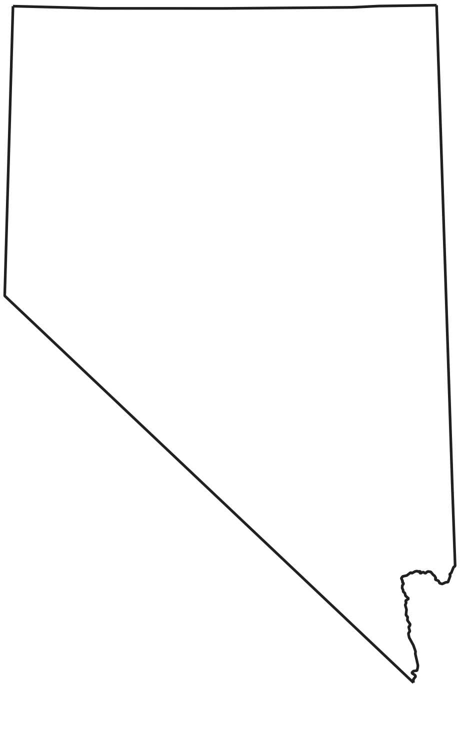
Prepared in cooperation with the State of Nevada and with other agencies

Water Resources Data
Nevada
Water Year 2004



Water-Data Report NV-04-1

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

Calendar for Water Year 2004

2003

October

S	M	T	W	T	F	S
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2004

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UNITED STATES DEPARTMENT OF THE INTERIOR

GALE A. NORTON, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

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Carson City, Nevada 89706

2004

Water Resources Data
Nevada
Water Year 2004

By Laurie J. Bonner, David M. Evetts, James R. Swartwood, Jon W. Wilson

Water-Data Report NV-04-1

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U.S. Department of the Interior
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U.S. Department of the Interior
Gale A. Norton, Secretary

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2004

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PREFACE

This report for Nevada is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface-water and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streams, canals, drains and springs, lakes and reservoirs, and observation wells provide the hydrologic information needed by Federal, State, and local agencies and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by personnel of the U.S. Geological Survey who collected, analyzed, verified, and organized the data and who typed, edited, and assembled the report. The Nevada Data Management Unit had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines.

In addition to the authors, U.S. Geological Survey personnel in Nevada who contributed significantly to the collection and preparation of the data in this report were: Kip A. Allander, Nancy L. Alvarez, David L. Berger, Steven N. Berris, Robert E. Bostic, Robert L. Burrows, Kenneth J. Covay, E. James Crompton, Peggy E. Elliott, Larry P. Etchemendy, Joseph M. Fenelon, Kerry T. Garcia, Gary C. Gortsema, Goug D. Hutchinson, Clifford Z. Jones, Joseph J. Joyner, Randy S. Kyes, Richard A. LaCamera, Randell J. Laczniak, Michael S. Lico, Glenn L. Locke, Thomas J. Lopes, Douglas K. Maurer, Rose L. Medina, Michael T. Moreo, Rodney H. Munson, Walter E. Nylund, Gary L. Otto, Angela P. Paul, Michael T. Pavelko, Robert N. Pennington, Russell W. Plume, Alan M. Preissler, David E. Prudic, Steven R. Reiner, Micheal R. Rosen, Timothy G. Rowe, Ryan C. Rowland, Roslyn Ryan, Ronald J. Spaulding, Donald H. Schaefer, Robert J. Sexton, Emil L. Stockton, Daron J. Tanko, Carl E. Thodal, Karen A. Thomas, Mary L. Tumbusch, Eric B. Turner, Sonya L. Vasquez, Shannon C. Water-molen, Craig L. Westenburg, David B. Wood and James L. Wood.

DISCONTINUED SURFACE-WATER DISCHARGE STATIONS

The following continuous-record surface-water discharge stations (gaging stations) in Nevada and parts of California have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations.

Station name	Station number	Drainage area (mi^2)	Period of record (water years)
Mesquite Canal near Mesquite, NV	09415060	--	1951-55
Bunkerville Canal near Bunkerville, NV	09415080	--	1951-55
Virgin River at Riverside, NV	09415190	5,890	1971-74, 1993-96
Virgin River above Halfway Wash near Riverside, NV	09415230	5,980	1978, 1980-83, 1985
White River near Preston, NV	09415500	--	1914
Water Canyon Creek near Preston, NV	09415515	11.0	1983-87, 1990-94
Pahranagat Valley Tributary near Hiko, NV	09415600	17.0	1964-77
White River above Upper Pahranagat Lake near Alamo, NV	09415700	2,630	1990-94
Pahranagat Wash near Moapa, NV	09415850	252	1988-93
Muddy River Power Diversion near Moapa, NV	09415950	--	1978-85
Muddy River above Moapa Indian Res near Moapa, NV	09416500	3,890	1914-18
Muddy River at Rr Pump Plant near Moapa, NV	09417000	3,900	1915-17
Muddy River at Weiser Ranch near Moapa, NV	09417400	4,360	1916-17
Meadow Valley Wash at Eagle Canyon, near Ursine, NV	09417500	293	1962-75
Meadow Valley Wash near Panaca, NV	09418000	450	1945-50
Mathews Canyon Wash near Caliente, NV	09418200	34.0	1958-84
Pine Canyon Wash near Caliente, NV	09418300	45.0	1958-84
Muddy River near Overton, NV	09419500	8,180	1913-16, 1948-52
Muddy River above Lake Mead near Overton, NV	09419515	8,310	1979-93
Lee Canyon near Charleston Park, NV	09419610	9.20	1963-94
Las Vegas Wash above Detention Basin near North Las Vegas, NV	09419648	--	1988-93
North Las Vegas Detention Basin Outlet at Craig Road near North Las Vegas, NV	09419649	1,920	1992-99
Las Vegas Wash at North Las Vegas, NV	09419650	1,300	1962-78
Las Vegas Wash at Lake Mead Drive near North Las Vegas, NV	09419655	--	1988-96
Las Vegas Creek at Lamb Blvd near Las Vegas, NV	09419656	46.3	1988-92
Flamingo Wash Detention Basin Outlet at Las Vegas, NV	09419672	--	1992-96
Flamingo Wash near Torrey Pines Drive near Las Vegas, NV	09419673	93.6	1988-99
Tropicana Wash at Swenson Street Bridge at Las Vegas, NV	09419676	--	1989-96
Flamingo Wash at Maryland Parkway at Las Vegas, NV	09419677	106	1970-78
Flamingo Wash at Eastern Avenue near Las Vegas, NV	094196775	108	1990-99
Duck Creek at Eastern Avenue at Las Vegas, NV	09419688	--	1988-96
Pittman Wash at Wigmam Parkway near Henderson, NV	09419695	68.31	1989-99
Las Vegas Wash above Three Kids Wash below Henderson, NV	09419753	2,180	1988-98
Las Vegas Wash below Lake Las Vegas below Henderson, NV	09419790	2,200	1992-2002
Thousand Springs Creek near Wilkins, NV	10172907	--	1985-90
Thousand Springs Creek near Shores, NV	1017290880	--	1985-87
Thousand Springs Creek below Toano Draw near Shores, NV	1017290885	--	1987-89
Thousand Springs Creek near Tacoma, NV	10172910	--	1911-14
Thousand Springs Creek near Montello, NV	10172914	--	1985-90
Snake Creek near Baker, NV	10243230	30.0	1913-15, 1916-17
Baker Creek at Narrows near Baker, NV	10243240	16.4	1947-55, 1993-97
Baker Creek near Baker, NV	10243250	10.0	1913-16
Franklin River near Arthur, NV	10244720	10.3	1964-83
Overland Creek near Ruby Valley, NV	10244745	9.00	1960-67, 1977-82
Duck Creek near Cherry Creek, NV	10245005	--	1986-88
Currie Spring near Currie, NV	10245030	--	1983-86
Goshute Creek near Cherry Creek, NV	10245040	9.67	1983-86
Illipah Creek near Hamilton, NV	10245445	31.5	1983-87, 1990-94
Newark Valley Trib near Hamilton, NV	10245800	157	1962-86
Stoneberger Creek near Austin, NV	10245925	35.6	1978-97
Big Spring near Duckwater, NV	10246835	--	1970-71
Little Currant Creek near Currant, NV	10246846	12.9	1964-81, 1983-86, 1990-94
Currant Creek at Ranger Station near Currant, NV	10246850	--	1913
Currant Creek (at Cazier's Ranch) near Currant, NV	10246860	--	1913-17, 1923

DISCONTINUED SURFACE-WATER DISCHARGE STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Period of record (water years)
Big Warm Spring near Duckwater, NV	10246890	--	1915-16
Duckwater Creek near Duckwater, NV	10246900	--	1915-17
Upper Hot Creek Ranch Springs near Warm Springs, NV	10246910	0.07	1967-72
Hot Creek Ranch Springs near Warm Springs, NV	10246920	--	1967-73
Six Mile Creek near Warm Springs, NV	10246930	19	1967-68, 1984-91
Moores Station Springs at Moores Station, NV	10246940	136	1967-73
Warm Springs at Warm Springs, NV	10246950	--	1967-73
Hot Creek near Warm Springs, NV	10247050	1,030	1967-73
Big Creek near Warm Springs, NV	10247200	12.0	1991-94
Penoyer Valley Tributary near Tempiute, NV	10247860	1.48	1966-77
Eldorado Valley Tributary near Nelson, NV	10248510	1.41	1966-77
Willow Creek near Warm Springs, NV	10249190	16.4	1978-92
McClusky Creek near Austin, NV	10249200	11.6	1979, 1981-82
Campbell Creek Tributary near Eastgate, NV	10249411	2.14	1964-82
Chiatovich Creek near Dyer, NV	10249900	37.3	1961-82
Beatty Wash near Beatty, NV	10251215	94.6	1989-95
Amargosa River at Highway 95 below Beatty, NV	10251218	470	1963-68, 1991-95
Amargosa River near Beatty, NV	10251220	470	1964-68
Fortymile Wash above East Cat Canyon, Nevada Test Site, NV	10251242	40.8	1991-95
East Cat Canyon Wash at Fortymile Wash, Nevada Test Site, NV	10251243	13.3	1991-95
Unnamed Tributary to Stockade Wash near Rattlesnake Ridge Nevada Test Site, NV	10251248	3.9	1984-95
Stockade Wash near Fortymile Wash, Nevada Test Site, NV	10251249	68.2	1991-95
Fortymile Wash at Narrows, Nevada Test Site, NV	10251250	258	1983-97
Pagany Wash near the Prow, Nevada Test Site, NV	102512531	0.47	1994-95
Pagany Wash #1 near Well UZ-4, Nevada Test Site, NV	102512533	0.82	1992-95
Drillhole Wash above Well UZ-1, Nevada Test Site, NV	102512535	0.68	1994-95
Wren Wash at Yucca Mountain, Nevada Test Site, NV	1025125356	0.23	1994-95
Split Wash below Quac Canyon Wash, Nevada Test Site, NV	102512537	0.33	1993-95
Split Wash at Antler Ridge, Nevada Test Site, NV	1025125372	2.35	1993-95
Fortymile Wash near Well J-13, Nevada Test Site, NV	10251255	304	1983-97
Amargosa River at Highway 127, near CA-NV State Line	10251259	1,542	1993-95
Carson Slough at Ash meadows, NV	10251275	--	1993-97
Peak Spring Canyon Creek near Charleston Peak, NV	10251890	3.09	1977-83, 1984-94
Lees Creek near Pahrump, NV	10251900	--	1916
Intermittent Springs near Pahrump, NV	10251950	--	1916
Lovell Wash near Blue Diamond, NV	10251980	52.8	1967-77
Virginia Creek near Bridgeport, CA	10289000	63.6	1954-75
Green Creek near Bridgeport, CA	10289500	19.5	1954-75
Summers Creek near Bridgeport, CA	10290000	8.26	1954-59
Robinson Creek near Bridgeport, CA	10291000	40.2	1911-12
Swauger Creek near Bridgeport, CA	10292000	52.8	1912-15, 1954-75
East Walker River below Sweetwater Creek near Bridgeport, CA	10293050	467	1974-82
East Walker River above Mason Valley near Mason, NV near Mason, NV	10294000	--	1916-18, 1921-24
East Walker River near Yerington, NV	10294500	--	1903-08
East Walker River near Mason, NV	10295000	1,230	1911-16
West Walker River at Leavitt Meadows, near Coleville, CA	10295200	73.0	1945-64
Saroni Canal near Wellington, NV	10298000	--	1920-23
West Walker River near Wellington, NV	10298500	521	1918-24
Desert Creek near Wellington, NV	10299100	50.4	1965-69
Walker River near Nordyke, NV	10300500	--	1895
Walker River near Mason, NV	10300600	2,400	1974-84
Walker River at Mason, NV	10301000	--	1911-16, 1921-23
Walker River above Little Dam near Schurz, NV	10301745	--	1995-2001
Walker River at Shurz, NV	10302000	2,850	1914-33
East Fork Carson River above Soda Springs Ranger Station, near Markleeville, CA	10302500	30	1947-51
Silver King Creek near Coleville, CA	10303000	31.6	1947-51
East Fork Carson River at Silver King Valley, near Markleeville, CA	10303500	--	1911-12
Wolf Creek near Markleeville, CA	10304000	11.7	1947-51
Silver Creek below Pennsylvania Creek, near Markleeville, CA	10304500	19.6	1947-67
Silver Creek near Markleeville, CA	10305000	27.3	1911-12
East Fork Carson River near Markleeville, CA	10305500	208	1911-31
Hot Springs Creek near Markleeville, CA	10306000	14.3	1947-57
Hot Springs Creek at Markleeville, CA	10306500	26.7	1912-30
Pleasant Valley Creek above Raymond Canyon Creek near Markleeville, CA	10307000	14.6	1947-50
Pleasant Valley Creek near Markleeville, CA	10307500	25.2	1911-12
Markleeville Creek at Markleeville, CA	10308000	53.7	1911-31
East Fork Carson River at California-Nevada State Line, CA	10308500	300	1911-14
Indian Creek at Woodfords, CA	10309025	1.7	1987-91
Indian Creek at Diamond Valley near Paynesville, CA	10309030	16.15	1987-91

DISCONTINUED SURFACE-WATER DISCHARGE STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Period of record (water years)
Indian Creek above Mouth near Gardnerville, NV	10309035	25.4	1994-98
Pine Nut Creek near Gardnerville, NV	10309050	10.14	1980-97
Buckeye Creek near Minden, NV	10309070	46.3	1980-97
East Fork Carson River at Minden, NV	10309100	392	1974-84, 1994-98
West Fork Carson River above Woodfords, CA	10309500	53	1947-51
Fredericksburg Canyon Creek near Fredericksburg, CA	10310300	3.71	1989-2000
Miller Spring near Sheridan, NV	10310350	--	1989-97
West Fork Carson River at Muller Lane near Minden, NV	10310358	--	1994-98
East Branch Brockliss Slough at Muller Lane near Minden, NV	10310402	--	1994-98
West Branch Brockliss Slough at Muller Lane near Minden, NV	10310403	--	1994-98
Carson River at Genoa, NV	10310405	570	1974-82
Vicee Canyon Creek near Carson City, NV	10311250	1.30	1983-85
Vicee Canyon Creek near Sagebrush Ranch near Carson City, NV	10311260	1.83	1984-85 1989-97
Carson River near Empire, NV	10311500	988	1901-07, 1911-23
Buckland Ditch near Fort Churchill, NV	10311900	--	1962-72
Stillwater Slough Cutoff Drain near Stillwater, NV	10312220	--	1967-81
Paiute Diversion Drain near Stillwater, NV	10312240	--	1967-81
Paiute Drain above D-line Canal near Stillwater, NV	10312250	--	1989-90
Indian Lakes Canal near Fallon, NV	10312260	--	1967-81
Indian Lakes Canal below East Lake near Stillwater, NV	10312265	--	1979-82
D-line Canal below East Lake near Stillwater, NV	10312267	--	1989
Paiute Drain at Wildlife Entrance near Stillwater, NV	10312270	--	1980-82
TJ Drain at Wildlife Entrance near Stillwater, NV	10312274	--	1989-90
Carson River below Fallon, NV	10312280	--	1967-85
Bishop Creek near Wells, NV	10312500	125	1910-11
Starr Creek near Deeth, NV	10313000	--	1913-24
Marys River at Marys River Cabin, near Deeth, NV	10313500	--	1913-14
Hanks Creek near Deeth, NV	10314000	--	1913-14
Marys River at Buena Vista Ranch, near Deeth, NV	10314500	--	1913-14
Marys River near Deeth, NV	10315000	355	1903, 1912-28
Secret Creek near Halleck, NV	10316000	35.0	1917-24
Lamoille Creek near Halleck, NV	10317000	245	1913-19
North Fork Humboldt River near North Fork, NV	10317400	11.0	1965-82
Mahala Creek near Tuscarora, NV	10317420	4.48	1980-85
Mahala Creek at State Hwy 225 near Tuscarora, NV	10317430	22.9	1980-82
Gance Creek near Tuscarora, NV	10317450	6.45	1980-87
Gance Creek at State Hwy 225 near Tuscarora, NV	10317460	20.2	1980-82
North Fork Humboldt River near Halleck, NV	10318000	1020	1898-1900, 1904-1914
South Fork Humboldt River near Lee, NV	10319000	54.0	1945-55
Huntington Creek near Lee, NV	10319500	770	1949-73
Tenmile Creek above South Fork Humboldt River near Elko, NV	10319950	164	1989-90
Dixie Creek above South Fork Humboldt River near Elko, NV	10320100	159	1989-96
South Fork Humboldt River near Elko, NV	10320500	1,310	1896-1922, 1924-32, 1937-73
Susie Creek near Carlin, NV	10321500	82.5	1956-58
Jack Creek below Indian Creek near Carlin, NV	10321860	10.47	1991-93
Maggie Creek near Carlin, NV	10321970	--	1990-91
Pine Creek near Palisade, NV	10323000	999	1912-14, 1946-58
Humboldt River near Dunphy, NV	10323400	--	1981-83
Humboldt River near Argenta, NV	10323500	7,490	1946-83
Humboldt River below Slaven Ditch near Argenta, NV	10323600	--	1981-84
Rock Creek at Rock Creek Ranch near Battle Mountain, NV	10324000	--	1915, 1917
Reese River near Ione, NV	10325500	53.0	1951-80
Reese River near Berlin, NV	10326000	94.0	1913-16
Big Creek near Austin, NV	10326500	9.0	1914,1916
Reese River near Austin, NV	10326700	1,130	1964-68
Fish Creek near Battle Mountain, NV	10326800	64.7	1977-85
Humboldt River near Valmy, NV	10327000	--	1950-58
Pole Creek near Golconda, NV	10328000	10.7	1961-74
North Fork Little Humboldt River near Paradise Valley, NV	10328450	210	1976-82
South Fork Little Humboldt River near Paradise Valley, NV	10328475	431	1976-83
Little Humboldt River below Chimney Dam near Paradise Valley, NV	10328500	780	1942-51, 1975-82
Cottonwood Creek near Paradise Valley, NV	10330000	--	1925-34
Cottonwood Creek at Paradise Valley, NV	10330500	57.4	1945-51
Humboldt River near Winnemucca, NV	10330900	14,600	1961-64
Humboldt River near Rose Creek, NV	10331500	15,200	1948-70
H L I L & P Company Feeder Canal near Mill City, NV	10332490	--	1914-31, 1937-38
H L I L & P Company Feeder Canal near Imlay, NV	10332500	--	1947-77
Humboldt River near Humboldt, NV	10333500	--	1933

DISCONTINUED SURFACE-WATER DISCHARGE STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Period of record (water years)
H L I L & P Company Outlet Canal near Humboldt, NV	10334000	--	1914-20, 1922-41
Humboldt River near Lovelock, NV	10336000	16,600	1912-27, 1950-59, 1998-2000
Toulon Drain at Derby Field Road near Toulon, NV	10336035	--	1998-2000
Army Drain above Iron Bridge near Lovelock, NV	10336039	--	1999-2000
Lower Humboldt Drain near Lovelock, NV	10336050	--	1965-66
Grass Lake near Meyers, CA	10336593	6.99	1971-74
Upper Truckee River near Meyers, CA	10336600	33.1	1961-86
Fallen Leaf Lake near Camp Richardson, CA	10336625	16.7	1969-92
Taylor Creek near Camp Richardson, CA	10336626	16.7	1969-92
Carnelian Creek at Carnelian Bay, CA	10336686	2.93	1999-2000
Edgewood Creek Tributary near Daggett Pass, NV	10336756	--	1981-83
Tributary of Edgewood Creek Tributary near Tahoe Village, NV	10336757	--	1981-83
Edgewood Creek Tributary at Highland Drive near Tahoe Village, NV	10336758	--	1981-83
Edgewood Creek near Stateline, CA	10336759	3.2	1983-87
Edgewood Creek at Lake Tahoe near Stateline, CA	10336765	5.50	1989-92
Summit Creek above Donnor Lake near Truckee, CA	10338100	4.96	1998
Donner Creek near Truckee, CA	10339000	29.4	1902-15, 1928-43
Truckee River above Prosser Creek near Truckee, CA	10339419	36.1	1993-98
South Fork Prosser Creek near Truckee, CA	10339500	6.37	1910
Prosser Creek at Hobart Mills, CA	10339700	27.4	1959-63
Alder Creek near Truckee, CA	10339900	7.47	1959-69, 1971-73
Prosser Creek near Truckee, CA	10340000	47.4	1904, 1908-12
Webber Creek near Truckee, CA	10341000	14.7	1910
Little Truckee River near Truckee, CA	10341500	32.3	1910
Little Truckee River below Diversion Dam near Sierraville, CA	10341950	36.1	1993-98
Little Truckee River near Hobart Mills, CA	10342000	37.1	1947-72
Little Truckee River at Highway 89 near Truckee, CA	10343200	59.0	1993-94
Bronco Creek at Floriston, CA	10345700	15.4	1993-98
Truckee River near Essex, NV	10347000	991	1889
Dog Creek near Verdi, CA	10347300	16.2	1956-61
Truckee River at Laughtons, CA	10347500	1,050	1890
Hunter Creek near Reno, NV	10347600	11.5	1962-72, 1978-81
Hunter Creek above Last Chance Ditch near Reno, NV	10347620	11.7	1993-95
Peavine Creek near Reno, NV	10347800	2.34	1963-74
Orr Ditch at Spanish Springs Valley near Sparks, NV	10348220	--	1992-95
Franktown Creek at Franktown, NV	10348500	14.0	1948-55, 1958
Galena Creek near Steamboat, NV	10348900	8.5	1961-94
Steamboat Creek at Steamboat Springs, NV	10349500	123	1900-2001
Whites Creek near Steamboat, NV	10349700	8.02	1962-66
Truckee River below Tracy, NV	10350400	1,590	1972-97
Truckee River at Clarks, NV	10350500	--	1907-15
Fernley A-Drain near Fernley, NV	10351350	--	1969-80
'A' Drain at Powerline Crossing near Fernley, NV	10351356	--	1989-90
Truckee River near Wadsworth, NV	10351800	--	1902-05
East Fork Quinn River near McDermitt, NV	10353000	140	1949-82
Quinn River near McDermitt, NV	10353500	1,100	1949-85
Kings River near Orvada, NV	10353600	20.5	1962-68 1976-95
Quinn River near Denio, NV	10353650	3,520	1964-67, 1978-81
Leonard Creek near Denio, NV	10353700	52.0	1961-83
South Willow Creek near Gerlach, NV	10353770	31.0	1973-2000
Red Mountain Creek near Gerlach, NV	10353790	30.0	1967-68
Badger Creek Trib near Vya, NV	10361700	7.70	1964-72
Wildhorse Reservoir near Gold Creek, NV	13174000	209	1938-96
Owyhee River at Patsville, NV	13174900	305	1972-75
Owyhee River at Mountain City, NV	13175000	350	1913-14, 1927-49
Owyhee River near Owyhee, NV	13175500	380	1914-26
Owyhee River above China Diversion Dam near Owyhee, NV	13176000	458	1939-84
Jack Creek below Schoonover Creek near Tuscarora, NV	13176900	19.8	1962-69
Jack Creek near Tuscarora, NV	13177000	31.0	1913-25
South Fork Owyhee River at Spanish Ranch near Tuscarora, NV	13177200	330	1959-74

DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following surface water-quality sites have been discontinued. Water-quality data were collected and published for the period of record expressed in water years, shown for each station. Abbreviations: CH, chemical; TE, temperature; SE, sediment; BI, biological.

Station name	Station number	Type of data	Period of record (water years)
Virgin River at Bloomington, UT	09413300	CH, TE, SE, BI	1978-80
Virgin River above I15 Rest Area near Littlefield, AZ	09413600	CH, TE, SE, BI	1977-80
Virgin River below I15 Rest Area near Littlefield, AZ	09413650	CH, TE, SE, BI	1977-80
Virgin River at Mouth of Narrows near Littlefield, AZ	09413800	CH, TE, SE, BI	1977-80
Virgin River at Mesquite, NV	09415090	CH, TE, SE	1992-93
Virgin River at Riverside, NV	09415190	CH, TE, SE	1974-75, 1992-95
Virgin River below Riverside, NV	09415200	CH, TE, BI	1969-74
Virgin River above Halfway Wash near Riverside, NV	09415230	CH, TE, SE, BI	1909, 1978-86, 1992-95
Pahranagat Wash near Moapa, NV	09415850	CH, TE, SE	1991-93
Pahranagat Wash below Arrow Canyon near Moapa, NV	09415852	CH, TE, SE	1991-93
Muddy River near Moapa, NV	09416000	CH, TE, SE	1977-78, 1989-94
Muddy River at Weiser Ranch near Moapa, NV	09417400	CH, TE	1992
Meadow Valley Wash near Caliente, NV	09418500	CH, TE	1977-84, 1990
Meadow Valley Wash below Lyman Crossing	09418670	CH, TE	1990-91
Meadow Valley Wash below Hoya Siding near Rox, NV	09418685	CH, TE	1992
Meadow Valley Wash 1.1 Miles above Rox, NV	09418690	CH	1991
Meadow Valley Wash Seep West Side RR .6 Miles above Rox	09418692	CH, TE	1992-93
Meadow Valley Wash above Rox, NV	09418693	CH, TE	1990-93
Meadow Valley Wash near Rox, NV	09418700	CH, TE, SE	1988-94
Meadow Valley Wash below Farrier Wash near Rox, NV	09418750	CH, TE, SE	1990, 1993
Muddy River near Glendale, NV	09419000	CH, TE	1977-83
Muddy River near Overton, NV	09419500	CH	1977
Muddy River at Overton NV	09419505	CH, TE	1992
Muddy River below Overton, NV	09419510	CH, TE, BI	1970-74
Muddy River above Lake Mead near Overton, NV	09419515	CH, TE, SE, BI	1973, 1979-93
Las Vegas Wash above Detention Basin near North Las Vegas, NV	09419648	CH, TE, SE	1989, 1991-93
Las Vegas Wash at Vegas Valley Drive near Las Vegas, NV	094196784	CH, TE, SE, BI	1992
Las Vegas Wasteway near East Las Vegas, NV	09419679	CH, TE, SE	1979-80, 1994
Las Vegas Wash near Henderson, NV	09419700	CH, TE, SE, BI	1970-92, 2000-02
Las Vegas Wash below Henderson, NV	09419750	CH, TE, BI	1970-73
Las Vegas Wash above Three Kids Wash below Henderson, NV	09419753	CH, TE	1988-92, 1995
Las Vegas Wash below Lake Las Vegas below Henderson, NV	09419790	CH, TE, SE	1993-95
Las Vegas Wash near Boulder City, NV	09419800	CH, TE, SE, BI	1969-85, 1992, 2000-02
Lake Mead near Las Vegas Beach, NV	09420900	CH, TE	1973-83, 1985
Lake Mead at Saddle Island, NV	09420950	CH, TE	1973-83, 1985
Colorado River at Willow Beach, AZ	09421900	CH, TE	1992
Colorado River below Davis Dam, NV-AZ	09423000	CH, TE, SE, BI	1969-87, 1992
Colorado River Lagoon North of Riviera, AZ	09423050	CH, TE	1973-85, 1987-92
Colorado River below Lagoon North of Riviera, AZ	09423060	CH, TE	1973-85, 1987-90
Thousand Springs Creek near Wilkins, NV	10172907	CH, TE	1985-90
Thousand Springs Creek above Toano Draw near Shores, NV	1017290840	CH, TE	1986
Thousand Springs Creek near Shores, NV	1017290880	CH, TE	1985-87
Thousand Springs Creek below Toano Draw near Shores, NV	1017290885	CH, TE	1987-90
Thousand Springs Creek below Toano Draw near Shores, NV	1017290890	CH, TE	1986
Rock Spring Creek near Shores, NV	1017290950	CH, TE	1986
Thousand Springs Creek near Tacoma, NV	10172910	CH, TE	1987
Thousand Springs Creek above Eighteen Mile Canyon near Montello, NV	1017291080	CH, TE	1986
Crittenden Springs above Crittenden Reservoir near Montello NV	1017291130	CH, TE	1985-87, 1989-90
Thousand Springs Creek below Crittenden Creek near Montello, NV	1017291190	CH, TE	1985-86
Thousand Springs Creek near Montello, NV	10172914	CH, TE	1985-90
Lehman Creek near Baker, NV	10243260	CH, TE	1987-88, 1990

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Cleve Creek near Ely, NV	10243700	CH, TE	1978
Franklin River near Arthur, NV	10244720	CH, TE	1977-83
Overland Creek near Ruby Valley, NV	10244745	CH, TE	1977-81, 1987-88, 1990
Illipah Creek near Hamilton, NV	10245445	CH, TE	1988, 1990
Illipah Creek Tributary near Hamilton, NV	10245450	CH, TE	1987
Pine Creek near Belmont, NV	10245900	CH, TE	1969, 1979-84
Mosquito Creek near Belmont, NV	10245910	CH, TE	1979-84
Stoneberger Creek near Austin, NV	10245925	CH, TE	1979-84
Lower Currant Creek near Currant, NV	10246846	CH, TE	1977-81
Willow Creek near Warm Springs, NV	10249190	CH, TE	1979-84
McClusky Creek near Austin, NV	10249200	CH, TE	1978-81
Kingston Creek below Cougar Canyon near Austin, NV	10249280	CH, TE	1977-84
North Twin River near Round Mountain, NV	10249295	CH, TE, SE, BI	1986
South Twin River near Round Mountain, NV	10249300	CH, TE, SE, BI	1967-96
Chiatovich Creek near Dyer, NV	10249900	CH, TE, SE, BI	1974-82, 1987-88, 1990
Amargosa River at Highway 95 below Beatty, NV	10251218	CH, TE	1993
Amargosa River near Beatty, NV	10251220	CH	1993
Unnamed Tributary-Stockade Wash near Rattlesnake Ridge, NTS, NV	10251248	CH, TE	1992-93
Stockade Wash at Airport Road, NTS, NV	102512484	CH, TE	1993
Yucca Wash near Mouth, Nevada Test Site, NV	10251252	CH, TE	1993
Pagany Wash Number 1, NTS, NV	102512533	CH, TE	1993
Cane Spring Wash Tributary below Skull Mountain, NTS, NV	102512654	CH, TE	1993
Amargosa River near Eagle Mountain below Death Valley Junction, CA	10251280	CH, TE	1993
Robinson Creek at Twin Lakes Outlet near Bridgeport, CA	10290500	CH, TE	1994-95
Buckeye Creek near Bridgeport, CA	10291500	CH, TE, SE	1977-79, 1995
East Walker River near Bridgeport, CA	10293000	CH, TE, BI	1959-71, 1973-85, 1994-95
East Walker River above Strosnider Drive near Mason, NV	10293500	CH, TE	1977-80, 1994-95
West Walker River at Highway 108 Bridge below Pickel Meadow, CA	10295300	TE, SE	1995
Little Walker River near Bridgeport, CA	10295500	CH, TE, SE	1977-85, 1990, 1995
West Walker River below Little Walker River near Coleville, CA	10296000	CH, TE, SE	1961-66, 1969-71, 1973-80, 1987-88, 1990, 1994-95
West Walker River near Coleville, CA	10296500	CH, TE	1977-84, 1994-95
West Walker River above Topaz Lake at Topaz, CA	10296650	CH, TE	1990-96
Topaz Lake near Topaz, CA	10297000	CH, TE	1994
West Walker River at Hoye Bridge near Wellington, NV	10297500	CH, TE	1977-96
West Walker River near Hudson, NV	10300000	CH, TE	1977-80, 1982, 1994-95
Walker River near Mason, NV	10300600	CH, TE	1977-84
East Drain above Mason Valley Wildlife Management Area near Yerington, NV	10301180	CH, TE	1994
Perk Slough at Mason Valley Wildlife Management Area Boundary near Wabuska, NV	10301280	CH, TE	1994
West Branch Spragg-Alcorn-Bewley Ditch at Sierra Way near Wabuska, NV	10301470	CH, TE	1994
Wabuska Drain at Sierra Way near Wabuska, NV	10301480	CH, TE	1994
Wabuska Drain above Confluence Walker River near Parker Butte near Wabuska, NV	10301495	CH, TE	1994
Walker River near Wabuska, NV	10301500	CH, TE, SE, BI	1969-95
Walker River above Weber Reservoir near Schurz, NV	10301600	CH, TE	1976-81, 1994
Weber Reservoir near Schurz, NV	10301700	CH, TE	1994
Walker River below Weber Reservoir near Schurz, NV	10301710	CH, TE	1977-80
Walker River above Canal 1-2 Diversion Weir near Schurz, NV	10301740	CH, TE	1994
Walker River at Little Dam Weir above Schurz, NV	10301750	CH, TE	1977-81
Lateral 1A above Highway 95 at Schurz, NV	10301765	CH, TE	1994-95
Lateral 2A at Takeout near Schurz, NV	10301770	CH, TE	1994-95
Lateral 2D below Schurz, NV	10301780	CH, TE	1994
Walker River at Schurz, NV	10302000	CH, TE	1994-95
Walker River at Lateral 2-A Siphon near Schurz, NV	10302002	CH, TE, SE	1994-95
Walker River at Powerline Crossing near Schurz, NV	10302005	CH, TE, SE	1994-95
Walker River near Mouth at Walker Lake, NV	10302025	CH, TE	1994-95
East Fork Carson River Below Markleeville Creek near Markleeville, CA	10308200	CH, TE, SE, BI	1966-70, 1977-81, 1992, 1998
East Fork Carson River above Bryant Creek near Gardnerville, NV	10308525	CH, TE, SE	1998
Leviathan Creek above Mine near Markleeville, CA	10308783	CH, TE	1980-82
Leviathan Mine Tunnel Spring near Markleeville CA	10308784	CH, TE	1980-82

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Leviathan Mine Pit Flow near Markleeville, CA	10308785	CH, TE	1980-82
Leviathan Mine Waste Flow near Markleeville, CA	10308786	CH, TE	1980-82
Leviathan Mine Seep below Crusher near Markleeville, CA	10308787	CH, TE	1981-82
Leviathan Creek below Delta near Markleeville, CA	10308788	CH, TE	1981-82
Leviathan Creek below Mine near Markleeville, CA	10308790	CH, TE	1980-82
Bryant Creek below Mountaineer Creek near Markleeville, CA	10308794	CH, TE, SE	1982, 1998
Bryant Creek near Gardnerville, NV	10308800	CH, TE, CH, SE	1979, 1982 1998
Bryant Creek above East Fork Carson River near Gardnerville, NV	10308875	CH, TE, SE	1998
East Fork Carson River below Bryant Creek near Gardnerville, NV	10308900	CH, TE, SE	1998
East Fork Carson River near Gardnerville, NV	10309000	CH, TE, CH, TE, SE CH, TE	1977 1978-80, 1981-84, 1987-96
East Fork Carson River near Dresslerville, NV	10309010	CH, TE, SE, BI	1993-95, 1996, 1998
East Fork Carson River at Riverview Drive Bridge near Dresslerville, NV	10309089	CH, TE, SE	1998
East Fork Carson River at Minden, NV	10309100	CH, TE, BI	1977-84, 1994-95
West Fork Carson River above Woodfords, CA	10309500	BI	1994-95
West Fork Carson River at Woodfords, CA	10310000	CH, TE, SE	1961-84, 1987-88, 1990, 1994
West Fork Carson River at Paynesville, CA	10310200	CH, TE, BI	1992-97
West Fork Carson River near Dresslerville, NV	10310355	CH, TE	1990-91
West Fork Carson River at Muller Lane near Minden, NV	10310358	BI	1994-95
Daggett Creek near Genoa, NV	10310400	CH,TE	1981
Carson River at Genoa, NV	10310405	CH, TE	1977-81
Carson River at Cradlebaugh Bridge near Genoa, NV	10310450	CH, TE, SE CH, TE	1983, 1988
Clear Creek near Carson City, NV	10310500	CH, TE	1987-89, 1996-97
Carson River at McTarnahan Bridge near Carson City, NV	10310800	CH	1992
Carson River near Carson City, NV	10311000	CH, TE, SE, BI	1977-84, 1990-97
North Fork Kings Canyon Creek near Carson City, NV	10311090	CH	1996-97
Kings Canyon Creek near Carson City, NV	10311100	CH, TE	1977-84, 1996-97
Ash Canyon Creek near Carson City, NV	10311200	CH, TE	1977-84, 1996-97
Eagle Valley Creek at Carson City, NV	10311300	SE	1997
Carson River at Deer Run Road near Carson City, NV	10311400	CH, TE, SE	1979-84, 1993-95, 1998-99
Carson River at Dayton, NV	10311700	CH, TE, SE, BI	1994-95, 1997-98
Gold Canyon Creek at Dayton, NV	10311710	CH, TE, SE	1998
Carson River below Dayton, NV	10311715	CH, TE, SE	1998-99
Six Mile Canyon Creek at Highway 50 near Dayton, NV	10311725	CH, TE, SE	1998
Carson River at Chaves Ranch near Clifton, NV	10311860	CH, TE, SE	1998-99
Carson River 2.8 miles below Highway 95 near weeks, NV	10312025	CH, TE, SE	1998
Carson River near mouth at Lahontan Reservoir, NV	10312030	CH, TE, SE	1998
Carson River Diversion Dam Outflow at V-Canal near Fallon, NV	10312155	CH, TE, SE	1998
Sheckler Reservoir at Outlet near Fallon, NV	10312165	CH, TE, SE	1986-88
Upper Westside Drain at Candee Lane near Fallon, NV	10312167	CH, TE	1988
Holmes Drain at Gage near Fallon, NV	10312170	CH, TE	1987-89, 1994
G-line Extension on Drain at US 95 near Fallon, NV	10312171	CH, TE	1987-89
Sheckler Drain at St. Clair Road near Fallon, NV	10312172	CH, TE	1988
South Branch Carson River at St. Clair Road near Fallon, NV	10312173	CH, TE	1988
Harrigan Road Drain above Upper Diagonal Drain near Fallon, NV	10312176	CH, TE	1988
"L" Drain above Diagonal Drain near Fallon, NV	10312178	CH, TE	1988
Carson Lake Drain above Carson Lake near Fallon, NV	10312180	CH, TE, SE, BI	1986-87, 1989, 1994-97
Pasture Road Drain above Diagonal Drain near Fallon, NV	10312181	CH, TE	1988
Lower Diagonal Drain at Pasture Road near Fallon, NV	10312182	CH, TE, SE, BI	1988, 1994-97
"L" Drain above Lee Drain near Fallon, NV	10312183	CH, TE, BI, SE	1987-89, 1994-97
L 12 Canal above Macari Lane near Fallon, NV	1031218750	CH, TE, SE	1995-96
Lower Diagonal Drain at Highway 50 near Fallon, NV	10312190	CH, TE	1986-88, 1995
Lower Diagonal Drain at Gage near Stillwater, NV	10312200	CH, TE	1988
S-Line Reservoir Outflow near Fallon, NV	1031220120	CH, TE. SE	1998
Harmon Reservoir Outflow near Fallon, NV	1031220130	CH, TE. SE	1998
New River Canal below New River Slough near Stillwater, NV	10312206	CH, TE	1988
Stillwater Point Diversion Drain near Stillwater, NV	10312215	CH, TE, SE	1986-90
Stillwater East-West Canal below Outlet near Stillwater, NV	10312216	CH, TE, SE	1988, 1998

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Stillwater Slough Cutoff Drain near Stillwater, NV	10312220	CH, TE, SE	1971, 1977-78, 1986, 1996, 1998
D-Line Canal at Sagouspe Dam near Fallon, NV	10312256	CH, TE, SE	1998
D-Line Canal below East Lake near Stillwater, NV	10312267	CH, TE, SE	1987-89
Carson River at Tarzyn Road near Fallon, NV	10312275	CH, TE, SE	1992-95, 1998
Dixie Creek above South Fork Humboldt River near Elko, NV	10320100	SE	1990-96
Fish Creek near Battle Mountain, NV	10326800	CH, TE	1977-84
Humboldt River near Golconda, NV	10327800	CH, TE	1990-91
North Fork Little Humboldt River near Paradise Valley, NV	10328450	CH, TE	1977-82
South Fork Little Humboldt River near Paradise Valley, NV	10328475	CH, TE	1978-82
Little Humboldt River below Chimney Dam near Paradise Valley, NV	10328500	CH, TE	1978, 1980-82
Little Humboldt River near Paradise Valley, NV	10329000	CH, TE	1977-84
Martin Creek near Paradise Valley, NV	10329500	CH, TE	1977-84
Cottonwood Creek near Paradise Valley, NV	10330000	CH, TE, SE	1977
Humboldt River near Humboldt, NV	10333500	CH, TE	1971
Rye Patch Reservoir near Rye Patch, NV	10334500	CH, TE	1990-91
Lovelock Drain above Graveyard Drain near Lovelock, NV	10335750	CH, TE	1990-91
Bradys Hot Springs Creek at Road Crossing at Bradys Hot Springs, NV	10336150	CH, TE	1988
Big Meadow Creek above Highway 89, CA	103365932	CH, TE, SE	1996-97
Upper Truckee River at mouth - east channel	103366117	CH, TE, SE	1996-97
Taylor Creek at Highway 89 near Camp Richardson	10336628	CH, TE, SE	1998
Blackwood Creek below North Fork Blackwood Creek near Tahoe City, CA	103366594	CH, TE, SE	1989
Blackwood Creek at Blackwood Canyon Road near Tahoe City, CA	103366596	CH, TE, SE	1989
First Creek above Len Way near Incline Village, NV	10336683	CH	1980
First Creek above Dale Drive near Incline Village, NV	10336685	CH, TE, SE	1980-81
Dale Drive Ditch at First Creek near Incline Village, NV	10336686	CH, TE, SE	1980-81
Dale Drive Ditch near Incline Village, NV	10336687	CH, TE, SE	1980-81
First Creek near Crystal Bay, NV	10336688	CH, TE, SE	1970-73, 1991-2002
Second Creek near Crystal Bay, NV	10336690	CH, TE, SE	1970-73
West Fork Second Creek at Lakeshore Drive near Crystal Bay	103366905	CH, TE, SE	1995-97, 2000
Second Creek at Lakeshore Drive near Crystal Bay, NV	10336691	CH, TE, SE	1991-2001
Burnt Creek at Lakeshore Drive at Incline Village, NV	103366913	CH, TE, SE	2000
Wood Creek above Jennifer Street near Incline Village, NV	10336692	CH, TE, SE	1991-2001
Wood Creek near Crystal Bay, NV	10336693	CH, TE, SE	1970-73
Wood Creek at mouth near Crystal Bay, NV	10336694	CH, TE, SE	1970-73, 1991-2002
Third Creek below Unnamed Tributary near Incline Village, NV	103366958	CH, TE, SE	1989, 1991-2001
Third Creek at Incline Village, NV	10336696	CH, TE, SE	1970-73
Third Creek at Village Boulevard at Incline Village, NV	103366965	CH, TE, SE	1989, 1991-2000
Third Creek at Highway 28 at Incline Village, NV	10336697	CH, TE, SE	1989
Incline Creek Tributary at Country Club Drive near Incline Village, NV	103366997	CH, TE, SE	1989, 1991-2002
Incline Creek Tributary at Highway 28 at Incline Village, NV	103366999	CH, TE, SE	1989-90
Marlette Creek near Carson City, NV	10336715	CH, TE	1977-84, 1990-91
Glenbrook Creek at US 50 near Glenbrook, NV	10336720	CH, TE, SE	1989
Glenbrook Creek at Old Highway 50 near Glenbrook, NV	10336725	CH, TE, SE	1972-74, 1989, 91, 2000
North Logan House Creek at Highway 50 near Glenbrook, NV	10336735	CH, TE, SE	1991-2002
Logan House Creek at Lake Tahoe near Glenbrook, NV	10336745	CH, TE, SE	1989
Burke Creek above mouth near Stateline, NV	10336748	CH, TE, SE	2001-02
Edgewood Creek below South Benjamin Drive near Daggett Pass, NV	10336750	CH, TE, SE	1989, 1991-2002
Edgewood Creek Tributary near Daggett Pass, NV	10336756	CH, TE, SE	1981-83, 1991-2001
Tributary of Edgewood Creek Tributary near Tahoe Village, NV	10336757	CH, TE, SE	1982-83
Edgewood Creek Tributary at Highland Drive near Tahoe Village, NV	10336758	CH, TE, SE	1981-83
Edgewood Creek at Palisades Drive near Kingsbury, NV	103367585	CH, TE, SE	1990-2002
Sediment Catchment Basin near Tahoe Village, NV	103367595	CH, TE, SE	1985
Edgewood Creek below Highway 50 near Stateline, NV	10336761	CH, TE, SE	1984-85, 1989, 1992
Edgewood Creek at Lake Tahoe near Stateline, NV	10336765	CH, TE, SE	1984-85, 1989-2002
Truckee River at Tahoe City, CA	10337500	CH, TE	1991-93
Squaw Creek at Squaw Valley Road at Squaw Valley, CA	10337850	CH, TE	1980
Squaw Creek at Highway 89, near Squaw Valley, CA	10337855	CH, TE	1991-92
Truckee River Tributary near Truckee, CA	10337900	CH, TE	1991
Truckee River near Truckee, CA	10338000	CH, TE	1992
Truckee River above Donner Creek, near Truckee, CA	10338010	CH	1991
Donner Creek at Donner Lake near Truckee, CA	10338500	CH, TE	1980

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Donner Creek near Truckee, CA	10339000	CH, SE	1980
Donner Creek at Mouth, near Truckee, CA	10339003	CH, TE	1991-92
Truckee River at Highway 267, at Truckee, CA	10339010	CH, TE	1980, 1991-92
Martis Creek at Highway 267 near Truckee, CA	10339250	CH, TE, SE	1973-86
Martis Creek near Mouth, at Truckee River near Truckee, CA	10339405	CH, TE	1980, 1991-92
Truckee River above Prosser Creek near Truckee, CA	10339419	CH, TE	1994-98
Truckee River at Old US 40 Bridge, below Truckee, CA	10339498	CH, TE	1980, 1991-92
Prosser Creek below Prosser Creek Dam, CA	10340500	TE	1993-98
Little Truckee River below Boca Dam near Truckee, CA	10344500	TE	1993-98
Truckee River at Boca Bridge near Truckee, CA	10344505	CH, TE	1980
Truckee River near Hirschdale Dump near Hirschdale, CA	10344992	CH, SE	1980
Truckee River below Hirschdale Dump near Hirschdale, CA	10344993	CH, SE	1980
Truckee River at Floriston Dam, near Floriston, CA	10345909	CH, TE	1980, 1991-92
Truckee River below Farad Powerhouse at Farad, CA	10345980	CH, TE	1992
Truckee River at Farad, CA	10346000	CH, TE, SE, BI	1960-61, 1967-81, 1992-98
Truckee River near Essex, NV	10347000	BI	1994-95
Truckee River at Crystal Peak Park at Verdi, NV	10347050	CH, TE, BI	1980
Dog Creek at Verdi, NV	10347310	CH, TE	1991
Truckee River at Bridge Street Bridge at Verdi, NV	10347320	CH, TE	1980, 1992
Truckee River below Viking Plant near Verdi, NV	10347335	CH, SE	1980
Truckee River near Verdi, NV	10347336	CH, TE, SE	1980
Truckee River Intragravel near Verdi, NV	10347337	CH, TE	1980
Truckee River near Mogul, NV	10347460	CH, TE	1992
Hunter Creek Reservoir Drain at Mayberry Drive at Reno, NV	10347615	CH, TE	1992
Truckee River at Circle Creek Ranch near Reno, NV	10347640	CH, TE	1992
Truckee River at Mayberry Drive below Lawton, NV	10347690	CH, TE, SE, BI	1979-80, 1992
Truckee River at Idlewild Park at Reno, NV	10347705	CH, TE, BI	1992, 1994-95
Peavine Creek near Reno, NV	10347800	CH, TE, SE	1967, 1969-71, 1973-74
Truckee River in Wingfield Park at Reno, NV	10347861	CH, SE	1980
Highland Plant Spill at Arlington Bridge at Reno, NV	10347870	CH, TE	1992
Truckee River at Reno, NV	10348000	CH, TE, SE, BI	1977-84, 1989-94, 1996-98
Truckee River near Sparks, NV	10348200	CH, TE, SE, BI	1979-80, 1992-95
Truckee River Intragravel near Sparks, NV	10348201	CH, TE	1980
Orr Ditch above Spanish Springs Valley near Sparks, NV	10348215	CH, TE	1980
Orr Ditch at Spanish Springs Valley near Sparks, NV	10348220	CH, TE	1995, 1998
North Truckee Drain at Spanish Springs Road near Sparks, NV	10348245	CH, TE	1980, 1995
Franktown Creek near Carson City, NV	10348460	CH, TE	1977-84
Washoe Lake near Carson City, NV	10349980	CH, TE	1980-84
Little Washoe Lake near Steamboat, NV	10348800	CH, TE	1980-83
Galena Creek near Steamboat, NV	10348900	CH, TE	1977-1984
Steamboat Creek at Steamboat, NV	10349300	CH, TE	1971, 1977-80, 1982-83
Steamboat Creek below Steamboat Ditch at Steamboat, NV	10349490	CH, TE	1980
Boynton Slough above Boynton Lane near Reno, NV	10349880	CH, TE	1980
Dry Creek above Steamboat Ditch near Reno, NV	10349910	CH, TE, SE	1995
Dry Creek at Huffaker Lane near Reno, NV	10349920	CH, TE	1980
Dry Creek at Boynton Slough near Reno, NV	10349960	CH, TE	1980
Pioneer Ditch at University Farms near Reno, NV	10349975	CH, TE	1980
FWM 31: Pioneer Ditch at Jones Ranch near Sparks, NV	10349979	CH, TE	1980
Steamboat Creek at Cleanwater Way near Reno, NV	10349980	CH, TE	1978-80, 1992
Pioneer Ditch Return No. 2 below Kimlick Lane near Reno, NV	10349986	CH	1980
Reno-Sparks STP Outfall near Reno, NV	10349989	CH, TE	1979-80
Reno-Sparks STP Outfall at Reno, NV	10349995	CH, TE	1994-1998
Truckee River at Vista, NV	10350000	CH, TE, SE, BI	1969, 1977-80, 1982-84, 1992-94
Truckee River at Rest Area near Vista, NV	10350010	CH, TE	1992
Truckee River at Lockwood, NV	10350050	CH, TE, SE, BI	1974-81, 1984, 1992, 1994-95
Diversion to Grass Field at Lockwood, NV	10350145	CH	1980
Return from Grass Field at Lockwood, NV	10350146	CH	1980
Truckee River at Mustang Bridge No. 1 near Hafed, NV	10350153	CH, TE	1984, 1991

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Truckee River at Patrick, NV	10350200	CH, TE, BI	1979-80, 1984, 1992
Diversion to Grass Pasture below Patrick, NV	10350325	CH	1980
Return from Grass Pasture below Patrick, NV	10350326	CH	1980
Truckee River below Tracy, NV	10350400	CH, TE, BI	1979-80, 1982-84, 1992
Truckee River at Derby Dam, NV	10351000	CH, TE, BI	1979-80
Truckee Canal at US 95 alternate near Fernley, NV	10351320	CH, TE, BI	1979-80, 1988-89
Fernley Check Dam near Fernley, NV	10351322	CH, SE	1980
Fernley Drain at US 95-alternate near Fernley, NV	10351335	CH, TE	1988-89
“A” Drain at US 50-alternate near Fernley, NV	10351345	CH, TE	1988-89
Streiff Drain at US 50-alternate near Fernley, NV	10351353	CH, TE	1988-89
'A' Drain at Powerline Crossing near Fernley, NV	10351356	CH, TE, SE	1988-90
Truckee Canal at Allendale Check Dam near Hazen, NV	10351367	CH, TE, BI	1980
Truckee Canal near Hazen, NV	10351400	CH, TE, SE, BI	1979
Truckee Canal at US 50 above Lahontan Reservoir, NV	10351590	CH, TE, SE, BI	1979-81
Truckee River below Derby Dam near Wadsworth, NV	10351600	CH, TE, SE, BI	1978-80, 1983, 1992-95
Truckee River at Painted Rock Bridge, NV	10351619	CH, TE, BI	1980, 1992
Diversion to Alfalfa Field at Wadsworth, NV	10351643	CH, SE	1980
Return from Alfalfa Field at Wadsworth, NV	10351644	CH, SE	1980
Herman Return near Wadsworth, NV	10351646	CH, TE, BI	1980
Truckee River at Old US 40 Bridge at Wadsworth, NV	10351648	CH, TE, SE, BI	1979-80, 1992
Truckee River below S-S Ranch near Wadsworth, NV	10351684	CH, TE	1980, 1992
Truckee River Intragravel below S-S Ranch near Nixon, NV	10351685	CH, TE	1980
Truckee River at Dead Ox Wash near Nixon, NV	10351690	CH, TE, SE, BI	1979-80, 1991-95
Truckee River Intragravel at Dead Ox near Nixon, NV	10351691	CH, TE	1980
Truckee River near Nixon, NV	10351700	CH, TE, SE, BI	1960-98
Truckee River at Numana Dam near Nixon, NV	10351725	CH, SE	1980
Truckee River at Highway 447 at Nixon, NV	10351750	CH, TE, SE, BI	1964, 1968, 1978-80, 1988, 1991-95
Truckee River at Marble Bluff Dam near Nixon, NV	10351775	CH, TE, BI	1979-80, 1992
Truckee River Fishway at Marble Bluff Dam near Nixon, NV	10351778	CH, TE, BI	1979
Truckee River below Marble Bluff Dam near Nixon, NV	10351780	CH, TE, SE	1979
Truckee River Delta at Pyramid Lake, NV	10351793	CH, SE	1980
Truckee River Delta at Pyramid Lake, NV	10351795	SE	1979
McDermitt Creek near McDermitt, NV	10352500	CH, TE, SE, BI	1975-84
East Fork Quinn River near McDermitt, NV	10353000	CH, TE	1977-81
Quinn River near McDermitt, NV	10353500	CH, TE, SE, BI	1977-86
Kings River near Orovada, NV	10353600	CH, TE	1977-84
Quinn River near Denio, NV	10353650	CH, TE	1978
Leonard Creek near Denio, NV	10353700	CH, TE	1977-83, 1987-88
Mahogany Creek near Summit Lake, NV	10353750	CH, TE	1987-88, 1990
Smoke Creek at BM 4044 near Gerlach, NV	10353799	CH, TE	1990
Cottonwood Creek near Flanigan, NV	10353970	CH, TE	1988
Willow Spring Creek near Flanigan, NV	10353975	CH, TE	1988
Mullen Creek near Flanigan, NV	10353978	CH, TE	1988
Bruneau River at Rowland, NV	13161500	TE, SE	1977-84, 1988-2000
Jarbidge River below Jarbidge, NV	13162225	TE, SE	1988-2000
Owyhee River near Gold Creek, NV	13174500	CH, TE	1977-84
Owyhee River at Mountain City, NV	13175000	CH, TE	1985
Owyhee River above China Diversion Dam near Owyhee, NV	13176000	CH, TE	1977-85
South Fork Owyhee River near Whiterock, NV	13177800	CH, TE	1977-81
Las Vegas Bay Sample Site above Gypsum Wash	360748114520301	CH, TE, SE	1992
Amargosa River near Evelyn, CA	361012116192801	CH	1988
Carpenter Canyon Creek	361440115430901	CH, TE	1987-89
Carson Slough at Stateline Road near Death Valley Junction	361910116224201	CH, TE	1988, 1993
Carson Slough at Spring Meadow Road at Ash Meadows, NV	362453116214501	CH	1988
212 S17 E60 05	362957115172001	CH, SE	1986
212 S16 E59 15	363406115213401	CH, SE	1986
219 S14 E64 12	364357114460501	CH, SE	1986
40-mile Wash at J-12	364551116233700	CH	1984
Busted Butte Wash	364749116235100	CH	1984
40-mile Wash at Road H	364904116234700	CH, TE	1984
40-mile Wash above Drill Hole Wash	364908116234600	CH	1984
Drill Hole Wash at Mouth	364911116235200	CH	1984
222 S12 E69 32	365105114180701	CH, SE	1986
Delirium Canal at Mouth	365513116222901	CH	1993, 1995

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Yucca Lake	365600116010000	CH, TE	1978
Pah Canyon above Mouth	365634116221501	CH	1993, 1995
Whiterock Creek	371209116075201	CH	1973
Meadow Valley Wash above Delmues Spring	375140114191801	TE	1985
Kawich Creek near Antler	375731116253800	CH, TE	1985-86
Kawich Creek above Weir	375736116252900	CH, TE	1985-92
Kawich Creek near Big Seep	375736116255201	CH, TE	1985-92
Lost Hammer	375739116253100	CH, TE	1985
MVW above Eagle Canyon River	380140114110901	CH	1985
Stream-Reveille V Ertec	380630116201901	CH	1981
Camp Creek	381437114150801	CH, TE	1985
Wilson Creek	381905114241201	CH, TE	1985
Creek near Upper Pony Spring	381917114383501	CH, TE	1985
B6-VFT-1/Ertec Big Sand	383131116022401	CH, TE	1981
Leviathan Creek 1200 Feet Upstream Site 10308783 above Leviathan Mine	384157119391301	CH, TE	1998
Aspen Creek above Leviathan Mine near Markleeville, CA	384235119385001	CH, TE	1998
Desert Creek at State Highway 22, NV	384250119190000	CH, TE	1973
Aspen Creek above Leviathan Creek near Markleeville, CA	384301119393001	CH, TE	1998
Leviathan Creek above Aspen Creek near Markleeville, CA	384303119393901	CH, TE	1998
Mountaineer Creek above Leviathan Creek near Markleeville, CA	384407119384101	CH, TE	1998
Leviathan Creek above Mountaineer Creek near Markleeville, CA	384407119384201	CH, TE	1998
Bryant Creek above Barney Riley Creek near Markleeville, CA	384505119384001	CH, TE	1998
Fredricksburg Canyon	384941119485101	TE	1981
Little Currant Creek	385004115212901	CH, TE	1983
Swallow Canyon, below	385030114205901	CH	1983
Swallow Canyon, above	385033114205201	CH	1983
Luther Canyon	385133119483001	CH	1981
Upper Angora Lake Sample Point near Angora Peak, CA	385145120040301	CH, TE	1997-98
Fallen Leaf Lake Site 2 at Fallen Leaf, CA	385256120040501	CH, TE	1998
East Stewart Creek at Trail	385318117213300	CH, TE	1984-87
East Stewart Creek above Weir	385323117213701	CH, TE	1986-92
Jobs Canyon	385327119502301	CH	1981
Monument Creek	385503119504501	TE	1981
Culvert-Highway 50 Runoff into Upper Truckee-rb, downstream Highway 50, NV	385521119592201	CH, TE	1995
Mott Canyon	385545119505701	TE	1981
Cascade Lake Sample Site near Center	385618120053101	CH, TE	1997
Culvert-Highway 50 runoff at Edgewood Creek-left bank, upstream, Highway 50, NV	385758119561101	CH, TE, SE	1995-97, 2000
Edgewood Creek Tributary above Edgewood Clubhouse near Stateline, NV	385758119564401	CH, TE, SE	1992, 1994
Edgewood Creek	385803119560901	CH, TE	1987
Minden Sewage Effluent Discharge to East Fork Carson River	385814119475101	CH, TE, BI	1980
Round Hill Sewage Effluent Discharge to East Fork Carson River	385815119475401	BI	1980
Burke Creek	385816119560001	CH, TE	1987
Round Hill Sewage Effluent Discharge to Williams Slough	385824119480301	CH, TE	1980
Kahle Creek	385833119565901	CH, TE	1987
Water Canyon	385902114572401	CH, TE	1983
Genoa Creek at Genoa, NV	390002119505401	CH	1957, 1976
Genoa Canyon	390003119505802	TE	1981
Zephyr Creek	390028119565101	CH, TE	1987
90 N13 E18 03cac 1	390100119564701	CH, TE	1987
Sierra Canyon	390101119505701	CH	1981
Willow Creek	390223114514801	CH, TE	1983-84
Incline Sewage Effluent Discharge to Carson River	390426119460401	CH, TE, BI	1980
Lake Tahoe Sample Point near Chambers Lodge, CA	390427120082201	CH, TE	1998
Lake Tahoe Sample Point at Homewood, CA	390444120090901	CH, TE	1997
Incline Sewage Effluent Discharge near Snyder's Ranch	390523119493101	CH, TE	1980
Lake Tahoe Sample Point - Mid Lake	390618120021101	CH, TE	1997-98
Slaughterhouse Creek	390644119563101	CH, TE	1987
Skunk Creek	390744119563201	CH, TE	1987
Bliss Creek	390835119554801	CH, TE	1987
Carson City STP Discharge	390950119435201	CH, TE	1980
Truckee River at Rampart, near Tahoe City, CA	390954120103700	CH, TE	1991-92
Marlette Lake Sample Site near Center	391033119540301	CH, TE	1997
Carson City Sewage Effluent Discharge to Carson R	391036119422401	CH, TE, BI	1980
Truckee River above Bear Creek, near Alpine Meadows, CA	391108120113900	CH, TE	1991-92
Bear Creek at Mouth, near Alpine Meadows, CA	391125120114900	CH, TE	1991-92
Steptoe Creek	391135114414401	CH, TE	1983
Truckee River at Highway 89 Bridge, near Squaw Valley, CA	391146120115000	CH, TE	1991-92
Truckee River above Squaw Creek, near Squaw Valley, CA	391240120115000	CH, TE	1991-92
Truckee River below Squaw Creek near Squaw Valley, CA	391252120120000	CH, TE	1992
Deer Creek 200 feet above Mouth, near Squaw Valley, CA	391319120115500	CH, TE	1991-92
Silver Creek at Highway 89, near Squaw Valley, CA	391326120120900	CH, TE	1991
Truckee River Tributary 4 Miles Upstream Pole Creek near Squaw Valley, CA	391352120121300	CH, TE	1991
Lake Tahoe Sample Point at Kings Beach, CA	391359120012701	CH, TE	1997
Pole Creek at Mouth, near Squaw Valley, CA	391402120122100	CH, TE	1991-92
Campbell Creek, Smith Creek Valley	391426117394601	CH, TE	1982
Peterson Creek, Smith Creek Valley	391430117313801	CH, TE	1982
Cleve Creek	391446114285801	CH, TE	1983
Unnamed Tributary RB Upstream Deep Creek, near Truckee, CA	391513120123400	CH	1991

DISCONTINUED SURFACE WATER-QUALITY STATIONS--Continued

Station name	Station number	Type of data	Period of record (water years)
Deep Creek above Mouth, near Truckee, CA	391529120123300	CH, TE	1991-92
Truckee River above Rocky Wash, near Truckee, CA	391551120123200	CH, TE	1991
Rocky Wash at Mouth, near Truckee, CA	391557120123200	CH	1991
Cabin Creek at Highway 89, near Truckee, CA	391642120122100	CH, TE	1991-92
Upper Illipah Creek	391654115232401	CH, TE	1983
Carson River at Weeks, NV	391735119150200	CH, TE, SE	1973, 1993-94
Truckee River below Donner Creek near Truckee, CA	391859120115600	CH, TE	1992
Truckee River above Trout Creek, near Truckee, CA	391950120100200	CH, TE	1991-1992
Trout Creek at Mouth, near Truckee, CA	391956120095200	CH, TE	1991
Truckee River at Polaris, near Truckee, CA	392018120080300	CH, TE	1991-92
Carson Lake 1 on Pasture Road near Carson Lake, NV	392106118455601	CH, TE	1995
Lower Illipah Creek	392118115201201	CH, TE	1983
Union Valley Creek at Mouth, near Truckee, CA	392133120064000	CH, TE	1991
Juniper Creek at Mouth, near Hirschdale, CA	392152120041700	CH, TE	1991
Truckee River below Juniper Creek, near Hirschdale, CA	392156120041400	CH, TE	1991-92
DR-SG-NE, Fallon Arsenic	392210118463301	CH, TE	1985
Prosser Creek at Mouth, near Truckee, CA	392213120065800	CH	1991
Truckee River below Prosser Creek, near Truckee, CA	392215120065600	CH, TE	1991-92
Gray Creek at Mouth, near Floriston, CA	392224120014600	CH, TE	1991-92
Truckee River above Bronco Creek, near Floriston, CA	392257120011100	CH, TE	1991-92
Bronco Creek at Mouth, near Floriston, CA	392303120011000	CH, TE	1991-92
Truckee River below Little Truckee River, near Truckee, CA	392304120053400	CH, TE	1991-92
Smith Creek, Smith Creek Valley	392310117390401	CH, TE	1982
L-drain at Pasture Road near Depp Lane near Fallon, NV	392310118432601	CH, TE	1995
Unnamed Drain at Berney and Pasture Roads near Fallon, NV	392410118432801	CH, TE	1995
Steamboat Ditch above Thomas Creek near Reno, NV	392537119474701	CH, TE, SE, BI	1993-95
Upper West Side Drain at Solias Road near Fallon, NV	392552118501101	CH, TE	1995
Lower Diagonal Drain No 1 at US 50 near Fallon, NV	392553118394901	CH, TE	1995
Canyon 24 at Mouth, near Floriston, CA	392555120014800	CH, TE	1991
Mystic Canyon Creek at Mouth, near Floriston, CA	392556120013000	CH, TE	1991
Last Chance Ditch at Thomas Creek Road near Reno, NV	392612119471801	CH, TE, SE, BI	1993-95
Lake Ditch at Holcomb Lane near Reno, NV	392637119465601	CH, TE, SE, BI	1993-95
Puny Dip Canyon at Mouth, near Floriston, CA	392639120002600	CH, TE	1991
Sheckler Drain at St. Clair Road near Fallon, NV	392643118501201	CH, TE	1995
New River Drain at US 50 near Fallon, NV	392646118401601	CH, TE	1995
Truckee River above Fleish Power Diversion, near Verdi, NV	392706120001500	CH, TE	1991
Dry Creek Diversion above Huffaker Lane near Reno, NV	392717119470301	CH, TE, SE, BI	1993-95
Dry Creek below Huffaker Lane near Reno, NV	392720119470101	CH, TE, SE, BI	1993-95
Deep Canyon Creek at Mouth, near Verdi, NV	392724120002300	CH	1991
Steamboat Ditch near Farretto Lane near Reno, NV	392729119485901	CH, TE, SE, BI	1993-95
Last Chance Ditch at Davis Lane near Reno, NV	392737119480801	CH, TE, SE, BI	1993-95
Lake Ditch at Del Monte Lane near Reno, NV	392744119480201	CH, TE, SE, BI	1993-95
New River Drain at Harrigan Road near Fallon, NV	392801118454001	CH, TE	1995
Unnamed Drain at Stuart Road near Harmon Reservoir	392831118385801	CH, TE	1995
Harmon Drain at Ditch House Road near Fallon, NV	392856118363801	CH, TE	1995
Harmon Drain at NV 116 near Fallon, NV	392857118400101	CH, TE	1995
14N43E28ACD	392900117030000	CH, TE	1967
Water from Surface of Carson River	392940118460000	CH	1969
Hunter Creek below Steamboat Ditch near Reno, NV	392942119533700	CH, TE	1992
Truckee River Tributary at Chalk Bluff near Reno, NV	393040119521200	CH, TE	1992
Pioneer Ditch above McCarren Boulevard near Sparks, NV	393055119442800	CH, TE	1992
S2 Canal X Fitz & Swope	393121118342701	CH, TE	1978
S5A Drain at Austin Road near Fallon, NV	393134118371401	CH, TE	1995
T-Line Canal	393143118533301	CH, TE	1984
A Drain above TJ-1 Drain near Stillwater, NV	393201118364901	CH, TE	1995
TJ-1 Drain below A Drain near Stillwater, NV	393202118364701	CH, TE	1995
Swope Drain at Freeman Lane near Stillwater, NV	393256118330201	CH, TE	1995
Paiute Diversion Drain near Fallon Indian Reservation	393331118341801	CH, TE	1995
Kalamazoo Creek	393417114314101	CH, TE	1983
101 N20 E27 19CCBA1	393448119001001	CH, TE	1988-89
Truckee River above Derby Dam near Wadsworth, NV	393520119270700	CH, TE	1992
Inflow to White Lake from Peavine Peak Area	393852119581501	CH, TE	1982
179 N23 E62 13b 1 Egan Creek	395152114552601	CH, TE	1983-84
Minden-Gardnerville STP Discharge	395756119464401	CH, TE	1980
Goshute Creek	400054114480001	CH, TE	1983
Snow Creek	400243114580301	CH, TE	1983
Clear Creek at Diversion Dam South of Winnemucca, NV	404355117392101	CH, TE	1979
Creek at Wheeler Ranch	410651119080001	CH, TE	1980
Louise Creek	411308118293501	CH, TE	1990
Big Creek	411559118215201	CH, TE	1990
Bottle Creek	411919118195701	CH, TE	1990

DISCONTINUED SURFACE-WATER QUALITY CONTINUOUS RECORD STATIONS

The following stations were discontinued as continuous-record surface-water-quality stations in Nevada. Daily records of temperature, specific conductance, pH, or dissolved oxygen were collected and published for the period of record shown for each station. Abbreviations: DO, dissolved oxygen; SC, specific conductance; WT, water temperature.

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record (water years)
Virgin River at Littlefield, AZ	09415000	5,090	WT, SC	1950-60, 1965-88
Virgin River above Halfway Wash near Riverside, NV	09415230	5,980	WT, SC	1978-82
Las Vegas Wasteway near East Las Vegas, NV	09419679	--	WT, SC	1980-87, 1979-87
Pahranagat Valley Wash near Moapa, NV	09415850	252	WT,SC	1988-93
Muddy River near Moapa, NV	09416000		WT, SC	1988-93
Meadow Valley Wash near Rox, NV	09418700	2,384	WT, SC	1988-93
Las Vegas Wash above detention basin near North Las Vegas, NV	09419648	--	WT, SC	1989-93
Las Vegas Wash near Henderson, NV	09419700	2,125	WT, SC	1986-87
Las Vegas Wash at powerline crossing below Henderson, NV	09419755	--	WT, SC	1986-87
Las Vegas Wash near Boulder City, NV	09419800	2,193	WT	1979-86
			SC	1976-77, 1979-86
Colorado River below Hoover Dam, AZ-NV	09421500	171,700	WT, SC	1978-87
Steptoe Creek near Ely, NV	10244950	11.1	WT	1967-83
South Twin River near Round Mountain, NV	10249300	20.0	WT	1966-68, 1970-83
Chiatovich Creek near Dyer, NV	10249900	37.3	WT	1975-82
Leviathan Creek above mine near Markleeville, CA	10308783	--	WT, SC	1981-82
Leviathan Mine tunnel spring near Markleeville, CA	10308784	--	WT, SC	1981-82
Leviathan Mine pit flow near Markleeville, CA	10308785	--	WT, SC	1982
Leviathan Mine waste flow near Markleeville, CA	10308786	--	WT, SC	1981
Leviathan Mine seep below crusher near Markleeville, CA	10308787	--	WT, SC	1982
Leviathan Creek below delta near Markleeville, CA	10308788	--	WT, SC	1982
Leviathan Creek below mine near Markleeville, CA	10308790	--	WT, SC	1981-82
Bryant Creek below Mountaineer Creek near Markleeville, CA	10308794	--	WT, SC	1982
Bryant Creek near Gardnerville, NV	10308800	31.5	WT, SC	1982-83
East Fork Carson River near Gardnerville, NV	10309000	356	WT, SC	1955-66, 1967-72, 1993-96
Carson River near Fort Churchill, NV	10312000	1,302	WT, SC	1962-70, 1972-82, 1994-97
Carson River near Silver Springs, NV	10312020	1,450	WT, SC	1963-71
Carson River below Lahontan Reservoir near Fallon, NV	10312150	1,801	WT	1981-83
Carson Lake Drain above Carson Lake near Fallon, NV	10312180	--	WT, SC	1994-97
Rice Ditch at Gage near Fallon, NV	10312185	--	WT, SC	1994-97
Stillwater Point Diversion Drain near Stillwater, NV	10312215	--	WT, SC, pH, DO	1988-90
Stillwater Slough at Stillwater, NV	10312218	--	WT, SC	1994-97
Paiute Drain above D-line Canal near Stillwater, NV	10312250	--	WT, SC	1988-90
			pH, DO	1988-89
D-line Canal below East Lake near Stillwater, NV	10312267	--	WT, SC, pH, DO	1989
TJ Drain at wildlife entrance near Stillwater, NV	10312274	--	WT, SC, pH, DO	1988-90
Humboldt River near Carlin, NV	10321000	4,310	WT	1966-68, 1981-83
Humboldt River at Palisade, NV	10322500	5,010	WT	1962-65
Reese River near Ione, NV	10325500	53	WT	1962
Humboldt River near Imlay, NV	10333000	15,504	WT, SC	1998-2000
Humboldt River near Rye Patch, NV	10335000	16,100	WT, SC	1952-58, 1960-81
Humboldt River near Lovelock, NV	10336000	16,600	WT, SC	1998-2000
Toulon Drain at Derby Field Road near Toulon, NV	10336035	--	WT, SC	1998-2000
Army Drain above Iron Bridge near Lovelock, NV	10336039	--	WT, SC	1999-2000
Upper Truckee River at South Upper Truckee River Road near Meyers, CA	10336580	14.09	WT	1997-2003
Grass Lake Creek near Meyers, CA	10336593	6.4	WT	1997-2001
Upper truckee River at Highway 50 above Meyers, CA	103366092	34.28	WT	1997-2003
Upper Truckee River at South Lake Tahoe, CA	10336610	54.9	WT	1997-2003
Upper Truckee River at Mouth near Venice Drive, CA	10336612	56.5	WT	1997-2001
Third Creek near Crystal Bay, NV	10336698	6.05	WT	1980-85
			SC	1981-1983
Incline Creek near Crystal Bay, NV	10336700	6.69	WT	1998-2001
Glenbrook Creek at Glenbrook, NV	10336730	4.11	WT	1998-2001
Trout Creek at US Forest Service Road 12N01 near Meyers, CA	10336770	7.4	WT	1997-2003
Trout Creel at Pioneer Trail near South LAke Tahoe, CA	10336775	23.7	WT	1997-2003
Cold Creek at Mouth, CA	10336779		WT	1997-2003
Trout Creek near Tahoe Valley, CA	10336780	36.7	WT	1997-2003
Trout Creek at South Lake Tahoe, CA	10336790	40.4	WT	1997-2003
Trout Creek near Mouth East near Bellevue/ElDorado Avenue, CA	10336795	41	WT	1997-2001
Truckee River at Tahoe City, CA	10337500	507	WT	1993-94
Truckee River near Truckee, CA	10338000	553	WT	1977-82, 1993-94
Donner Creek at Highway 89 near Truckee, CA	10338700	29.1	WT	1993-1994

DISCONTINUED SURFACE-WATER QUALITY CONTINUOUS RECORD STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record (water years)
Martis Creek at Highway 267 near Truckee, CA	10339250	25.8	WT	1975-88
Martis Creek near Truckee, CA	10339400	39.9	WT	1975-2000
Little Truckee River below Diversion Dam near Sierraville, CA	10341950	36.1	WT	1994
Little Truckee River at Highway 89 near Truckee, CA	10343200	59.0	WT	1994
Bronco Creek at Floriston, CA	10345700	15.4	WT	1993-94
Truckee River at Floriston, CA	10345900	932	WT, SC	1964-71
Truckee River at Farad, CA	10346000	932	WT	1972-81
			SC	1972-80
Dog Creek at Verdi, NV	10347310	--	WT	1993-94
Truckee River near Verdi, NV	10347336	--	WT	1980
Truckee River at Mogul, NV	10347460	1,035	WT	1994
Hunter Creek above Last Chance Ditch near Reno, NV	10347620	11.7	WT	1993-94
North Truckee Drain at Kleppe Lane near Sparks, NV	10348300	--	WT, SC	1993-98
Steamboat Creek at Clearwater Way near Reno, NV	10349980	244	WT, SC	1993-1997, 1998
Reno-Sparks Sewer Treatment Plant Outfall at Reno, NV	10349995	--	WT, SC	1994-98
Truckee River at Vista, NV	10350000	1,430	WT, SC	1988-94
Truckee River at Lockwood, NV	10350050	1,433	WT	1980-81
Truckee River above Tracy, NV	10350390	1,590	WT	1972-82
Truckee River below Tracy, NV	10350400	1,590	WT	1972-82
Truckee River right bank below Tracy, NV	10350405	1,590	WT	1972-82
Truckee River at Derby Dam, NV	10351000	1,676	WT	1980-81, 1988-96, 2001-02
"A" Drain at powerline crossing near Fernley, NV	10351356	--	WT, SC, pH, DO	1988-90
Truckee Canal at U.S. 50 above Lahontan Reservoir, NV	10351590		WT	1980
Truckee River below Derby Dam near Wadsworth, NV	10351600	1,676	WT	1988-95
McDermitt Creek near McDermitt, NV	10352500	225	WT	1975-78
Quinn River near McDermitt, NV	10353500	1,100	WT, SC	1980-83
South Lead Lake-Southwest landing	393652118311201	--	WT, pH	1988-90
			SC, DO	1988-89

INTRODUCTION

Water-resources data published herein for the 2004 water year comprise the following records:

Water discharge for 182 gaging stations on streams, canals, and drains.

Discharge data for 95 partial record stations and miscellaneous sites, and 16 springs.

Stage and contents for 21 ponds, lakes and reservoirs.

Water levels for 19 continuous observation wells, and 889 periodic observation wells.

Water-quality data for 114 stream, canal, spring and drain sites and 138 wells.

Precipitation totals for 39 stations.

Water withdrawals for 11 wells.

Additional water data, collected at various sites that are not part of the systematic data-collection program, are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Nevada.

Records of stream discharge and content or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled “Surface Water Supply of the United States.” Through water year 1960, these water-supply papers were in an annual series; for 1961-70, they were in a 5-year series. Records of water quality were published from 1941 to 1970 in an annual series of water-supply papers entitled “Quality of Surface Waters of the United States.” Records of ground-water levels were published through 1974 in a series of water-supply papers entitled “Ground-Water Levels in the United States.” Water-Supply Papers may be consulted at the libraries of principal cities in the United States, or, if not out of print, they may be purchased from the U.S. Geological Survey, Information Services, Federal Center, Box 25286, Denver, CO 80225-0046.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a state-by-state basis. Water-quality records for water years 1964 through 1974 were similarly released, either in separate reports or in conjunction with the streamflow records.

Beginning with the 1975 water year, surface-water, ground-water, and water-quality data have been published annually as official Geological Survey reports on a state basis. These reports carry an identification number consisting of the two-letter state abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as “U.S. Geological Survey Water Data Report NV-01-1.” For archiving and general distribution, the reports for water years 1971-74 are identified also as official water-data reports. The water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. For further ordering information, the Customer Inquiries telephone number is (703) 487-4650, between 8:30 am and 5:30 pm EST.

The computer age has led to the dissemination of information quickly and easily through the Internet, the worldwide computer network. Hydrologic information from the USGS is available on the World Wide Web (WWW). Included are water-related activities, information contacts, publications, and various other items that may be of interest to the general public, local State and other Federal agencies, and universities.

The USGS Nevada Water Science Center has a web page for disseminating such information. The page can be accessed using the WWW address: http://nevada.usgs.gov/

COOPERATION

The U.S. Geological Survey and organizations of the State of Nevada have had cooperative agreements for the systematic collection of streamflow records since 1909, and for water-quality records since 1951. Organizations that assisted in collecting data or funding through cooperative agreement with the Survey during 2004 are:

NEVADA STATE AGENCIES

Bureau of Mines and Geology
CA Department of Water Resources
Dayton Valley Conservation District
Department of Conservation and Natural Resources
Department of Transportation
Division of Environmental Protection
Division of Water Resources
UNR Agricultural Station

INDIAN TRIBES

Pyramid Lake Paiute Tribe
Duck Valley Reservation Shoshone-Paiute Tribes
Fallon Paiute-Shoshone Tribe
Summit Lake Paiute Tribe
Timbisha Shoshone Tribe
Walker River Paiute Tribe

OTHER FEDERAL AGENCIES

Department of Energy
Bureau of Reclamation
Bureau of Land Management
Bureau of Indian Affairs
Corps of Engineers
Environmental Protection Agency
Fallon Naval Air Station
Federal Emergency Management Agency
Fish & Wildlife Service
Forest Service
National Park Service
Nuclear Regulatory Commission
U.S. Board of Water Commissioners
U.S. District Court Watermaster
U.S. Air Force

REGIONAL AGENCIES, CITIES, COUNTIES

Tahoe Regional Planning Agency
Carson City
Carson Water Subconservancy District
Carson-Truckee Water Conservancy District
Clark County Flood Control Authority
Clark County Sanitation District
City of Henderson
Churchill County
Desert Research Institute
El Dorado County (CA)
Elko County
Las Vegas Valley Water District
Lahontan Water-Quality Control Board
Pershing County Water Conservation District
Southern Nevada Water Authority
Storey County
Truckee Carson Irrigation District
Truckee Meadows Water Authority
Truckee Meadows Water Reclamation Facility
Walker River Irrigation District
Washoe County

Organizations that supplied data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Compiled by Robert E. Bostic, E. James Crompton, Kerry T. Garcia, and Sonya L. Vasquez

Surface Water

Nevada has no truly large rivers. The largest streams in the State are the Humbled, Truckee, Carson, Walker, Muddy, Virgin, and Colorado Rivers. The Colorado River, which is by far the largest, forms the boundary between southeastern Nevada and northwestern Arizona. Of the remaining listed rivers, only the Humboldt and Muddy begin and terminate in Nevada.

The larger rivers typically follow the flow pattern of a gaining stream in the well-watered mountain reaches and a losing stream in the lower-altitude reaches. Most of Nevada is typified by basin-and-range topography, and most Nevada rivers have no direct connection with the ocean. Downstream depletion of flow is caused by irrigation, public use, infiltration, and evapotranspiration. Characteristically, stream discharge is low in late summer, and then increases through the autumn and winter until the snowmelt season in the spring. Maximum discharge for the year normally can be expected in May and June, although floods have occurred from November through March as a result of rain or rain on snow.

Much of Nevada is drained by small streams that are dry most of the year. Typically, such streams respond only to intense precipitation, which generally occurs only a few times a year at the most. In many years, the streams have no flow, and even in relatively wet years, total flow duration in such streams can be measured in hours.

Streams and rivers in Nevada drainages for water year 2004, were generally below normal runoff and ranged from around 40 percent to about 65 percent depending on the particular area, elevation of the drainage and water usage in the system. Runoff this year on streams with little or no control was earlier than the typical seasonal runoff, with the peaks generally occurring in mid March.

The Humboldt River begins in northeastern Nevada and terminates in northwestern Nevada. For water year 2004, the discharge at Palisade (station 10322500) was 51 percent of the 97-year mean. Monthly and annual mean discharges for water year 2004 and for the period of record (water years 1903-06, 1912-2004) at the Palisade station are shown in figure 1. Rye Patch Reservoir (station 10334500), the last impoundment on the Humboldt River, at its highest level was 16 percent of full capacity in April, to a low of 4 percent the end of September.

The Truckee River is a major western Nevada stream for which discharge is largely controlled by reservoirs and regulated lakes in the Sierra Nevada of California and Nevada. The Truckee River begins at Lake Tahoe (station 10337000) which is regulated above its natural rim (6,223 feet above NGVD of 1929). Lake Tahoe during water year 2004, dropped below its rim September 17, with the water surface ranging between 6,224.30 early June, to 6,222.84 feet, September 30. The 2004 discharge at Reno (station 10348000) was 60 percent of the 77-year mean (water years 1907-21, 1926, 1931-34, 1947-2004). The river terminates in Pyramid Lake (station 10336500), a closed-basin water body which is a saline remnant of Pleistocene Lake Lahontan. Water-surface elevations, in figure 2, illustrate a decline from 1975 through 1981, an increase during 1982-84, which raised the lake level by 25 feet, a steady decline from 1986 through 1994 with slight increases from 1995-1999. Since 1999 the lake has continued to decline. The lake-surface elevation declined 3.0 feet from 3,809.4 in September 2003 to 3,806.4 feet above NGVD of 1929 the end of September 2004.

The Carson River is formed in Carson Valley by the confluence of the East Fork and West Fork Carson Rivers, with headwaters in the Sierra Nevada of California. The 2004 discharge at Carson City (station 10311000) was 51 percent of the 65-year mean. Monthly and annual mean discharges for water year 2004 and for the period of record (water years 1940-2004) at the Carson City station are shown in figure 1. Lahontan Reservoir (station 10312100), the major impoundment on the Carson River, at its highest level was 79 percent of full capacity early June, and a low of 26 percent November 11.

The Walker River is formed in Mason Valley by the confluence of the East and West Walker Rivers; both rivers originate in the Sierra Nevada of California. The East Walker River discharge is controlled by Bridgeport Reservoir and the West Walker River by Topaz Lake. The 2004 discharge of the Walker River at Wabuska (station 10301500) was 28 percent of the 79-year mean (water years 1904, 1921-35, 1940-41, 1943, 1945-2004). The river terminates in Walker Lake (station 10288500) north of Hawthorne, which is also a saline remnant of ancient Lake Lahontan similar to Pyramid Lake. Water-surface elevations for the lake are shown in figure 2 and illustrate a steady decline from 1969 through 1981 like that of Pyramid Lake. In contrast, the high discharges in the Walker River from 1982 through 1984 raised the lake level by about 14 feet. Lake levels have steadily declined since 1986 until May 1995, and increased slightly through 1999. Since 1999 the lake has continued to decline. The lake-surface elevation decreased 4.0 feet during the 2004 water year, from 3,939.2 the end of September 2003 to 3,935.2 feet above NGVD of 1929 the end of September 2004.

The Colorado River in southeastern Nevada is completely controlled by a series of impoundments that includes Hoover Dam (station 09421000) and Davis Dam (station 09422500) in Nevada. Since 1935, the mean annual discharge of the river below Hoover Dam (station 09421500) is 13,950 cubic feet per second. Mean annual discharge fluctuates on the basis of upstream supply and downstream hydroelectric-power and irrigation requirements. The 2004 mean annual discharge of the Colorado River below Hoover Dam was 95 percent of the 70-year mean (water years 1935-2004).

The Virgin River is one of the major tributaries to Lake Mead on the Colorado River and has most of its drainage area in Utah and Arizona. The discharge at Littlefield, Arizona (station 09415000), was 48 percent of the 75-year mean (water years 1930-2004).

The Muddy River is another tributary to Lake Mead. The discharge at Glendale (station 09419000) was 76 percent of the 53-year mean (water years 1951-1983, 1985-2004).

Lake Mead, since it’s most recent high elevation in December 1997 of 1214.64 feet, has now dropped 88.78 feet at the end of September, to an elevation of 1125.86 feet.

Water Quality

The quality of surface water in Nevada varies greatly from place to place, as well as seasonally. Concentrations of dissolved solids generally are higher in the southern part of the state than in the northern part, and are dependent to a large extent upon water discharge. Concentrations usually are greatest during periods of low streamflow, and lowest during periods of high streamflow due to dilution by precipitation or snowmelt.

At two southern Nevada stations, Virgin River at Littlefield (station 09415000) and Colorado River below Hoover Dam (station 09421500), mean dissolved-solids concentrations for period of record were 1,990 mg/L and 691 mg/L, respectively. Mean dissolved-solids concentrations in the 2004 water year were 2,310 mg/L and 656 mg/L, respectively. Mean dissolved-solids concentrations in the 2004 water year were 116 and 95percent, respectively, of the means for the period of record. For the Virgin River at Littlefield station, the mean discharge for the 2004 water year was 113 ft^3/s and 236 ft^3/s for the period of record. For the Colorado River below Hoover Dam station, the mean discharge for the 2004 water year was 13,270 ft^3/s and 13,950 ft^3/s for the period of record. Figure 3 shows the dissolved-solids concentrations measured at the Colorado River station since the 1971 water year. The downward trend in concentration during 1983-85 and again in 1997-2000 probably was the result of dilution by consecutive years of greater than average inflow to Lake Mead. During 1988-96 and 2001-2004, in contrast, the concentration increased, presumably because the amount of runoff from the upper basin was less than the long-term mean.

The quality of ground water in Nevada also varies greatly because of the various soil and rock types found in the state. Concentrations of dissolved solids generally are higher in the southern part of the state (latitude less than or equal to 38°00'00") than in the northern part (latitude greater than 38°00'00"), similarly to what occurs in surface water. Concentrations in the southern part of the state ranged from 5 to 102,000 mg/L with an average of 1,800 mg/L and a median of 596 mg/L. Concentrations in the northern part of the state ranged from 10 to 94,700 mg/L with an average of 1,310 mg/L and a median of 266 mg/L.

Ground water samples were collected from 80 wells in water year 2004. The constituents analyzed were nutrients, common ions, trace constituents, and organic substances. EPA’s drinking water standards for nitrate (10 mg/L), fluoride (4.0 mg/L), and arsenic (0.01 mg/L in 2004 water year) were exceeded in 2 wells, 16 wells, and 3 wells, respectively.

Ground Water

Development of ground-water supplies in Nevada continued during water year 2004 with 2,920 Well Driller's Reports (well logs) submitted to the State Engineer's office. During 2004, 2,112 new wells were drilled and 808 existing wells were reworked or abandoned. The number of new wells drilled during water years 1971-2004 are shown on figure 4. New wells are grouped into 4 categories of proposed water use; domestic, irrigation, public supply and industrial, and other (which includes all other proposed uses). Half of the new wells were drilled for domestic use (figure 5). Most of the new wells represented in the other category were wells used for monitoring. The other category also includes wells drilled for artificial recharge, dewatering, livestock, and mining (figure 5).

Well drilling was concentrated in the northwestern and southern parts of the State. Drilling in extreme northern Nevada was mainly for domestic use near the communities of Elko and Winnemucca and mainly mining and monitoring use in areas between Elko and Winnemucca. Drilling in northwestern Nevada was concentrated in and around the Reno-Lake Tahoe areas; particularly near the communities of Minden-Gardnerville, Fallon, Fernley, and Reno. Drilling in southern Nevada was concentrated in and around the Las Vegas area and near the community of Pahrump. While monitor drilling was predominant in Las Vegas, domestic drilling was predominant in the outlying communities.

Nevada is almost entirely within the Great Basin Region of the Basin and Range physiographic province. The region is characterized by mountain ranges with a general north-south orientation separated by basins (valleys) that are filled by accumulations of unconsolidated to partly consolidated sedimentary deposits and underlain by consolidated rocks that also form the surrounding ranges (Stewart, 1980). Most wells have been drilled into unconsolidated basin-fill deposits. Some consolidated rocks yield substantial quantities of water, particularly in parts of eastern and southern Nevada where ground water flows through thick accumulations of limestone and dolomite. Locally, some fractured volcanic rocks also yield substantial quantities of water. Water wells, however, are not commonly drilled into consolidated rocks, because the well yields are less predictable and most present-day development is in basins where water is readily obtained from shallow depths in unconsolidated deposits.

The depths of the wells drilled in 2004 are shown in figure 6. Domestic wells were most commonly drilled to depths between 125 and 250 feet below land surface. Wells drilled for irrigation use were most commonly drilled to depths between 250 and 625 feet. Public supply and industrial wells were most commonly drilled to depths between 375 to 500 feet and greater than 1,000 ft. Wells in the other category, primarily test holes, were most commonly drilled to depths between 0 and 125 feet.

Ground-water levels fluctuate seasonally and annually in response to changes in withdrawals and climatic conditions. These fluctuations can cause changes in natural recharge to and discharge from the ground-water reservoirs. Water levels generally rise from late winter to early summer, in response to (1) runoff from melting snow in the surrounding mountain ranges, particularly in the northern part of the State and (2) application of surface water for irrigation. Water levels generally decline from summer to early winter, when recharge is small and ground water is discharged by evapotranspiration, irrigation, and domestic use. Long-term climatic changes also can affect water-level trends, but the effects occur over a period of years. Superimposed on the natural fluctuations in water levels are changes caused by increasing or decreasing ground-water withdrawals.

Water-level trends for six selected observation wells are shown in figure 7. The well in Paradise Valley is close to a stream used for irrigation. The well in Eagle Valley taps aquifers used for public supply. The well in Pahrump Valley is in a basin undergoing transition from irrigation to domestic use. The well in Diamond Valley is in an area of intensive irrigation. The well in Steptoe Valley is in a relatively undeveloped basin. The well in Las Vegas Valley taps aquifers used for public supply.

The well in Paradise Valley is in the northwestern part of the basin. Water levels may fluctuate primarily in response to variations in nearby surface-water streamflow. The well probably does not reflect responses to ground-water withdrawals for agricultural irrigation in the central to southern parts of the basin.

The well in Eagle Valley is in the northern part of the basin north of Carson City. Water levels in the new Eagle Valley well may reflect responses to ground-water withdrawals for municipal use.

The well in Pahrump Valley is in the west-central part of the basin. Ground-water use has changed from historically agricultural to residential because Pahrump has become a bedroom community for Las Vegas. Water levels may reflect this transition.

The well in Diamond Valley is in the southern part of the basin in a farming area. Water levels may reflect responses to ground-water withdrawals for agricultural irrigation.

The well in Steptoe Valley is in the central part of the basin. Water levels may respond primarily to fluctuations in climatic conditions.

The well in Las Vegas Valley is in the northwestern part of the basin northwest of Las Vegas. Las Vegas has undergone a tremendous population increase and surface-water imports from Lake Mead have exceeded ground-water withdrawals since 1975. Water levels may reflect responses to ground-water withdrawals for municipal and commercial use.

Water Use

Statewide, Nevada's annual precipitation averages about 9 inches--the lowest of any State in the Nation. Spatially, average precipitation ranges from 4 inches in some low-altitude valleys to about 16 inches in higher areas; in the higher mountains, precipitation exceeds 30 inches.

Water year 2004 (October 1, 2003-September 30, 2004) was a below normal year for precipitation for northern Nevada and near or above normal in southern Nevada. Precipitation at six selected sites in Nevada during water year 2004, as reported by the National Weather Service, ranged from 57 percent to 108 percent of the average value. The following table summarizes the data.

Precipitation

Weather station	Water year 2004 (inches)	Average, water years 1970-2000	Water year 2004	
			Departure from average (inches)	Percent of average
Elko	10.15	9.78	0.37	104
Ely	5.81	9.98	-4.17	58
Las Vegas	4.93	4.56	0.37	108
Reno	5.96	7.52	-1.56	79
Tonopah	3.24	5.71	-2.47	57
Winnemucca	5.56	8.38	-2.82	66

In a normal year, surface water is the source for about 60 percent of Nevada's water withdrawals. Some surface water right holders also have supplemental ground water rights, which can be used when surface water is not available for their use.

Public supply is a rapidly growing use of water in the State and currently ranks second behind irrigation. The rate of increase in public-supply withdrawals nearly parallels the rapid growth in the State's population. Since 1986, Nevada has been the nation's fastest growing state (U.S. Bureau of the Census, 2004a). In July 2004, Nevada's population was estimated to be 2,410,768 people (Nevada State Demographer, 2005). From April 1, 2000 to July 1, 2004, Nevada's population increased 20.6 percent (Nevada State Demographer, 2005). For U.S. cities with over 100,000 people, North Las Vegas and Henderson were the second and third fastest-growing cites from 2000 to 2003 growing 25.1 and 22.5 percent, respectively (U.S. Bureau of the Census, 2004b).

In 2004, about 88 percent of Nevadans lived in urban areas having populations of 2,500 people or more (Nevada State Demographer, 2005). The three largest population centers in the State are the Las Vegas, Reno, and Carson City areas which makeup about 82 percent of the State's population (Nevada State Demographer, 2005). The primary source of public-supply water for Las Vegas and Reno is surface water; for Carson City, it is ground water. In 2004, these three areas continue to account for about 80 percent of all the water withdrawn (acre-feet per month) by public-supply utilities in the State. In 1974, the Las Vegas area (which encompasses the cities of Las Vegas, North Las Vegas, Henderson, and Nellis Air Force Base) surface- and ground-water withdrawals were about equal. By 2004, Lake Mead (Colorado River) was the source for nearly 90 percent of the area's public-supply withdrawals (Southern Nevada Water Authority, 2005a). The Las Vegas area is dependent on the Colorado River to meet its public-supply water needs. About 59 percent of the water used in Las Vegas is for residential use, 14 percent for commercial/industrial, golf courses about 8 percent, and about 7 percent is used by resorts (Southern Nevada Water Authority, 2005b). Of the total residential use, about 70 percent is used for outdoor landscaping (Southern Nevada Water Authority, 2005c).

Since January 2000, the water level of Lake Mead has dropped over 80 feet (Southern Nevada Water Authority, 2005e) and because of this drop, the Las Vegas area went from a drought watch to a drought alert in 2004, which caused additional water use restrictions to go into effect (Southern Nevada Water Authority, 2005e). The water-use restrictions taken in the Las Vegas area were: No outside watering permitted from 11 a.m. to 7 p.m., limits on the amount of turf, and rebates given for reducing the amount of turf (Las Vegas Valley Water District, 2005). Clark County now requires all new golf courses and nearby landscape areas to utilize reclaimed wastewater. Some communities in the area prohibit man-made lakes and have placed restrictions on the size of outside decorative water displays at resort hotels. Restrictions have been placed on the percentage of turf that can be used at commercial, industrial, and multifamily developments.

Another measure instituted by Southern Nevada Water Authority is a program called Water Smart Landscapes where the homeowner is paid $1 for every square foot of lawn they convert to xeriscape (Southern Nevada Water Authority, 2005d) From January 2003 through March 2004, 3.4 million square feet of sod had been removed and converted to xeriscape under this program (Las Vegas Sun, 2005a). Because of the compliance with drought restrictions, the Las Vegas area is continuing a 2-year trend of declining water use. Water use declined more than 15 billion gallons from 2002 to 2003, despite the fact that there were more than 60,000 new residents in 2003 (Southern Nevada Water Authority, 2005e).

Two additional means to acquire or reuse water in the Las Vegas area has been to look at modifying the amount of water Nevada can use from the Colorado River system and artificial recharge. Secretary of the Interior Gale Norton signed the Quantification Settlement Agreement at Hoover Dam October 16, 2003. The agreement provides Nevada with an opportunity over the next 15 years to access additional water from the Colorado River if water levels allow for surplus use. This agreement may provide additional water that may be available in coming years while southern Nevada develops other water resources (Southern Nevada Water Authority, 2004f). Artificial recharge is another method the Las Vegas area is using to help provide water to the Las Vegas area during peak demand. From 1987 through 2004, about 289,000 acre-feet of treated Colorado River water has been injected into the Las Vegas Valley groundwater basin (Southern Nevada Water Authority, 2005f). This artificial recharge could also help stabilize declining ground-water levels.

The Nevada Test Site (NTS) is 60 miles northwest of Las Vegas. From 1950 until the ban on nuclear weapons testing in 1992, the NTS was the primary continental site for the testing of nuclear weapons. Ground water is the source of all water used at the NTS. With the ceasing of weapons testing and the related decline in personnel, water withdrawals have declined nearly 80 percent since 1989 (figure 8). Monthly pumpage from the 14 production wells on the NTS in 2004 is shown in figure 9.

In the Reno area (which encompasses the cities of Reno and Sparks), the Truckee River supplies most of the community's public-supply water. During years of high or surplus flows in Truckee River, the principal water purveyor follows a conjunctive use agreement to reduce its groundwater withdrawals, thus allowing groundwater storage to increase. About 68 percent of the water used in the Reno area is for residential use, 22 percent for commercial, and about 7 percent for irrigation (Truckee Meadows Water Authority, 2005a). Conservation measures enforced in the Reno area limit outside watering to twice a week with no watering between 1 and 5 p.m.; washing down hard surfaces is prohibited; and decorative water displays are turned off (Truckee Meadows Water Authority, 2005b).

In the Carson City area, ground water supplies most of the community's public-supply water. However, the amount of water that Carson City gets from surface water sources is increasing. City ordinance limits outside watering to every other day from June through September, with no watering between 10 a.m. and 7 p.m. This is done to help reduce peak demand and not to limit water use. Wasting water and washing driveways is also prohibited. Despite these measures, levels in water tanks in some areas of the city dipped below 20 percent of capacity and in two areas were below 10 percent on June 28 (Nevada Appeal, 2004a). To boost water levels city officials enacted emergency water restrictions prohibiting outdoor watering from June 28 through June 20 (Nevada Appeal, 2004b).

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U.S. Bureau of the Census, 2004b, Arizona, Nevada and California Cities Show Fastest Growth, Census Bureau Says. Accessed March 24, 2005, on the World Wide Web at URL: http://www.census.gov/Press-Release/www/releases/archives/population/001856.html

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, hydrologic-station records in USGS reports have been listed in order of downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary entering between two main-stream stations is listed between those stations. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is located with respect to the stream to which it is immediately tributary is indicated by an indention in that list of stations in the front of this report. Each indentation represents one rank. This downstream order and system of indentation indicates which stations are on tributaries between any two stations and the rank of the tributary on which each station is located.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These station numbers are in the same downstream order used in this report. In assigning a station number, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list composed of both types of stations. Gaps are consecutive. The complete 8-digit (or 10-digit) number for each station such as 09004100, which appears just to the left of the station name, includes a 2-digit part number “09” plus the 6-digit (or 8-digit) downstream order number “004100.” In areas of high station density, an additional two digits may be added to the station identification number to yield a 10-digit number. The stations are numbered in downstream order as described above between stations of consecutive 8-digit numbers.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The USGS well and miscellaneous site-numbering system is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, and the next 7 digits denote degrees, minutes, and seconds of longitude; the last 2 digits are a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and miscellaneous site are the same, a sequential number such as “01,” “02,” and so forth, would be assigned as one would for wells. The 8-digit, downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

Local site numbers used in Nevada locate ground-water data sites (wells or springs) by hydrographic areas and by the official rectangular subdivision of the public lands with reference to the Mt. Diablo base line and meridian. Nevada has been divided into 14 hydrographic regions or major basins and 256 individual hydrographic areas or valleys. The classification is used to compile information pertaining to water resources in Nevada. The local site number uses as many as 19 digits to locate the site by hydrographic area, township, range, section, and section subdivision.

The first segment of the local site number specifies the hydrographic area as defined by Rush (1968). The remainder of the number specifies the township north or south of the Mt. Diablo base line, the range east of the Mt. Diablo meridian, the section, and the subdivision of the section. Sections are divided into quadrants labeled counterclockwise from upper right as A, B, C, and D. Each quadrant is then similarly subdivided up to as many as three times, depending on the accuracy of available maps; thus each section of about 640 acres may be subdivided into tracts approximately 330 ft on a side containing about 2.5 acres. Lettered quadrants are read from left to right, with the largest subdivision on the left. Sites within the smallest subdivision used are numbered sequentially with 1 digit. As an example, a well in Fallon (Carson Desert, hydrographic area 101) located within the SE1/4NE1/4NW1/4SW1/4 section 6, Township 19 North, Range 28 East, would have the number 101 N19 E28 6CBAD1. A second well within the same 2.5-acre tract would be numbered 101 N19 E28 6CBAD2.

Prior to January 1976, local site numbers in Nevada were published according to the following general format: 19/28-36aabc1. The first number was the township north of the base line (if the township was south of the base line, the first number was followed by an “S”). The second number was the range east of the meridian, the third number was the section, and the following letter or letters and number indicated the quarter sections and sequence as defined above.

Wells and springs in California are assigned numbers according to their location in the rectangular system for the subdivision of public land. For example, in the number 005S012E22P001M (fig. 1), the first four characters indicate the township (T. 5 S.), and the next four characters indicate the range (R.12 E.); the two digits following the range indicate the section (sec. 22); and the letter following the section indicates the 40-acre subdivision of the section. Within each 40-acre subdivision, the wells are numbered serially, as indicated by the last three digits. The final letter indicates the baseline and meridian designation as follows: H, Humboldt; M, Mount Diablo; S, San Bernardino. This 15-digit number is called the Local Number or State Well Number.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 61 sites in small drainage basins in 39 States that was established in 1963 to provide consistent streamflow data representative of undeveloped watersheds nationwide, and from which data could be analyzed on a continuing basis for use in comparison and contrast with conditions observed in basins more obviously affected by human activities. At selected sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program may be accessed from http://water.usgs.gov/hbn/.

National Stream-Quality Accounting Network (NASQAN) is a network of sites used to monitor the water quality of large rivers within the Nation’s largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande River basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia Rivers so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment (NAWQA) Program; (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world’s oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program may be accessed from http://water.usgs.gov/nasqan/.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a network of monitoring sites that provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from this network of 250 precipitation-chemistry monitoring sites. The USGS supports 74 of these 250 sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation’s land and water resources. Reports and other information on the NADP/NTN Program, as well as data from the individual sites, may be accessed from http://bqs.usgs.gov/acidrain/.

The USGS National Water-Quality Assessment (NAWQA) Program is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; to provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and to provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 42 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents is measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for water-resources managers to use in making decisions and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and Federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, State, and local water-resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program may be accessed from Z *http://water.usgs.gov/nawqa/*.

The USGS National Streamflow Information Program (NSIP) is a long-term program with goals to provide framework streamflow data across the Nation. Included in the program are creation of a permanent Federally funded streamflow network, research on the nature of streamflow, regional assessments of streamflow data and databases, and upgrades in the streamflow information delivery systems. Additional information about NSIP may be accessed from *http://water.usgs.gov/nsip/*.

Carbonate Rock Study Area consists of recording wells, intermittent and quarterly measurements at wells, spring and fall discharge measurements at springs, and bulk precipitation readings at high-elevation sites.

Carson River Mercury Study consists of streamflow sites where depth/width integrated water samples for total and dissolved mercury, total and dissolved methylmercury, and suspended sediment are collected for determination of loads into and out of Lake Lahontan.

Clear Creek Monitoring Project consists of sites where chemical analyses of water samples are collected in the Clear Creek watershed. Water samples were collected at four sites to characterize water quality in the basin. The project is in cooperation with the Nevada Department of Transportation and is being done to collect background data to evaluate the effectiveness of future erosion control efforts proposed in the basin.

Cold Creek Monitoring Project consists of ground-water quality and ground-water level data collected in the Cold Creek watershed as part of a cooperative study with El Dorado County Department of Transportation and California Tahoe Conservancy. The purpose of the study is to assess effects of urban runoff into a detention basin adjacent to Cold Creek.

Dayton Valley consists of water-level measurements at wells, and bulk precipitation readings at sites.

Douglas County Network consists of sites for miscellaneous streamflow measurements, wells for water-level measurements, and ground water water-quality sites where data are routinely collected, principally in Carson Valley, western Nevada. The data will be used to establish background information to determine if changes in water quantity or quality occurs.

Dry Valley Study is a two year water-resource investigation to estimate natural ground-water discharge and to characterize the quality of ground water.

Colorado River Basin Study consists of lake sites where water samples were taken and analyzed in cooperation with the U.S. National Park Service to determine gasoline-related organic compound concentrations in Lake Mead and Lake Mohave.

Lake Tahoe Interagency Monitoring Program is a network of surface-water sites where streamflow and water-quality data are routinely collected around Lake Tahoe and ground-water sites monitored for nutrients. The surface-water data will be used to provide a long-term database of streamflow and of sediment and nutrient loadings from major tributaries to Lake Tahoe.

Lake Tahoe Basin Organics Study in Lake Tahoe and other Lower Echo Lake (Nevada and California) consists of lake sites where water samples were taken and analyzed for MTBE and other gasoline components. The data will be used to determine the effectiveness of the prohibition of carbureted 2-stroke engines in the Lake Tahoe Basin.

Las Vegas Valley Study consisits of water-level measurements at selected wells throughout the valley.

Other Lakes in the Lake Tahoe Basin is a two-year study to determine the nutrient concentrations in five lakes and associated outlet streams in the Lake Tahoe basin.

Nevada Test Site and Adjacent Areas Monitoring Project collects and compiles hydrogeologic data to aid in characterizing local and regional ground-water flow systems underlying the Nevada Test Site and vicinity. This work is done in cooperation with the U.S. Department of Energy as part of their Environmental Restoration and Hydrologic Resources Management Programs. Specific activities include the collection of water-level, water-use, evapotranspiration, and discharge data. Periodic and continuous water-level measurements are collected from wells and test holes at and adjacent to the Nevada Test Site. Measurements provide information defining short- and long-term water-level fluctuations. Water-use data are compiled for most water-supply wells at the Nevada Test Site. Continuous water-use data are collected at selected well sites. Evapotranspiration and discharge data are collected at Ash Meadows National Wildlife Refuge and Oasis Valley.

Newlands Shallow Aquifer Monitoring Project consists of wells for water-level measurements and ground-water-quality sites in Churchill County, Nevada where data are collected to monitor changes in water levels and water quality caused by changes in land use.

Spanish Springs Project consisits of water quality data from lysimeters and ground-water wells. Data were collected as part of a cooperative study with Washoe County Department of Water Resources to determine the amount of nitrogen entering the ground water from septic tank systems in the Spanish Springs Valley.

Waterfall Fire Project consists of water-quality measurements made to monitor water chemistry and sediment concentrations associated with the Waterfall Forest Fire which occurred in July 2004. Information from these samples should help assess the impacts of vegetation loss on stream chemistry and sediment runoff.

Walker River Basin Project objectives are to develop (1) an improved water budget for Walker Lake and (2) the capability to predict how changes in irrigation practices in and below Mason Valley will affect flows in the lower Walker River so alternatives for supplementing flows can be evaluated.Walker Lake is a perennial, natural terminal lake that became at-risk because of upstream agricultural diversions. Between 1882 and 1994, upstream diversions caused Walker Lake to decline about 140 feet and the total dissolved solids (TDS) concentrations to increase from 2,500 mg/L to 13,300 mg/L. The Lahontan cutthroat trout (LCT), a threatened species that is native to Walker Lake, has adapted to the high TDS of terminal basins. However, diversions have lowered lake levels and increased TDS to concentrations that threaten the survival of the LCT.

Yucca Mountain Ground-Water Monitoring Project includes periodic measurements made throughout the Yucca Mountain Area to support environmental and regulatory aspects of the Yucca Mountain Project. Discharge and water-level measurements are made at selected springs and wells. Data presented do not include data collected as part of the Site-Characterization Program nor continual records developed from pressure-sensor data. The data included have been reviewed according to quality-assurance requirements specific to the Yucca Mountain Project.

EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS

Data Collection and Computation

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and volume of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that is either downloaded electronically in the field to a laptop computer or similar device or is transmitted using telemetry such as GOES satellite, land-line or cellular-phone modems, or by radio transmission. Measurements of discharge are made with a current meter or acoustic Doppler current profiler, using the general methods adopted by the USGS. These methods are described in standard textbooks, USGS Water-Supply Paper 2175, and the Techniques of Water-Resources Investigations of the United States Geological Survey (TWRIs), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2, which may be accessed from *http://water.usgs.gov/pubs/twri/*. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standardization (ISO).

For stream-gaging stations, discharge-rating tables for any stage are prepared from stage-discharge curves. If extensions to the rating curves are necessary to express discharge greater than measured, the extensions are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams and weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily values. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features of the stream channel, the daily mean discharge is computed by the shifting-control method in which correction factors based on individual discharge measurements and notes by engineers and observers are used when applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the controlling section, the daily mean discharge is computed by the shifting-control method.

The stage-discharge relation at some stream-gaging stations is affected by backwater from reservoirs, tributary streams, or other sources. Such an occurrence necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage at some distance from the base gage.

An index velocity is measured using ultrasonic or acoustic instruments at some stream-gaging stations and this index velocity is used to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relation is then used to calculate average discharge.

At some stations, stage-discharge relation is affected by changing stage. At these stations, the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations in the northern United States, the stage-discharge relation is affected by ice in the winter; therefore, computation of the discharge in the usual manner is impossible. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter-discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge from other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the volume or contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly changes are computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some stream-gaging stations, periods of time occur when no gage-height record is obtained or the recorded gage height is faulty and cannot be used to compute daily discharge or contents. Such a situation can happen when the recorder stops or otherwise fails to operate properly, the intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records from other stations in the same or nearby basins. Likewise, lake or reservoir volumes may be estimated on the basis of operator’s log, prior and subsequent records, inflow-outflow studies, and other information.

Data Presentation

The records published for each continuous-record surface-water discharge station (stream-gaging station) consist of five parts: (1) the station manuscript or description; (2) the data table of daily mean values of discharge for the current water year with summary data; (3) a tabular statistical summary of monthly mean flow data for a designated period, by water year; (4) a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration; and (5) a hydrograph of discharge.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments follow that clarify information presented under the various headings of the station description.

LOCATION.—Location information is obtained from the most accurate maps available. The location of the gaging station with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in “River Mileage Measurement,” Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.—Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.—This term indicates the time period for which records have been published for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that its flow reasonably can be considered equivalent to flow at the present station.

REVISED RECORDS.—If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

GAGE.—The type of gage in current use, the datum of the current gage referred to a standard datum, and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.—All periods of estimated daily discharge either will be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See section titled Identifying Estimated Daily Discharge.) Information is presented relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, the outlet works and spillway, and the purpose and use of the reservoir.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD.—Information here documents major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the USGS.

REVISIONS.—Records are revised if errors in published records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://water.usgs.gov/nwis/nwis*). Users are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent data updates. Updates to NWISWeb are made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because no current or, possibly, future station manuscript would be published for these stations to document the revision in a REVISED RECORDS entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the Water Science Center (address given on the back of the title page of this report) to determine if the published records were revised after the station was discontinued. If, however, the data for a discontinued station were obtained by computer retrieval, the data would be current. Any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the REMARKS and in the inclusion of a stage-capacity table when daily volumes are given.

Peak Discharge Greater than Base Discharge

Tables of peak discharge above base discharge are included for some stations where secondary instantaneous peak discharge data are used in flood-frequency studies of highway and bridge design, flood-control structures, and other flood-related projects. The base discharge value is selected so an average of three peaks a year will be reported. This base discharge value has a recurrence interval of approximately 1.1 years or a 91-percent chance of exceedence in any 1 year.

Data Table of Daily Mean Values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed TOTAL gives the sum of the daily figures for each month; the line headed MEAN gives the arithmetic average flow in cubic feet per second for the month; and the lines headed MAX and MIN give the maximum and minimum daily mean discharges, respectively, for each month. Discharge for the month is expressed in cubic feet per second per square mile (line headed CFSM); or in inches (line headed IN); or in acre-feet (line headed AC-FT). Values for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if extensive regulation or diversion is in effect or if the drainage area includes large noncontributing areas. At some stations, monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir volumes are given. These values are identified by a symbol and a corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed MEAN), maximum (MAX), and minimum (MIN) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those values. The designated period will be expressed as FOR WATER YEARS __-__, BY WATER YEAR (WY), and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. The designated period will consist of all of the station record within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript.

Summary Statistics

A table titled SUMMARY STATISTICS follows the statistics of monthly mean data tabulation. This table consists of four columns with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, WATER YEARS __-__, will consist of all of the station records within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the ANNUAL 7-DAY MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When the dates of occurrence do not fall within the selected water years listed in the heading, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration-curve statistics and runoff data also are given. Runoff data may be omitted if extensive regulation or diversion of flow is in effect in the drainage basin.

The following summary statistics data are provided with each continuous record of discharge. Comments that follow clarify information presented under the various line headings of the SUMMARY STATISTICS table.

ANNUAL TOTAL.—The sum of the daily mean values of discharge for the year.

ANNUAL MEAN.—The arithmetic mean for the individual daily mean discharges for the year noted or for the designated period.

HIGHEST ANNUAL MEAN.—The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.—The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.—The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.—The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.—The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. This value should not be confused with the 7-day 10-year low-flow statistic.

MAXIMUM PEAK FLOW.—The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.—The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.—The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

> Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.
>
> Cubic feet per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area.
>
> Inches (INCHES) indicate the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.—The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.—The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.—The discharge that has been exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first table lists annual maximum stage and discharge at crest-stage stations, and the second table lists discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are often made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for a special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified. This identification is shown either by flagging individual daily values with the letter “e” and noting in a table footnote, “e–Estimated,” or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of Field Data and Computed Results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The degree of accuracy of the records is stated in the REMARKS in the station description. “Excellent” indicates that about 95 percent of the daily discharges are within 5 percent of the true value; “good” within 10 percent; and “fair,” within 15 percent. “Poor” indicates that daily discharges have less than “fair” accuracy. Different accuracies may be attributed to different parts of a given record.

Values of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 ft^3/s; to the nearest tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharge values listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, values of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Data Records Available

Information of a more detailed nature than that published for most of the stream-gaging stations such as discharge measurements, gage-height records, and rating tables is available from the Water Science Center. Also, most stream-gaging station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the Water Science Center (see address that is shown on the back of the title page of this report).

EXPLANATION OF PRECIPITATION RECORDS

Data Collection and Computation

Rainfall data generally are collected using electronic data loggers that measure the rainfall in 0.01-inch increments every 15 minutes using either a tipping-bucket rain gage or a collection well gage. Twenty-four hour rainfall totals are tabulated and presented. A 24-hour period extends from just past midnight of the previous day to midnight of the current day. Snowfall-affected data can result during cold weather when snow fills the rain-gage funnel and then melts as temperatures rise. Snowfall-affected data are subject to errors. Missing values are indicated by this symbol “---” in the table.

Data Presentation

Precipitation records collected at surface-water gaging stations are identified with the same station number and name as the stream-gaging station. Where a surface-water daily-record station is not available, the precipitation record is published with its own name and latitude-longitude identification number.

Information pertinent to the history of a precipitation station is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, period of record, and general remarks.

The following information is provided with each precipitation station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

INSTRUMENTATION.—Information on the type of rainfall collection system is given.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of records.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and Examination of Data

Surface-water samples for analysis usually are collected at or near stream-gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperature, sediment discharge, and so forth); extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, sampling date, or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water Analysis

Most of the methods used for collecting and analyzing water samples are described in the TWRIs, which may be accessed from *http://water.usgs.gov/pubs/twri/*.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross-section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled at several verticals to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum and minimum values (and sometimes mean or median values) for each constituent measured, and are based on 15-minute or 1-hour intervals of recorded data beginning at 0000 hours and ending at 2400 hours for the day of record.

SURFACE-WATER-QUALITY RECORDS

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because discharge data are useful in the interpretation of surface-water quality. Records of surface-water quality in this report involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A *continuous-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A *partial-record station* is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A *miscellaneous sampling site* is a location other than a continuous- or partial-record station, where samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between *continuous records* as used in this report and *continuous recordings* that refer to a continuous graph or a series of discrete values recorded at short intervals. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently.

Accuracy of the Records

One of four accuracy classifications is applied for measured physical properties at continuous-record stations on a scale ranging from poor to excellent. The accuracy rating is based on data values recorded before any shifts or corrections are made. Additional consideration also is given to the amount of publishable record and to the amount of data that have been corrected or shifted.

Rating classifications for continuous water-quality records

[≤, less than or equal to; ±, plus or minus value shown; °C, degree Celsius; >, greater than; %, percent; mg/L, milligram per liter; pH unit, standard pH unit]

Measured physical property	Rating			
	Excellent	Good	Fair	Poor
Water temperature	≤ ±0.2 °C	> ±0.2 to 0.5 °C	> ±0.5 to 0.8 °C	> ±0.8 °C
Specific conductance	≤ ±3%	> ±3 to 10%	> ±10 to 15%	> ±15%
Dissolved oxygen	≤ ±0.3 mg/L	> ±0.3 to 0.5 mg/L	> ±0.5 to 0.8 mg/L	> ±0.8 mg/L
pH	≤ ±0.2 unit	> ±0.2 to 0.5 unit	> ±0.5 to 0.8 unit	> ±0.8 unit
Turbidity	≤ ±5%	> ±5 to 10%	> ±10 to 15%	> ±15%

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern is assuring that the data obtained represent the naturally occurring quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, must be made on site when the samples are taken. To assure that measurements made in the laboratory also represent the naturally occurring water, carefully prescribed procedures must be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1-A9. Most of the methods used for collecting and analyzing water samples are described in the TWRIs, which may be accessed from *http://water.usgs.gov/pubs/twri/*. Also, detailed information on collecting, treating, and shipping samples can be obtained from the USGS Water Science Center (see address that is shown on the back of title page in this report).

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Water Science Center.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may be collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Samples for biochemical oxygen demand (BOD) and indicator bacteria are analyzed locally. All other samples are analyzed in the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRIs, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. The TWRI publications may be accessed from *http://water.usgs.gov/pubs/twri/*. These methods are consistent with ASTM standards and generally follow ISO standards.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of “daily values” of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

DRAINAGE AREA.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—This indicates the time periods for which published water-quality records for the station are available. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. For parameters measured weekly or less frequently, true maximums or minimums may not have been obtained. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.—Records are revised if errors in published water-quality records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://waterdata.usgs.gov/nwis*). Users of USGS water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent updates. Updates to the NWISWeb are made on an annual basis.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this section:

Printed Output	Remark
E	Value is estimated.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
M	Presence of material verified, but not quantified.
N	Presumptive evidence of presence of material.
U	Material specifically analyzed for, but not detected.
A	Value is an average.
V	Analyte was detected in both the environmental sample and the associated blanks.
S	Most probable value.

Water-Quality Control Data

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. Falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as less than LRL for samples in which the analyte was either not detected or did not pass identification. Analytes detected at concentrations between the LT-MDL and the LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a remark code of “E.” These data should be used with the understanding that their uncertainty is greater than that of data reported without the E remark code.

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this Water Science Center are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples. These data are not presented in this report but are available from the Water Science Center.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated in the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. Many types of blank samples are possible; each is designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this Water Science Center are:

Field blank—A blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank—A blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank—A blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank—A blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank—A blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank—A blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank—A blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory. The reference material composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. Many types of replicate samples are possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this Water Science Center are:

Concurrent samples—A type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating the collection of samples into two or more compositing containers.

Sequential samples—A type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample—A type of replicate sample in which a sample is split into subsamples, each subsample contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

EXPLANATION OF GROUND-WATER-LEVEL RECORDS

Generally, only ground-water-level data from selected wells with continuous recorders from a basic network of observation wells are published in this report. This basic network contains observation wells located so that the most significant data are obtained from the fewest wells in the most important aquifers.

Site Identification Numbers

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is produced for local needs.

Data Collection and Computation

Measurements are made in many types of wells, under varying conditions of access and at different temperatures; hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Most methods for collecting and analyzing water samples are described in the TWRIs referred to in the On-site Measurements and Sample Collection and the Laboratory Measurements sections in this report. In addition, TWRI Book 1, Chapter D2, describes guidelines for the collection and field analysis of ground-water samples for selected unstable constituents. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1 through A9. The TWRI publications may be accessed from *http://water.usgs.gov/pubs/twri/*. The values in this report represent water-quality conditions at the time of sampling, as much as possible, and that are consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. Trained personnel collected all samples. The wells sampled were pumped long enough to ensure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum above sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (EOM).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth of water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Data Presentation

Water-level data are presented in alphabetical order by county. The primary identification number for a given well is the 15-digit site identification number that appears in the upper left corner of the table. The secondary identification number is the local or county well number.

Each well record consists of three parts: the well description, the data table of water levels observed during the water year, and, for most wells, a hydrograph following the data table. Well descriptions are presented in the headings preceding the tabular data.

The following comments clarify information presented in these various headings.

LOCATION.—This paragraph follows the well-identification number and reports the hydrologic-unit number and a geographic point of reference. Latitudes and longitudes used in this report are reported as North American Datum of 1927 unless otherwise specified.

AQUIFER.—This entry designates by name and geologic age the aquifer that the well taps.

WELL CHARACTERISTICS.—This entry describes the well in terms of depth, casing diameter and depth or screened interval, method of construction, use, and changes since construction.

INSTRUMENTATION.—This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on continuous, monthly, or some other frequency of measurement.

DATUM.—This entry describes both the measuring point and the land-surface elevation at the well. The altitude of the land-surface datum is described in feet above the altitude datum; it is reported with a precision depending on the method of determination. The measuring point is described physically (such as top of casing, top of instrument shelf, and so forth), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above National Geodetic

Vertical Datum of 1929 (NGVD 29); it is reported with a precision depending on the method of determination.

REMARKS.—This entry describes factors that may influence the water level in a well or the measurement of the water level, when various methods of measurement were begun, and the network (climatic, terrane, local, or areal effects) or the special project to which the well belongs.

PERIOD OF RECORD.—This entry indicates the time period for which records are published for the well, the month and year at the start of publication of water-level records by the USGS, and the words “to current year” if the records are to be continued into the following year. Time periods for which water-level records are available, but are not published by the USGS, may be noted.

EXTREMES FOR PERIOD OF RECORD.—This entry contains the highest and lowest instantaneously recorded or measured water levels of the period of published record, with respect to land-surface datum or sea level, and the dates of occurrence.

Water-Level Tables

A table of water levels follows the well description for each well. Water-level measurements in this report are given in feet with reference to either sea level or land-surface datum (lsd). Missing records are indicated by dashes in place of the water-level value.

For wells not equipped with recorders, water-level measurements were obtained periodically by steel or electric tape. Tables of periodic water-level measurements in these wells show the date of measurement and the measured water-level value.

Hydrographs

Hydrographs are a graphic display of water-level fluctuations over a period of time. In this report, current water year and, when appropriate, period-of-record hydrographs are shown. Hydrographs that display periodic water-level measurements show points that may be connected with a dashed line from one measurement to the next. Hydrographs that display recorder data show a solid line representing the mean water level recorded for each day. Missing data are indicated by a blank space or break in a hydrograph. Missing data may occur as a result of recorder malfunctions, battery failures, or mechanical problems related to the response of the recorder’s float mechanism to water-level fluctuations in a well.

GROUND-WATER-QUALITY DATA

Data Collection and Computation

The ground-water-quality data in this report were obtained as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some wells within a county but not for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide.

Most methods for collecting and analyzing water samples are described in the TWRIs, which may be accessed from *http://water.usgs.gov/pubs/twri/*. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in TWRI, Book 1, Chapter D2; Book 5, Chapters A1, A3, and A4; and Book 9, Chapters A1-A6. Also, detailed information on collecting, treating, and shipping samples may be obtained from the USGS Water Science Center (see address shown on back of title page in this report).

Laboratory Measurements

Analysis for sulfide and measurement of alkalinity, pH, water temperature, specific conductance, and dissolved oxygen are performed on site. All other sample analyses are performed at the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used by the USGS laboratory are given in TWRI, Book 1, Chapter D2 and Book 5, Chapters A1, A3, and A4, which may be accessed from *http://water.usgs.gov/pubs/twri/*.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web (WWW). These data may be accessed from *http://water.usgs.gov*.

Water-quality data and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on various media. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each Water Discipline Water Science Center (See address that is shown on the back of the title page of this report.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, may be accessed from *http://water.usgs.gov/ADR_Defs_2004.pdf*. Terms such as algae, water level, and precipitation are used in their common everyday meanings, definitions of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units. Other glossaries that also define water-related terms are accessible from *http://water.usgs.gov/glossaries.html*.