA2 JULIAN POWERLINE SHALLOW	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390729119020401	110A N15 E26 25CCBC1 USGS	well	NWISWeb/Appendix 1	no	no	no
390906118575701	110A N15 E27 21ACAC1 EAST JULIAN	well	NWISWeb/Appendix 1	no	no	no
390700118584001	110A N15 E27 32DADD1 WILLOW ET LB US	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
390700118584101	110A N15 E27 32DADD2 WILLOW ET DEEP	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
383919118454101	110B N09 E29 08ADC 1 RVP	well	NWISWeb/Appendix 1	no	no	no
384234118390801	110B N10 E30 20DDAB1 EAST LAKE SHALLOW	well	NWISWeb/Appendix 1	no	no	no
384234118390802	110B N10 E30 20DDAB2 EAST LAKE DEEP	well	NWISWeb/Appendix 1	no	no	no
384917118421601	110B N11 E29 15CCAD1 TLS	well	NWISWeb/Appendix 1	no	no	no
384917118421602	110B N11 E29 15CCAD2 TRANSMISSION LINE-DEEP	well	NWISWeb/Appendix 1	no	no	no
385628118481301	110B N13 E28 36CDAC1 LATERAL 2A LB US S	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal, *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
385628118481302	110B N13 E28 36CDAC2 LATERAL 2A LB DS D	well	NWISWeb/Appendix 1	no	NWISWeb/Appendix 3	no
382234118333801	110C N06 E31 18DAC 1 WHISKY FLAT 3	well	no	no	NWISWeb/Appendix 3	no
382034118313301	110C N06 E31 28DCDD1 SWRI	well	NWISWeb/Appendix 1	no	no	no
382033118315501	110C N06 E31 33BABB2	well	NWISWeb/Appendix 1	no	no	no
382918118392201	110C N07 E30 05DCDC1 KIRBY ZOO	well	NWISWeb/Appendix 1	no	no	no
382850118392401	110C N07 E30 08ACDC1	well	NWISWeb/Appendix 1	no	no	no
383440118365001	110C N08 E30 03DDAD1 U.S. ARMY WELL 7	well	NWISWeb/Appendix 1	no	no	no
383308118410901	110C N08 E30 18DCDD1 U.S. ARMY WELL 5	well	no	no	NWISWeb/Appendix 3	no
375746119160901	112 N01 E24 12DAAD1 001N024E12J001M SCG	well*	no	no	NWISWeb/Appendix 3	no
375537119151901	112 N01 E25 30ABAA1 001N025E30B001M TLOG	well*	no	no	NWISWeb/Appendix 3	no
375652119062001	112 N01 E26 16ADAD1 001N026E16H001M TPGM	well*	no	no	NWISWeb/Appendix 3	no
380139119143001	112 N02 E25 17DCBC1 002N025E17Q001M LLR	well*	no	no	NWISWeb/Appendix 3	no
384200118165000	122 N10 E33 26BBC 1 SPG NEAR GILLIS CAMP	spring*	no	no	NWISWeb/Appendix 5	no
384102118155901	122 N10 E33 35ADC 1 RABBIT SPRING	spring*	no	no	NWISWeb/Appendix 5	no
10311200	ASH CYN CK NR CARSON CITY, NV	stream*	no	no	NWISWeb/Appendix 4	no
10291480	BUCKEYE CK AT BIG MEADOW NR BRIDGEPORT, CA	stream	no	no	NWISWeb/Appendix 4	no
10291500	BUCKEYE CK NR BRIDGEPORT, CA	stream	no	no	NWISWeb/Appendix 4	no
10298510	COLONY DITCH BLW DIV W WALKER RVR NR SMITH VLY, NV	canal	no	NWISWeb/Appendix 2	no	no
10299050	DESERT CK ABV JACKASS CK NR WELLINGTON, NV	stream	no	NWISWeb/Appendix 2	NWISWeb/Appendix 4	no
10299000	DESERT CK ABV LOBDEL LAKE NR WELLINGTON, NV	stream	no	NWISWeb/Appendix 2	NWISWeb/Appendix 4	no
10299020	DESERT CK BLW EF DESERT CK NR WELLINGTON, NV	stream	no	NWISWeb/Appendix 2	NWISWeb/Appendix 4	no
10299005	DESERT CK BLW LOBDEL DAM NR WELLINGTON, NV	stream	no	NWISWeb/Appendix 2	NWISWeb/Appendix 4	no
10299100	DESERT CK NR WELLINGTON, NV	stream	no	no	NWISWeb/Appendix 4	no
10295100	E WALKER RV AT NORDYKE RD NR MASON, NV	stream	no	NWISWeb/Appendix 2	no	no
10291495	EAGLE CK AT BUCKEY CAMPGROUND NR BRIDGEPORT, CA	stream	no	no	NWISWeb/Appendix 4	no
10295025	FOX DITCH AT BARTLETT LN NR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no
10295030	FOX DITCH BLW DIV AT E WALKER RD NR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no
10289490	GREEN CK BLW CAMPGROUND NR BRIDGEPORT, CA	stream	no	no	NWISWeb/Appendix 4	no
10289500	GREEN CK NR BRIDGEPORT, CA	stream	no	no	NWISWeb/Appendix 4	no
10294180	HIGH DITCH NR HALL DITCH DIV NEAR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no
10294130	HIGH DITCH NR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no
382415119234000	LAVA SPRINGS	spring	no	no	NWISWeb/Appendix 5	no
10295020	MICKEY DITCH BLW FLUME AT E WALKER RD NR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no
10295010	MICKEY DITCH NR BORSINI LN NR MASON, NV	canal	no	NWISWeb/Appendix 2	no	no

Table 1. Data-collection sites for the Walker River Basin study, water years 2010–14.—Continued

[NWIS, National Water Information System; NWISWeb, data are available from the NWIS web portal; *, site is located outside of the Walker River Basin study area]

NWIS site identification number	NWIS station name	Site type	Water level	Surface-water discharge	Water chemistry	Meteorological
10296585	MILL CK AT HWY 395 AT WALKER, CA	stream	no	NWISWeb/Appendix 2	no	no
10299275	N FK RED CYN CK NR WELLINGTON, NV	stream	no	no	NWISWeb/Appendix 4	no
10298560	PLYMOUTH CANAL AT WELLINGTON CUTOFF NR WELLINGTON	canal	no	NWISWeb/Appendix 2	no	no
10298550	PLYMOUTH CANAL BLW DIV W WALKER RVR NR SMITH VLY	canal	no	NWISWeb/Appendix 2	no	no
10299900	RED CYN CK NR WELLINGTON, NV	stream	no	no	NWISWeb/Appendix 4	no
10299274	S FK RED CYN CK NR WELLINGTON, NV	stream	no	no	NWISWeb/Appendix 4	no
10298100	SARONI CANAL AT SR 338 AT SMITH VLY, NV	canal	no	NWISWeb/Appendix 2	no	no
10298050	SARONI CANAL NR PLYMOUTH CANAL DIV NR SMITH VLY	canal	no	NWISWeb/Appendix 2	no	no
10300125	TUNNEL DITCH AT SHEPARDS WAY NR HUDSON, NV	canal	no	NWISWeb/Appendix 2	no	no
10300150	TUNNEL DITCH BLW TUNNEL NR HUDSON, NV	canal	no	NWISWeb/Appendix 2	no	no
10298700	W WALKER R AT HWY 824 AT SMITH VLY, NV	stream	no	NWISWeb/Appendix 2	no	no
10300400	W WALKER RV AT NORDYKE RD NR MASON, NV	stream	no	NWISWeb/Appendix 2	no	no
10296630	W WALKER RVR AT CUNNINGHAM BRIDGE AT COLEVILLE, CA	stream	no	NWISWeb/Appendix 2	no	no
10297100	W WALKER RVR BLW TOPAZ CANAL NR WELLINGTON, NV	stream	no	NWISWeb/Appendix 2	no	no
384200118431901	WALKER LAKE 3 CENTER NDOW	lake	no	no	NWISWeb/Appendix 6	no
384200118431801	WALKER LAKE MONITORING STATION (01 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431803	WALKER LAKE MONITORING STATION (03 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431805	WALKER LAKE MONITORING STATION (05 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431807	WALKER LAKE MONITORING STATION (07 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431809	WALKER LAKE MONITORING STATION (09 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431811	WALKER LAKE MONITORING STATION (11 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431813	WALKER LAKE MONITORING STATION (13 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431815	WALKER LAKE MONITORING STATION (15 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431817	WALKER LAKE MONITORING STATION (17 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431819	WALKER LAKE MONITORING STATION (19 METER DEPTH)	lake	no	no	Appendix 6	no
384200118431800	WALKER LAKE MONITORING STATION (SURFACE)	lake	no	no	no	Appendix 6
390710118591001	WALKER RV MISC-WLKRV16	stream	no	NWISWeb/Appendix 2	no	no
381205119072000	WARM SPRINGS BODIE HILL	spring	no	no	NWISWeb/Appendix 5	no

Table 2. Water-chemistry analytes for the Walker River Basin study, water years 2010–14.

[Physical properties in the field were measured with a multi-probe sonde, except for alkalinity, bicarbonate, and carbonate, which were determined using the inflection-point, incremental titration method. NWQL, National Water Quality Laboratory; RGDL, Reston Groundwater Dating Laboratory; RSIL, Reston Stable Isotope Laboratory]

Analyte	Water-chemistry category	Analysis location	Water treatment	Unit	Unit abbreviation	Wells (Appendix 3)	Streams (Appendix 4)	Springs (Appendix 5)	Lake, near surface (Appendix 5)	Lake, multiple depths (Appendix 6)
Alkalinity	Physical property	field	filtered	milligrams per liter, as calcium carbonate	mg/L, as CaCO ₃	Yes	No	No	No	No
Alpha radioactivity, thorium-230 curve	Radionuclide	NWQL	filtered	picoCuries per liter	pCi/L	Yes	No	No	No	No
Aluminum	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Ammonia	Nutrient	NWQL	filtered	milligrams per liter, as nitrogen	mg/L, as N	Yes	No	No	No	No
Antimony	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Argon	Dissolved gas	RGDL	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	No
Arsenate	Ion	NWQL	filtered	micrograms per liter, as arsenic	µg/L, as As	Yes	No	No	No	No
Arsenic	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Arsenite	Ion	NWQL	filtered	micrograms per liter, as arsenic	µg/L, as As	Yes	No	No	No	No
Barium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Beryllium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Bicarbonate	Ion	field	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Boron	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Bromide	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	Yes	No	No	No
Cadmium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Calcium	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Carbon dioxide	Dissolved gas	RGDL	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	No
Carbonate	Ion	field	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Chloride	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	Yes	Yes	No	No
Chromium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Cobalt	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Copper	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Delta oxygen-18	Isotope	RSIL	unfiltered	per mil (parts per thousand)	‰	Yes	Yes	Yes	No	No
Deuterium/Protium ratio	Isotope	RSIL	unfiltered	per mil (parts per thousand)	‰	Yes	Yes	Yes	No	No
Dimethyl-arsenate, recoverable	Ion	NWQL	filtered	micrograms per liter, as arsenic	µg/L, as As	Yes	No	No	No	No
Dinitrogen	Dissolved gas	RGDL	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	No
Dissolved oxygen	Physical property	field	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	Yes
Dissolved oxygen, lab	Physical property	NWQL	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	No
Dissolved solids, dried at 180 °C	Physical property	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	Yes	No
Fluoride	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Gross beta radioactivity, cesium-137 curve	Radionuclide	NWQL	filtered	picoCuries per liter	pCi/L	Yes	No	No	No	No
Iron	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Lead	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Lithium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Magnesium	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No

Table 2. Water-chemistry analytes for the Walker River Basin study, water years 2010–14.—Continued

[Physical properties in the field were measured with a multi-probe sonde, except for alkalinity, bicarbonate, and carbonate, which were determined using the inflection-point, incremental titration method. NWQL, National Water Quality Laboratory; RGDL, Reston Groundwater Dating Laboratory; RSIL, Reston Stable Isotope Laboratory]

Analyte	Water-chemistry category	Analysis location	Water treatment	Unit	Unit abbreviation	Wells (Appendix 3)	Streams (Appendix 4)	Springs (Appendix 5)	Lake, near surface (Appendix 6)	Lake, multiple depths (Appendix 6)
Manganese	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Mercury	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Methane, recoverable	Dissolved gas	RGDL	unfiltered	milligrams per liter	mg/L	Yes	No	No	No	No
Molybdenum	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Monomethyl-arsenate, recoverable	Ion	NWQL	filtered	micrograms per liter, as arsenic	µg/L, as As	Yes	No	No	No	No
Nickel	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Nitrate	Nutrient	NWQL	filtered	milligrams per liter, as nitrogen	mg/L, as N	Yes	No	No	No	No
Nitrate plus nitrite	Nutrient	NWQL	filtered	milligrams per liter, as nitrogen	mg/L, as N	Yes	No	No	No	No
Nitrite	Nutrient	NWQL	filtered	milligrams per liter, as nitrogen	mg/L, as N	Yes	No	No	No	No
Organic nitrogen	Nutrient	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Orthophosphate	Nutrient	NWQL	filtered	milligrams per liter, as phosphorus	mg/L, as P	Yes	No	No	No	No
pH	Physical property	field	unfiltered	standard units	standard units	Yes	Yes	Yes	Yes	Yes
Potassium	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Selenium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Silica	Ion	NWQL	filtered	milligrams per liter, as silicon dioxide	mg/L, as SiO ₂	Yes	No	No	No	No
Silver	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Sodium	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Specific conductance	Physical property	field	unfiltered	microsiemens per centimeter at 25 degrees Celsius	µS/cm at 25 °C	Yes	Yes	Yes	Yes	Yes
Strontium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Sulfate	Ion	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Thallium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Total nitrogen, analytically determined	Nutrient	NWQL	filtered	milligrams per liter	mg/L	Yes	No	No	No	No
Uranium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Vanadium	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No
Water temperature	Physical property	field	unfiltered	degrees Celsius	°C	Yes	Yes	Yes	Yes	Yes
Zinc	Trace metal	NWQL	filtered	micrograms per liter	µg/L	Yes	No	No	No	No

Summary

With funding from the 2002 Farm Bill and in response to declining lake levels and worsening water quality in Walker Lake, the USGS, in cooperation with the Bureau of Reclamation, began a study of the Walker River Basin in 2004. The main objective of the study was to determine how to best sustain the desert terminal lake and improve water quality. To accomplish this goal, the USGS has been collecting and analyzing hydrologic data since 2004; this report documents the data and data-collection methods for water years 2010–14.

Groundwater levels were measured in 195 wells, totaling 2,070 measurements, from October 2, 2009, to March 18, 2014. Surface-water discharge was measured in 11 streams and 13 irrigation canals, totaling 104 measurements, from January 6, 2011, to October 29, 2012. Water-chemistry data were collected at wells, streams, springs, and Walker Lake. Chemical analyses included determining physical properties; concentrations of major ions, nutrients, trace metals, dissolved gases, and radionuclides; and ratios of the stable isotopes of hydrogen and oxygen. Groundwater-chemistry samples were collected from 70 wells, totaling 107 samples, from September 15, 2010, to September 21, 2012. Stream water-chemistry samples were collected from 14 streams, totaling 359 samples, from October 21, 2010, to September 27, 2013. Spring water-chemistry samples were collected from 20 springs, totaling 20 samples, from August 18, 2011, to August 15, 2012. Walker Lake water-chemistry samples from near the lake surface were collected on November 2, 2010, and January 14, 2014. Walker Lake water-chemistry data from 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19 meters below the lake surface were collected from May 3, 2011, to June 9, 2013. Meteorological data were collected on Walker Lake from March 30, 2011, to September 30, 2013. All of the data are presented in this report and accessible from NWISWeb, except multiple-depth Walker Lake water-chemistry data, which are available only in this report.

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Appendixes

All of the appendixes in this report are distributed in Microsoft® Excel 2010 format and are available for download at <http://dx.doi.org/10.3133/ds967>.

Appendix 1. Water-level measurements for the Walker River Basin study, water years 2010–14.

Appendix 2. Surface-water discharge measurements for the Walker River Basin study, water years 2011–13.

Appendix 3. Groundwater-chemistry data for the Walker River Basin study, water years 2010–12.

Appendix 4. Stream water-chemistry data for the Walker River Basin study, water years 2011–13.

Appendix 5. Spring water-chemistry data for the Walker River Basin study, water years 2010–13.

Appendix 6. Lake water-chemistry and meteorological data from sites located on Walker Lake, water years 2011–14.

