Physical, Chemical, and Biological Data for the Uncompahgre Project Area and the Grand Valley, West-Central Colorado, 1993–98

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CONVERSION FACTORS, VERTICAL DATUM, AND ABBREVIATIONS

Multiply	By	To obtain
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
foot (ft)	0.3048	meter
liter (L)	0.2642	gallon
mile (mi)	1.609	kilometer (km)
millimeter (mm)	0.03937	inch
ton per day (ton/d)	0.9072	metric ton per day

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

$$°F=1.8\ (°C+32)$$

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Altitude, as used in this report, refers to distance above or below sea level.

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L). Concentrations in bottom-sediment and biological samples are given in micrograms per gram (µg/g).

For those who wish to convert dry-weight concentrations to wet-weight concentrations for biological samples, the equation is:

wet weight concentration = dry weight concentration [1-(percent moisture)/100].

ADDITIONAL ABBREVIATIONS

µg/L	micrograms per liter
µm	micrometer

ACRONYMS

BOR	Bureau of Reclamation
FWS	U.S. Fish and Wildlife Service
NIWQP	National Irrigation Water Quality Program
USGS	U.S. Geological Survey
WWSWA	Walter Walker State Wildlife Area

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Abstract

Since 1985, the U.S. Department of the Interior has conducted a multiagency program named the National Irrigation Water Quality Program to assess effects of Federal irrigation projects on water quality and fish and wildlife in the Western United States. Field investigations have been done for the Uncompahgre Project Area and the Grand Valley in west-central Colorado. The data collected for a reconnaissance investigation in 1988–89 and for a detailed study in 1991–92 were published in previously released reports of the U.S. Geological Survey. Since 1992, considerable water, bottom-sediment, and biological data have been collected for additional studies and for remediation planning in the Uncompahgre Project area and in the Grand Valley. None of the post-1992 data have been published. This report contains all selenium data and other water-quality and chemical data for samples collected during water years 1993–97 in the two study areas. Also included in this report are chemical results for samples collected through March 1998 that have completed analyses.

INTRODUCTION

In 1985, the U.S. Department of the Interior (DOI) began a program to determine if irrigation drainage from DOI-constructed or managed projects was having adverse effects on water quality and on fish and wildlife in the Western United States. The program, named the National Irrigation Water Quality Program (NIWQP), had five phases (Deason, 1986): (1) Site identification, (2) reconnaissance investigations, (3) detailed studies, (4) planning, and (5) remediation. About 600 irrigation projects were initially screened for phase 1. Reconnaissance investigations and field screenings (phase 2) were done at 39 sites from 1986 to 1997 to determine whether irrigation drainage had caused or had the potential to cause harmful effects on human health or on fish and wildlife or could limit the beneficial use of water. Detailed studies (phase 3) were done at eight sites (through 1998) and were initiated if reconnaissance investigations indicated that potentially serious water-quality problems were related to irrigation drainage. The detailed studies were to provide the scientific information needed to develop alternatives to mitigate or resolve the problems. The purpose of remediation planning (phase 4) is to develop a plan of action for cleanup of sites, which involved the appropriate government agencies and private concerns. As of 1998, five study areas were involved in phase 4 remediation planning at various levels of activity. Phase 5 involves the implementation of corrective actions developed during the planning phase. As of 1998, one study area had begun remediation.

A reconnaissance-level study was done of the Uncompahgre Project in west-central Colorado (fig. 1; pl. 1), which is a Bureau of Reclamation (BOR) irrigation project, and of Sweitzer Lake from late 1987 to 1989 (Butler and others, 1991). That study identified potentially adverse concentrations of selenium in some water, bottom sediment, and biota samples. All data collected in 1987–89 are listed in Butler and others (1991). On the basis of results of the reconnaissance investigation, a detailed study of the project area was started in 1991. The detailed study also included areas adjacent to and upstream from the irrigation project boundary (pl. 1) and was referred to as the

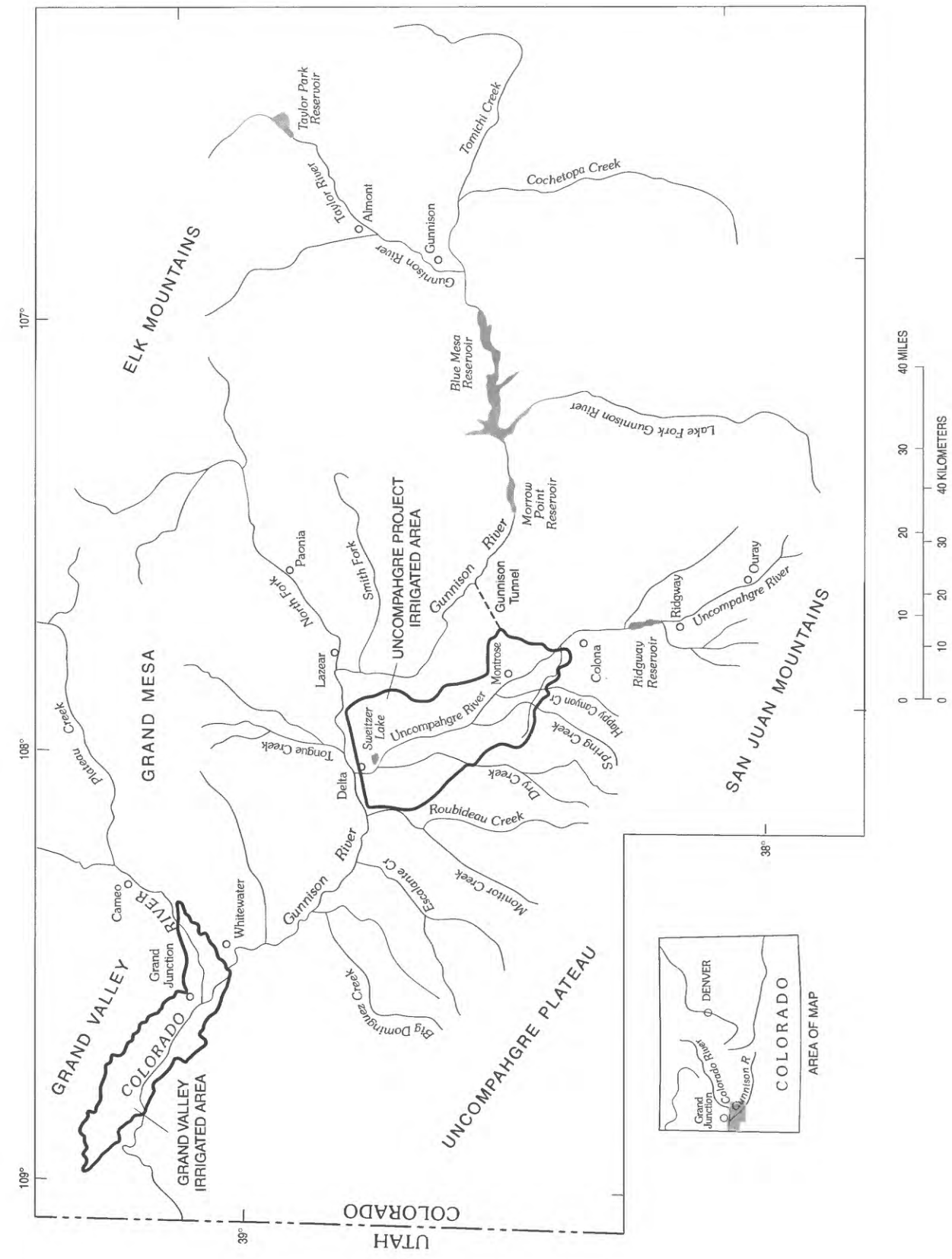


Figure 1. Location of the Uncompahgre Project and Grand Valley.

"Uncompahgre Project area" in Butler and others (1996). Irrigation drainage from the Grand Valley (fig. 1; pl. 2) has been identified as a major source of dissolved solids to the Colorado River (Bureau of Reclamation, 1978). The largest source of the dissolved solids from the Grand Valley is a marine shale (the Mancos Shale), which also is present in the Uncompahgre Project. Historical water-quality data for the Gunnison and Colorado Rivers indicated that the Grand Valley may be contributing substantial selenium loads to the Colorado River; therefore, the Grand Valley was included in the detailed study of 1991.

Data collection for the detailed study was done in 1991–92. Physical and chemical data for water, bottom-sediment, and biota samples collected for the detailed study are listed in Butler and others (1994), and interpretive results of the study are described in Butler and others (1996). As part of the detailed study, selenium and other chemical data for soil and alfalfa in the Uncompahgre Project Area were collected in 1991, and those data are listed in Stewart and others (1993) and in Crock and others (1994). Results of the detailed study indicated that irrigation drainage from the Uncompahgre Project and the Grand Valley was a major source of selenium in the Colorado River Basin. Selenium concentrations in some biota samples exceeded potentially harmful levels described in the literature (Butler and others, 1996).

Following the conclusion of the detailed study in September 1992, NIWQP activities in the Uncompahgre Project and the Grand Valley areas were in a "transitional" period from 1993 until late 1994. In the spring and summer of 1993, additional water sampling was done on selected drainages in the Uncompahgre Project Area and in the Grand Valley to better define selenium loads. In late 1994, NIWQP decided that sufficient selenium concerns existed in the study area to warrant going into phase 4, the planning phase for remediation. A core team was formed consisting of members from Bureau of Reclamation (BOR), the U.S. Geological Survey (USGS), and the U.S. Fish and Wildlife Service (FWS) to conduct the planning activities for the Uncompahgre Project area and the Grand Valley. A monitoring program was developed to sample water and biota from selected major tributaries that drain irrigated areas of the Uncompahgre Project and the Grand Valley. Monitoring was done to collect sufficient information to better define year-to-year variability of selenium concentrations and loads in drainages and of selenium concentrations in biota. In addition, long-term data were needed for assessing the effectiveness of remediation. Selected ponds and wetland areas also were sampled beginning in 1995 to monitor selenium levels at areas used by migratory birds in the study area.

In 1995, the phase 4 planning team for the Uncompahgre Project area and the Grand Valley realized that several gaps in the data and information needed to be addressed before planning could begin. One major data gap concerned selenium and other contaminant information for bottomland and floodplain areas along the Colorado River in the Grand Valley and along the Gunnison River downstream from Delta. The Colorado River in the Grand Valley and the Gunnison River downstream from Delta had been identified as critical habitat for the recovery of endangered fish, such as the razorback sucker and the Colorado squawfish (U.S. Fish and Wildlife Service, 1994). In 1988, a consortium of water users, the States of Colorado, Utah, and Wyoming, Federal agencies, and environmental groups was formed to study and implement methods to recover endangered fish in the Upper Colorado River Basin. The Recovery Implementation Program (RIP) has reviewed numerous sites in the Grand Valley and some sites on the lower Gunnison River for possible habitat restoration. Based on initial research information about razorback suckers, a finding was reported that the bioaccumulation of relatively low selenium concentrations in water to the diet items of fish could impair reproduction of the endangered fish (Hamilton and others, 1996). The primary source of the selenium loading to the lower Gunnison River is irrigation drainage from the Uncompahgre Project (Butler and others, 1996), and many of the backwater and bottomland areas in the Grand Valley receive irrigation-induced ground-water discharge that could have high selenium concentrations. Therefore, in 1995, a program for the phase 4 planning effort was begun to screen selected backwater and bottomland areas in the lower Gunnison River, downstream from the Uncompahgre Project, and along the Colorado River in the Grand Valley. The screening program included sampling of water, bottom sediment, and biota at selected sites, with the emphasis on selenium. The Walter Walker State Wildlife Area (WWSWA) was identified as the backwater or bottomland area in the Grand Valley most used by the Colorado squawfish (Osmundson and others, 1997); therefore, in 1997–98, a study of water quality and ground water was done at the wildlife area.

Other issues also resulted in additional data-collection activities since phase 4 began. Selenium concentrations in the Colorado River are of concern in the lower basin States, such as the Salton Sea area in California, where evaporative concentration of Colorado River water has caused excessive selenium concentrations in irrigation drainage (Setmire and others, 1993). In July 1997, the Colorado Water Quality Control Commission amended the selenium standard for the lower Gunnison River. Selenium concentrations in the lower Gunnison River and in the Uncompahgre River exceed the selenium standard (5 µg/L) periodically. A task force consisting of water users, agricultural interests, State, Federal, and local governments, and private individuals was formed to identify and implement measures to decrease selenium loading to the Gunnison River. Because of the issues concerning selenium concentrations and loads in the main-stem rivers, the phase 4 planning efforts have included continued monitoring of selenium at key streamflow-gaging stations on the Gunnison, Uncompahgre, and Colorado Rivers.

Purpose and Scope

This report presents all selenium and other data collected for NIWQP in the Uncompahgre Project area and in the Grand Valley since October 1992. For water and bottom-sediment samples that were collected for NIWQP studies, all selenium results through March 1998 are included in the report. Besides selenium data, physical data and other chemical data also are included. For biota samples, only selenium analyses were done, and results for biota samples collected through December 1997 are included in this report. Also included in this report are selenium data for water samples collected for water years 1993–97 at gaging stations on the Gunnison and the Colorado Rivers and Plateau Creek (pl. 1 and 2). These data were collected for other programs of the USGS and have been previously published in the annual data reports for Colorado (U.S. Geological Survey, 1994 through 1998). The previously published selenium data are included in this report because it is useful to have selenium data for key sites on the Gunnison and the Colorado Rivers available in the same publication with the selenium data collected for the NIWQP studies.

Acknowledgments

The authors thank various landowners for allowing access to their property to collect samples. The authors also thank Kenneth Weston of the BOR and Michael McCormack of the USGS for their assistance with data-collection activities at the WWSWA, and Kathleen Holley of the FWS for coordination activities with the endangered fish recovery program. The authors also acknowledge the staff of the Colorado River Fishery Program (CRFP) of the FWS in Grand Junction for their assistance in collection of muscle-plug samples from Colorado squawfish. Thanks also to Thomas May at Midwest Science Center, Columbia, Missouri, for performing neutron-activation analysis to determine selenium concentrations in muscle-plug samples.

SAMPLING AND ANALYTICAL METHODS

All water samples were collected and processed by the USGS. Water samples from streams and ditches were collected using standard methods of the USGS (Ward and Harr, 1990). At sites where depth or flow was insufficient to use water samplers, samples were collected from the centroid of flow, using 1-L glass or plastic bottles. Water samples from shallow ponds and wetland areas were collected by hand, using 1-L bottles. Where multiple samples were collected, the samples were composited in a churn splitter. Samples from ponds and lakes that were too deep to wade were collected from a boat, using a plastic Kemmerer sampler (Ward and Harr, 1990). Ground-water sampling of wells involved sampling of wells less than 12 ft deep; therefore, ground-water samples were pumped using Tygon tubing and a peristaltic pump. For the 1997–98 study at WWSWA, subsurface pore water in the bed materials of a backwater channel and a pond were collected using a stainless-steel potentiometer and a peristaltic pump. The potentiometer probe was part of a hydraulic potentiomanometer system used to measure hydraulic-head differences between surface water and ground water (Winter and others, 1988). All ground-water samples were pumped into clean 1- or 3-L plastic bottles for processing. Water samples collected for dissolved constituents were filtered onsite using 0.45-µm filters. A few water samples were analyzed for selected total trace elements, which were analyses of unfiltered, or whole-

water samples. Quality-assurance sampling since 1992 has included deionized water blanks and collection of duplicate and split samples.

All water samples were analyzed by the USGS National Water Quality Laboratory (NWQL) in Arvada, Colorado. Analytical methods for selenium and other inorganic constituents are described in Fishman and Friedman (1989). Analysis for uranium was done by a laboratory contracted through the NWQL using a method described in Thatcher and others (1977).

Bottom-sediment samples were collected by the USGS using a BMH-53 sampler or Wildco core sampler (Ward and Harr, 1990). If multiple samples were composited into a single sample for analysis, the individual cores were composited in a stainless-steel bucket. Most of the bottom-sediment samples were analyzed by the USGS Branch of Geochemistry in Lakewood, Colorado. Selenium analysis by the Branch of Geochemistry was done using the method described by Sanzolone and Chao (1987) and Crock and others (1994). A few bottom-sediment samples had a 40-element inductively coupled plasma (ICP) scan done using the method described by Crock and others (1983) and Arbogast (1990). A small number of bottom-sediment samples had selenium analysis done by the NWQL using a method described in Fishman and Friedman (1989). The NWQL and the Branch of Geochemistry do not use the same acid digestion method to extract selenium from bottom sediment; therefore, the selenium results from the two laboratories are not equivalent.

Biota sampling was done by the FWS using standard equipment and techniques (U.S. Fish and Wildlife Service, 1986, 1990). Fish were collected with seine or gill nets or by using electroshocking equipment. Muscle-plug samples from Colorado squawfish were obtained by CRFP staff using a protocol described by Williamson (1992). Muscle plugs from individual fish were collected using a 5-mm sterile biopsy punch. Because of the small mass, selenium concentrations in muscle plugs were determined by neutron-activation techniques at the Midwest Science Center in Columbia, Missouri, using the methodology discussed in McKown and Morris (1978).

Aquatic plants and algae were collected by handpicking. Aquatic invertebrates were collected by using a kick screen. Light traps were used to collect zooplankton samples at a few sites in 1997. Whole-body bird samples were collected using steel shot. Bird eggs were collected from nests and, in some places, from artificially constructed nests. Bird eggs were examined for abnormalities prior to being frozen. Selenium analysis was done on biota samples by laboratories contracted by the FWS Patuxent Analytical Control Facility in Laurel, Maryland. Analyses for selenium in biota samples (except the muscle-plug samples) were performed using hydride-generation atomic absorption spectroscopy.

ORGANIZATION OF DATA AND DESCRIPTION OF SAMPLING SITES

The data tables are separated by the two primary irrigated areas—the Uncompahgre Project area and the Grand Valley. In each area, the data are further segregated by main-stem rivers, tributaries, and by ponds, backwaters, and bottomlands. In the Grand Valley, the data for the WWSWA are presented in a separate section. The same site code designations used for the detailed study (Butler and others, 1994) are used in this report for sites that were resampled since 1992.

For water samples, the onsite and selenium data and other chemical data may be presented in separate tables, depending on sampling frequencies of constituent groups. For example, at backwater and bottomland sites, many samples had only onsite data and a selenium analysis, and a smaller number of those samples had additional chemical data such as major-ion or other trace-element data. In such cases, the onsite and selenium data are in one table, major-ion data in another table, and trace-element data in a third table. Organizing the data in this manner avoids having a large data table containing many blank entries.

Uncompahgre Project and Adjacent Areas in the Lower Gunnison River Basin

Sampling sites include all sites in the irrigated area of the Uncompahgre Project (pl. 1) plus other sites located adjacent to the project in the lower Gunnison River Basin. Only samples collected since October 1992 that have selenium analysis are included in this report.

Gunnison and Uncompahgre Rivers

Three sites on the Gunnison River and two sites on the Uncompahgre River had selenium data collected by NIWQP or for other programs of the USGS. The sites are located at USGS gaging stations and are listed in table 1 in the "Data for the Uncompahgre Project area and adjacent areas in the lower Gunnison River Basin" section in this report. Selenium and other water-quality data are listed in tables 2 through 4, and the selenium results for fish samples are listed in table 5. Site locations are shown on plate 1, except site GUN6, which is shown on plate 2.

Sites GUN1 and UC1 are reference sites located upstream from the Uncompahgre Project. Sites UC16 and GUN6 represent the outflow sites on the Uncompahgre and Gunnison Rivers. Site GUN6 also is the gaging station where long-term selenium data have been collected in the Gunnison River Basin. All samples from the Gunnison River were collected for other programs of the USGS. All data listed for site GUN1 and data for site GUN6 for water years 1996 and 1997 were collected by the National Water Quality Assessment Program (NAWQA) study of the Upper Colorado River Basin.

Tributary Streams, Ditches, and Canals

Site descriptions are listed in table 6, and locations are shown on plate 1. Selenium and other water-quality data are listed in tables 7 through 9, bottom-sediment data are listed in table 10, and the biota data are listed in table 11. Tables 7 through 11 are located in the "Data for the Uncompahgre Project area and adjacent areas in the lower Gunnison River Basin" section in this report.

Most of the water sampling in 1993 was on tributaries and canals along the Gunnison River to obtain more detailed selenium-loading data for the Gunnison River in the Uncompahgre Project area. Sites NGTR, DCC3, CD4, LF1, LZA6, RB3, AKC, and WGL are reference sites located outside the irrigated area of the Uncompahgre Project and, except for site RB3, drain areas consisting primarily of Mancos Shale. Reference sites were sampled to obtain selenium data for drainage basins not affected by irrigation drainage from the Uncompahgre Project. However, the water quality at all sites, except perhaps sites RB3 and WGL, probably was affected by nonproject irrigation in the drainage basins upstream from the sampling sites. Site DRY2 (table 6) was a NAWQA sampling site.

One of the purposes of post-detailed study sampling was to monitor selenium concentrations in water and biota at selected tributaries draining the Uncompahgre Project. Five tributary sites were sampled starting in water year 1995. These five sites are DCC1, MA2, CD1, LZA1, and RD1 (pl. 1). Biota samples were not collected at site CD1. The five sites are located on the east side of the project and were selected for monitoring because the detailed study (Butler and others, 1996) indicated the east side was the major source of selenium loading from the Uncompahgre Project.

Ponds and Backwater and Bottomland Areas

Sampling sites are described in table 12 and shown on plate 1. Selenium and other water-quality data are listed in tables 13 through 15, bottom-sediment data in tables 16 through 17, and biota data in table 18.

One objective of the NIWQP sampling in the study area since 1992 was to monitor and document the variability of selenium concentrations in migratory birds. To meet that objective, water, bottom sediment, birds (primarily bird eggs), and diet items were sampled at selected ponds in and adjacent to the Uncompahgre Project. Markley Pond (site MKP) and Sweitzer Lake (site SWLSE) were bird-monitoring sites located in the irrigated area that were previously sampled for the reconnaissance study or for the detailed study. A wetland area represented by sites OV1 through OV4 is located along the lower Uncompahgre River and is used extensively by migratory waterfowl. Three other bird-sampling sites that are located outside the irrigated area of the Uncompahgre Project in the lower Gunnison River Basin were sampled since 1992. Site FRP is located on Mancos Shale and was previously sampled in 1992 for the detailed study. Site JP2 is an isolated pond located near the Gunnison River flood plain downstream from Delta (pl. 1). Cheney Reservoir (site CHY1) is located about 6 miles south-southwest of Juniata Reservoir (pl. 2) in a nonirrigated area on Mancos Shale between Delta and Grand Junction and was a reference site for bird monitoring for the entire study area.

The remainder of the sites (table 12) not used for bird monitoring were sampled as part of the screening of selenium concentrations in backwater and

bottomland areas along the Gunnison River downstream from the Uncompahgre River. This reach of the Gunnison River has been declared a critical habitat for recovery of endangered razorback sucker and Colorado squawfish. Although most of these sites are not located in the Uncompahgre Project boundary (pl. 1), selenium from the project could affect these areas through transport by the Gunnison River. All data listed in tables 13 through 18 for backwater and bottomland sites were collected for NIWQP studies except the biota data listed for sites DSP3, WVF1, and WVF2 (table 18), which were collected for RIP studies (Kathleen Holley, U.S. Fish and Wildlife Service, written commun., 1998).

Grand Valley and the Colorado River

Sampling sites included in this section are located in the irrigated area of the Grand Valley (pl. 2) and on tributaries located outside the irrigated area. Also included with the Grand Valley data are selenium and other data for the Colorado River, Plateau Creek, and bottomland areas located upstream from the Grand Valley. All data tables for the Grand Valley and the Colorado River are in the "Data for the Grand Valley" section in this report.

Colorado River and Plateau Creek

Data-collection sites on the Colorado River and Plateau Creek are listed in table 19, and site locations are shown on plate 2. Selenium and other water-quality data are listed in tables 20 through 22, and selenium data for fish samples are listed in table 23. Selenium data collected in 1994–96 for muscle-plug samples from Colorado squawfish are listed in tables 24 through 26.

Sites COL2, PLT, COL4, and COL8 are located at active USGS gaging stations where selenium and water-quality data have been collected for various programs. All data listed for sites COL2 and COL8 for water years 1996–97 were collected for the NAWQA program. In 1994–95, the USGS did a salinity investigation of the Colorado River in the Grand Valley (Butler and von Guerard, 1996), and as part of that study, selenium sampling was done at the eight sites listed in table 19 on the Colorado River. Selenium concentrations at site COL2 represent background concentrations in the Colorado River upstream from the Grand Valley. Site COL8 is the outflow site for the entire study area and also is a long-term monitoring site.

Muscle-plug sampling provides a nonlethal method for determining selenium concentrations in muscle tissue of Colorado squawfish. These data (tables 24–26) were collected to define selenium concentrations in Colorado squawfish in and downstream from the Grand Valley at various backwater and bottomland areas.

Tributary Streams and Ditches

Sampling sites for tributary streams and ditches in the Grand Valley are listed in table 27, and locations are shown on plate 2. The selenium and associated water-quality data are listed in tables 28 through 30, suspended-sediment data in table 31, bottom-sediment data in table 32, and biota data in table 33.

The greatest number of water samples (tables 28–30) for Grand Valley drainages were collected for the monitoring program (sites LC1, BSW1, RW1, and SC) which started in late 1994, or for the NAWQA program (site RW2). The water sampling in 1993 was done during the transition period between phase 3 and phase 4 to define selenium loading on selected Grand Valley drainages in greater detail. Sites LSW3, BSW3, ESC4, WSC3, and WSC2 are reference sites on tributary streams, and sampling at those locations was designed to document selenium concentrations in basins immediately upstream from the irrigated areas in the Grand Valley. The only bottom-sediment and biota data collected for tributaries in the Grand Valley were collected at the monitoring sites LC1, RW1, and SC.

Ponds and Backwater and Bottomland Areas

Sampling sites at ponds and at backwater and bottomland areas for the Grand Valley are listed in table 34 and are shown on plate 2. Data for water samples are listed in three tables: onsite measurements and selenium data are in table 35, major-ion and dissolved-solids data are in table 36, and trace-element data (other than selenium) are in table 37. Selenium concentrations in bottom-sediment samples are listed in table 38, and the results for the single bottom-sediment sample that had the 40-element ICP scan are listed in table 39. Selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley are listed in table 40.

As was done for the Uncompahgre Project, sampling of ponds and of backwater and bottomland areas in the Grand Valley was done either as part of migratory-bird monitoring or for the selenium screening of backwater and bottomland areas associated with endangered fish recovery. The sites in table 34 that were part of the migratory-bird monitoring were sites P30E, P30W, RDP, and TMP. All other sites listed in table 34 were sampled for the selenium screening at backwater and bottomland areas.

Beginning in 1997, site-specific monitoring and more detailed sampling was started at two areas in the Grand Valley. Water sampling at sites LW1 through P30OUT (table 34) was associated with monitoring at the Colorado River Wildlife Area. The purpose of that monitoring was to assess changes in water management at the wildlife area, which has the goal of decreasing selenium concentrations in two ponds (sites P30E and P30W). Sites GF4 through GF1 (table 34) are associated with a bottomland area across the Colorado River from the Colorado River Wildlife Area (pl. 2) that was purchased by the endangered fish recovery program and the Colorado River Basin Salinity Control Program. That sampling was designed to assess selenium loading to the bottomland area and to determine selenium concentrations in the food chain that could affect endangered fish.

Walter Walker State Wildlife Area

The WWSWA has been identified by the FWS (Osmundson, 1997) as one of the backwater or bottomland areas in the Grand Valley most heavily used by Colorado squawfish. A dike along the north side of the Colorado River at and downstream from site WWDIV (fig. 2) prevents the river from flowing through the channel area shown on the orthophotograph. During spring runoff, the river backs into the channel area at site WWOUT (fig. 2) and creates a backwater pool that, in 1997, extended the entire length of the channel to site WWDIV. This backwater provides an ideal habitat in which the Colorado squawfish can stage prior to spawning migrations because the backwater provides an escape from the high and cold snowmelt runoff in the Colorado River and has a plentiful food supply (Osmundson and Kaeding, 1989).

Selenium sampling for NIWQP in 1995–96 and for RIP since 1995 have indicated that parts of the WWSWA are highly contaminated with selenium and that the source of high selenium concentrations was shallow ground-water discharge, much of which is probably irrigation induced. There was a concern that selenium, and perhaps other contaminants, could adversely affect Colorado squawfish reproduction or affect reintroduction of razorback suckers at WWSWA. Therefore, RIP constructed a diversion structure (at site WWDIV) to provide flushing flows into the channel area from the Colorado River to dilute selenium concentrations in the water and eventually in the bottom sediment and in the food chain. The diversion was operational in December 1996. To better understand the hydrology of the wildlife area and to aid in assessing the effects of the diversion, the NIWQP phase 4 planning team began a hydrologic investigation of WWSWA in March 1997. The water-quality and water-level data collected for that study are included in this report.

Water-sampling sites at WWSWA are listed in table 41, and sites where the NIWQP study team collected bottom-sediment and biota samples are listed in table 42. Site locations are shown in figure 2. Most of the water-sampling sites were part of the hydrologic investigation of the wildlife area done in 1997–98. Many of the sampling sites listed for North Pond and the backwater channel area (table 41) have a surface-water and ground-water component. These ground-water sites represent subsurface water collected from the bed materials of the pond or channel. In the data tables for water-sampling sites, the sampling media are distinguished by the extensions on the site codes —SW for surface-water samples and GW for ground-water samples. All the bottom-sediment and biota samples collected by the NIWQP study team were collected in 1995 and 1996 as part of the selenium screening of backwater areas along the Colorado River in the Grand Valley for phase 4 planning studies.

Water-quality data collected from North Pond are listed in tables 43 and 44, and data for the channel area are listed in tables 45 and 46. Two samples were collected from the Colorado River diversion (site WWDIV, fig. 2) for analysis of total trace elements, and those results are listed in table 47. Part of the WWSWA study in 1997 was done to document suspended-sediment concentrations and particle-size distribution and selenium concentrations in suspended sediment being diverted from the river into the channel area. Results for the sediment data are listed in tables 48 and 49.

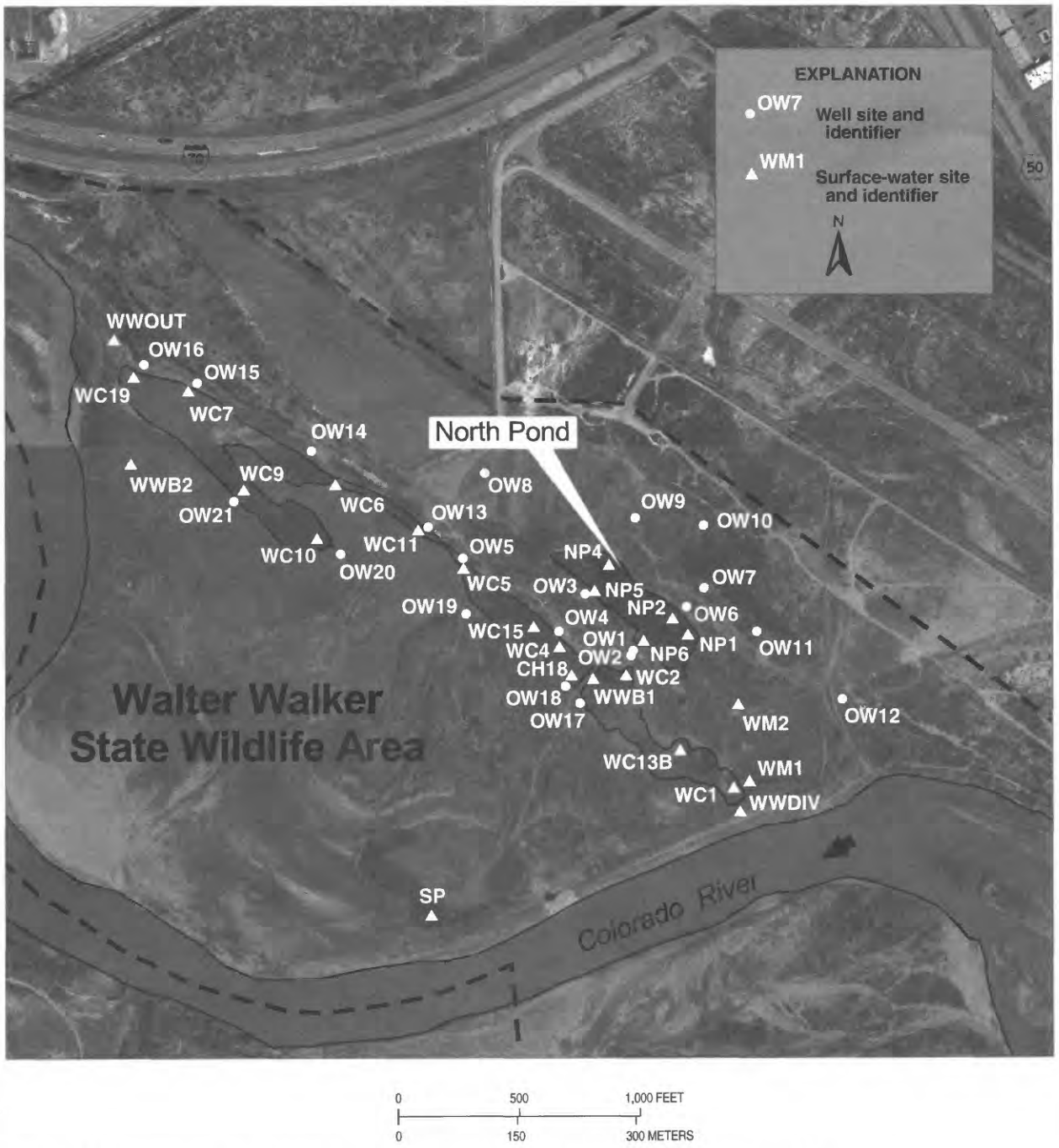


Figure 2. Location of sampling sites at the Walter Walker State Wildlife Area in the Grand Valley.

As part of the hydrologic investigation in 1997, 21 shallow (less than 12 ft) observation wells were installed at the WWSWA (fig. 2). Also, staff gages were installed to monitor the surface-water altitude of the Colorado River and of the backwater channel. Water levels in wells and altitudes of surface water were measured by BOR from April 1997 through March 1998 on approximately a biweekly schedule. Also, periodic water-quality samples were collected from wells for selenium analysis and occasionally for other constituent analyses. Water-quality data for the wells are listed in tables 50 through 52. The water-level measurements for the wells are shown in figures 3 through 9, which are located in the "Data for the Grand Valley" section at the back of this report. Locations of the surface-water staff gages are described in table 53 (locations of staff gages not shown in fig. 2 because of map crowding). Water levels for staff gages are shown in figures 10 and 11.

Selenium concentrations in bottom-sediment samples collected by USGS at WWSWA in 1995 are listed in table 54. The selenium concentrations in biota samples collected by the FWS in 1995–96 are listed in table 55. The BOR has collected a considerable number of water, bottom-sediment, and biota samples from North Pond and from the channel area at WWSWA since 1995 for various studies and monitoring programs for RIP. Some of that sampling was involved with field and laboratory studies concerning selenium effects on razorback suckers. All selenium and water-quality data collected for the RIP studies are planned for publication in a series of reports through that program.

REFERENCES CITED

Arbogast, B.F. (ed.), 1990, Quality-assurance manual for the Branch of Geochemistry, U.S. Geological Survey: U.S. Geological Survey Open-File Report 90–668, 184 p.

Bureau of Reclamation, 1978, Stage one development, Grand Valley Unit, definite plan report-appendix B, hydrosalinity, land resource, economics: Salt Lake City, five numbered sections plus attachments.

Butler, D.L., Krueger, R.P., Osmundson, B.C., Thompson, A.L., and McCall, S.K., 1991, Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Gunnison and Uncompahgre River Basins and at Sweitzer Lake, west-central Colorado, 1988–89: U.S. Geological Survey Water-Resources Investigations Report 91–4103, 99 p.

Butler, D.L., and von Guerard, P.B., 1996, Salinity in the Colorado River in the Grand Valley, western Colorado, 1994–95: U.S. Geological Survey Fact Sheet FS–215–96, 4 p.

Butler, D.L.,Wright, W.G., Hahn, D.A., Krueger, R.P., and Osmundson, B.C., 1994, Physical, chemical, and biological data for detailed study of irrigation drainage in the Uncompahgre Project area and in the Grand Valley, west-central Colorado, 1991–92: U.S. Geological Survey Open-File Report 94–110, 146 p.

Butler, D.L., Wright, W.G., Stewart, K.C., Osmundson, B.C., Krueger, R.P., and Crabtree, D.W., 1996, Detailed study of selenium and other constituents in water, bottom sediment, soil, alfalfa, and biota associated with irrigation drainage in the Uncompahgre Project area and in the Grand Valley, west-central Colorado, 1991–93: U.S. Geological Survey Water-Resources Investigations Report 96–4138, 136 p.

Crock, J.G., Litche, F.E., and Briggs, P.E., 1983, Determination of elements in National Bureau of Standards geologic reference materials SRM 278 obsidian and SRM 688 basalt by inductively coupled argon plasma-atomic absorption spectrometry: Geostandards Newsletter, v. 7, p. 335–340.

Crock, J.G., Stewart, K.C., and Severson, R.C., 1994, Listing of geochemical data and assessment of variability for alfalfa and soils in the Uncompahgre Project area, Colorado: U.S. Geological Survey Open-File Report 94–580, 83 p.

Deason, J.P., 1986, Irrigation-induced contamination problems, *in* Summers, J.B., and Anderson, S.S., eds., Toxic substances in agricultural water supply and drainage—Defining the problems: U.S. Committee on Irrigation and Drainage, Regional meeting, Washington, D.C., 1986, Proceedings, p. 201–210.

Fishman, M.J., and Friedman, L.C., eds., 1989, Methods for determination of inorganic substances in water and fluvial sediments (3d ed.): U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 545 p.

Hamilton, S.J., Buhl, K.J., Bullard, F.A., and McDonald, S.F., 1996, Evaluation of toxicity to larval razorback sucker of selenium-laden food organisms from Ouray NWR on the Green River, Utah: Denver, Colorado River Recovery Implementation Program Report, 79 p.

McKown, D.M., and Morris, J.S., 1978, Rapid measurement of selenium in biological samples using instrumental neutron activation analysis: Journal of Radioanalytical Chemistry, v. 43, p. 411–420.

Osmundson, D.B., and Kaeding, L.R., 1989, Studies of Colorado squawfish and razorback sucker use of the '15-mile reach' of the upper Colorado River as part of conservation measures for the Green Mountain and Ruedi Reservoir water sales: Grand Junction, Colo., U.S. Fish and Wildlife Service, 85 p.

Osmundson, D.B., Tucker, M.E., Burdick, B.D., Elmblad, W.R., and Chart, T.E., 1997, Non-spawning movements of subadult and adult Colorado squawfish in the upper Colorado River: Grand Junction, Colo., U.S. Fish and Wildlife Service, variously paged.

Sanzolone, R.F., and Chao, T.T., 1987, Determination of selenium in thirty-two geochemical reference materials by continuous-flow hydride generation atomic absorption spectrophotometry: Geostandards Newsletter, no. 11, p. 81–85.

Setmire, J.G., Schroeder, R.A., Densmore, J.N., Goodbred, S.L., Audet, D.J., and Radke, W.R., 1993, Detailed study of water quality, bottom sediment, and biota associated with irrigation drainage in the Salton Sea area, California, 1988–90: U.S. Geological Survey Water-Resources Investigations Report 93–4014, 102 p.

Stewart, K.C., Crock, J.G., and Severson, R.C., 1993, Chemical results and variability assessment of selected water-extractable constituents from soils of the Uncompahgre Project area, west-central Colorado: U.S. Geological Survey Open-File Report 93–507, 27 p.

Thatcher, L.L., Janzer, V.J., and Edwards, K.W., 1977, Methods for determination of radioactive substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A5, 95 p.

U.S. Geological Survey, 1994–98, Water resources data, Colorado, water years 1993–97, volume 2. Colorado River Basin: U.S. Geological Survey Water-Data Reports CO–93–2 through CO–97–2, published annually.

U.S. Fish and Wildlife Service, 1986, Field operations manual for resource contamination assessment: Washington, D.C., variously paged.

———1990, Patuxent analytical control facility reference manual: Laurel, Md., variously paged.

———1994, Rule and regulation 50 CFR, part 17, March 21, 1994: Federal Register, v. 59, no. 54, p. 13374–13400.

Ward, J.R., and Harr, C.A., eds., 1990, Methods for collection and processing of surface-water and bed-material samples for physical and chemical analyses: U.S. Geological Survey Open-File Report 90–140, 71 p.

Williamson, J.H., 1992, Colorado squawfish genetic survey-tissue sampling protocol: Denver, U.S. Fish and Wildlife Service, 12 p.

Winter, T.C., LaBaugh, J.W., and Rosenberry, D.O., 1988, The design and use of a hydraulic potentiomanometer for direct measurement of differences in hydraulic head between groundwater and surface water: Limnology and Oceanography, v. 33, no. 5, p. 1209–1214.

DATA FOR THE UNCOMPAHGRE PROJECT AND ADJACENT AREAS IN THE LOWER GUNNISON RIVER BASIN

Table 1. List of sampling sites and types of data collected for the Gunnison and Uncompahgre Rivers, water years 1993–97

[Sites on pl. 1, except site GUN6, which is on pl. 2; X, data type was collected; --, data type was not collected]

Site code	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sediment	Biota
GUN1	09128000	Gunnison River below Gunnison Tunnel	X	--	X
GUN4	09144250	Gunnison River at Delta	X	--	X
UC1	09147500	Uncompahgre River at Colona	X	--	X
UC16	09149500	Uncompahgre River at Delta	X	--	X
GUN6	09152500	Gunnison River at Whitewater	X	--	X

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97

[All sites on pl. 1 except site GUN6, which is on pl. 2; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; µg/L, micrograms per liter; mg/L, milligrams per liter; <, less than; --, no data; all chemical concentrations for dissolved constituents unless otherwise noted]

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
GUN1	12-13-94	1250	555	198	8.3	3.0	<1	86	25	5.7	4.7
	02-21-95	1515	663	204	8.3	3.0	<1	90	27	5.6	4.6
	05-10-95	1220	3,390	222	8.0	6.0	<1	95	28	6.2	5.6
	05-24-95	1300	4,610	193	8.2	7.5	<1	82	24	5.2	4.9
	06-29-95	1245	5,360	142	8.0	10.0	<1	60	18	3.7	3.9
	07-10-95	1025	8,150	152	8.1	10.0	<1	63	19	3.8	3.6
	09-19-95	1120	1,180	172	7.9	13.0	<1	76	22	5.0	4.0
	10-16-95	1420	1,470	168	8.0	11.0	<1	71	21	4.6	3.6
	12-11-95	1305	1,910	177	7.7	7.0	<1	81	24	5.0	3.9
	02-29-96	1100	1,010	195	7.9	1.0	<1	83	24	5.7	5.0
	04-17-96	1345	1,020	201	8.1	3.5	<1	86	25	5.6	5.3
	05-22-96	1345	2,890	147	8.0	8.0	<1	64	19	3.9	3.5
	07-02-96	1010	2,750	167	8.2	9.5	<1	68	20	4.2	4.0
	08-19-96	1310	716	172	8.0	12.0	<1	71	21	4.5	4.0
GUN4	10-28-92	1310	988	849	8.6	12.0	5	340	87	31	50
	04-07-93	0945	3,020	517	8.2	4.5	2	200	49	19	28
	06-15-93	1730	7,830	264	8.1	13.0	<1	100	28	8.4	11
	08-12-93	0805	1,290	802	8.1	16.0	4	330	84	28	45
	08-20-96	1215	959	782	8.4	18.0	5	300	79	26	43
	09-16-96	1405	1,110	865	8.3	15.0	6	350	87	32	48
	11-12-96	1320	1,310	550	8.2	7.5	3	220	56	20	30
UC1	10-28-92	0730	119	655	8.3	9.0	<1	300	94	16	20
	04-08-93	1220	318	647	8.4	7.0	1	280	85	16	21
	06-15-93	1020	930	366	7.8	10.0	<1	160	51	8.2	13
	07-13-93	1215	497	379	8.4	11.5	1	150	49	7.4	9.9
	08-12-93	1410	322	390	8.7	16.0	<1	170	54	7.9	11

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnisor and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
GUN1	12-13-94	1250	555	198	8.3	3.0	<1	86	25	5.7	4.7
	02-21-95	1515	663	204	8.3	3.0	<1	90	27	5.6	4.6
	05-10-95	1220	3,390	222	8.0	6.0	<1	95	28	6.2	5.6
	05-24-95	1300	4,610	193	8.2	7.5	<1	82	24	5.3	4.9
	06-29-95	1245	5,360	142	8.0	10.0	<1	60	18	3.7	3.9
	07-10-95	1025	8,150	152	8.1	10.0	<1	63	19	3.8	3.6
	09-19-95	1120	1,180	172	7.9	13.0	<1	76	22	5.0	4.0
	10-16-95	1420	1,470	168	8.0	11.0	<1	71	21	4.6	3.6
	12-11-95	1305	1,910	177	7.7	7.0	<1	81	24	5.0	3.9
	02-29-96	1100	1,010	195	7.9	1.0	<1	83	24	5.7	5.0
	04-17-96	1345	1,020	201	8.1	3.5	<1	86	25	5.6	5.3
	05-22-96	1345	2,890	147	8.0	8.0	<1	64	19	3.9	3.5
	07-02-96	1010	2,750	167	8.2	9.5	<1	68	20	4.3	4.0
	08-19-96	1310	716	172	8.0	12.0	<1	71	21	4.5	4.0
GUN4	10-28-92	1310	988	849	8.6	12.0	5	340	87	31	50
	04-07-93	0945	3,020	517	8.2	4.5	2	200	49	19	28
	06-15-93	1730	7,830	264	8.1	13.0	<1	100	28	8.4	11
	08-12-93	0805	1,290	802	8.1	16.0	4	330	84	28	45
	08-20-96	1215	959	782	8.4	18.0	5	300	79	26	43
	09-16-96	1405	1,110	865	8.3	15.0	6	350	87	32	48
	11-12-96	1320	1,310	550	8.2	7.5	3	220	56	20	30
UC1	10-28-92	0730	119	655	8.3	9.0	<1	300	94	16	20
	04-08-93	1220	318	647	8.4	7.0	1	280	85	16	21
	06-15-93	1020	930	366	7.8	10.0	<1	160	51	8.3	13
	07-13-93	1215	497	379	8.4	11.5	1	150	49	7.4	9.9
	08-12-93	1410	322	390	8.7	16.0	<1	170	54	7.9	11

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
GUN1	12-13-94	1.6	80	14	0.9	0.1	13	112	183	0.06
	02-21-95	1.5	83	18	1.0	.2	12	117	220	.06
	05-10-95	1.5	88	21	1.1	.2	12	127	1,110	.08
	05-24-95	1.6	78	16	1.0	.2	14	112	1,520	.09
	06-29-95	1.4	56	13	.7	.1	16	89	1,300	<.05
	07-10-95	1.3	61	13	3.2	.1	14	92	2,270	.06
	09-19-95	1.2	71	13	.8	<.1	12	100	350	<.05
	10-16-95	1.2	70	12	.7	.1	11	95	385	.05
	12-11-95	1.2	73	14	.7	.2	12	103	541	.06
	02-29-96	1.4	77	18	1.3	.2	11	111	365	<.05
	04-17-96	1.6	79	21	1.0	.2	12	117	333	<.05
	05-22-96	1.4	60	11	.8	.2	15	90	749	.06
	07-02-96	1.3	67	15	.8	.2	12	96	780	.08
	08-19-96	1.3	70	15	.8	.2	11	92	201	.09
GUN4	10-28-92	3.6	148	300	7.1	.3	13	581	1,550	--
	04-07-93	2.5	115	150	4.9	.2	13	337	2,750	.32
	06-15-93	1.4	71	58	1.6	.2	13	165	3,490	.22
	08-12-93	3.3	139	280	5.9	.3	15	549	1,910	.85
	08-20-96	3.6	130	260	5.8	.3	13	509	1,320	--
	09-16-96	3.6	145	300	6.6	.3	13	577	1,730	--
	11-12-96	2.5	114	160	4.0	.3	12	353	1,250	--
UC1	10-28-92	2.3	130	210	3.5	.4	10	434	139	--
	04-08-93	2.2	116	220	4.0	.3	9.4	427	367	--
	06-15-93	1.4	73	95	19	.2	9.4	241	605	--
	07-13-93	1.4	76	110	1.7	.3	8.7	234	314	--
	08-12-93	1.6	83	110	2.0	.3	8.3	245	213	--

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature (^oC)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
UC1	09-09-93	0700	81	558	8.3	10.0	1	260	82	14	18
	12-19-94	0920	50	672	8.4	0.5	1	310	97	17	23
	01-19-95	0945	48	689	8.0	0.0	1	320	100	17	24
	02-15-95	1610	63	677	8.4	7.5	1	310	95	17	25
	03-08-95	1335	156	669	8.5	8.0	1	310	96	16	22
	05-18-95	1300	798	532	8.2	11.5	1	230	71	13	18
	06-27-95	1415	1,000	325	8.1	13.0	<2	130	42	6.4	9.3
	07-24-95	1400	760	315	8.0	14.5	<1	140	46	6.3	7.5
	08-18-95	1415	400	361	7.4	18.0	<1	160	51	7.1	8.8
	09-27-95	1415	191	497	8.2	17.5	<1	220	69	11	14
	10-27-95	1210	142	506	8.2	10.5	<1	220	68	11	15
	11-24-95	1310	108	548	8.3	9.0	<1	240	75	12	17
	01-10-96	1405	84	590	8.1	4.0	1	260	82	14	19
	03-07-96	1315	81	581	8.4	5.5	<1	270	85	14	20
	05-07-96	1000	310	351	8.2	10.5	<1	160	51	8.2	13
	07-02-96	0945	546	423	8.4	10.5	<1	180	59	8.4	12
UC16	10-28-92	1010	527	1,190	8.4	11.0	11	510	140	38	68
	04-07-93	1355	405	1,010	8.3	8.5	12	410	110	32	63
	06-15-93	1500	617	966	8.2	17.0	8	420	120	29	53
	07-13-93	0750	200	1,500	8.2	15.0	12	610	170	45	86
	08-11-93	1520	350	1,460	8.2	21.5	14	610	170	45	91
	09-10-93	1310	292	1,540	8.4	18.0	14	680	190	50	93
	12-19-94	1250	188	1,800	8.3	2.0	17	800	210	67	130
	01-18-95	0910	170	1,820	8.1	0.0	26	760	190	69	130
	02-16-95	1230	166	1,830	8.4	5.5	18	760	190	69	140
	03-08-95	1030	287	1,630	8.7	4.0	20	630	160	56	120
	04-25-95	1305	166	1,220	8.3	12.0	12	470	130	36	69
	05-19-95	1200	1,420	767	8.0	12.5	4	310	85	23	42
	06-29-95	1115	454	1,060	8.1	16.0	7	420	120	30	57
	07-27-95	1340	334	1,340	8.1	21.0	12	590	170	39	78
	08-17-95	1330	322	1,290	8.4	21.5	11	560	160	39	74

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
UC1	09-09-93	2.2	135	170	2.5	0.3	12	382	83.5	--
	12-19-94	2.4	138	220	4.1	.3	12	459	61.9	--
	01-19-95	2.2	137	230	4.6	.3	11	472	61.0	0.14
	02-15-95	2.4	125	220	4.2	.4	11	450	76.5	--
	03-08-95	2.4	121	220	4.0	.4	9.9	443	187	--
	05-18-95	2.2	111	150	3.4	.3	11	335	723	--
	06-27-95	1.3	70	81	1.5	.2	10	194	523	--
	07-24-95	1.2	69	77	1.5	.2	9.0	190	390	--
	08-18-95	1.3	80	94	1.7	.3	8.1	220	238	--
	09-27-95	1.7	107	140	2.4	.3	10	313	161	--
	10-27-95	1.8	104	140	2.4	.4	9.8	311	119	--
	11-24-95	1.8	106	160	2.7	.3	9.1	341	99.6	--
	01-10-96	1.9	116	180	3.2	.4	11	381	86.4	--
	03-07-96	1.9	111	180	3.7	.4	9.0	381	83.2	--
	05-07-96	1.4	83	100	1.9	.3	12	238	199	--
	07-02-96	1.5	85	120	2.0	.3	8.6	263	387	--
UC16	10-28-92	3.4	188	460	8.0	.5	15	846	1,200	--
	04-07-93	3.3	147	390	8.1	.3	12	712	779	1.2
	06-15-93	3.0	148	370	7.3	.5	14	694	1,160	1.8
	07-13-93	3.5	209	620	9.1	.6	17	1,080	581	--
	08-11-93	4.1	203	610	9.9	.6	18	1,090	1,030	3.6
	09-10-93	3.5	199	630	9.5	.6	16	1,110	877	--
	12-19-94	4.2	184	770	14	.6	15	1,340	678	3.5
	01-18-95	4.2	232	790	15	.6	15	1,370	629	3.7
	02-16-95	4.5	183	790	15	.6	13	1,350	603	3.2
	03-08-95	6.7	200	660	16	.6	13	1,160	900	2.1
	04-25-95	3.6	168	380	9.5	.5	11	747	335	1.5
	05-19-95	3.1	125	260	5.3	.3	11	505	1,930	--
	06-29-95	3.2	158	390	6.7	.5	15	724	888	1.6
	07-27-95	3.4	201	520	8.8	.6	16	969	874	2.9
	08-17-95	3.5	194	490	8.6	.6	15	920	800	3.0

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Selenium total, ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
UC16	09-26-95	1445	616	1,090	8.3	16.0	8	--	460	130	34
	10-26-95	1500	505	1,200	8.2	11.0	11	--	480	130	38
	11-24-95	1005	311	1,590	8.2	5.5	16	--	640	170	53
	01-10-96	1040	214	1,620	8.3	1.5	17	--	680	180	57
	02-05-96	1200	199	1,580	8.5	3.5	18	--	660	170	56
	03-07-96	1015	177	1,540	8.7	3.0	16	--	640	160	58
	04-09-96	1100	211	1,230	8.2	11.0	15	--	510	140	39
	05-07-96	1330	482	925	8.1	12.0	8	--	390	110	28
	06-06-96	1000	423	1,160	8.0	17.0	12	--	510	140	39
	07-02-96	1245	468	1,200	8.2	21.0	12	--	520	150	36
	08-08-96	1135	141	1,700	8.3	18.0	16	--	780	220	55
	08-20-96	1100	208	1,610	8.3	18.0	13	--	710	200	50
	09-16-96	1240	600	1,160	8.2	15.0	10	--	500	140	37
	10-16-96	1220	381	1,270	8.4	10.5	13	--	520	140	41
	11-12-96	1215	286	1,670	8.4	6.0	16	--	740	200	58
	01-07-97	1315	174	1,700	8.6	1.0	14	--	740	190	64
	03-11-97	0915	257	1,460	8.4	4.5	13	--	580	150	50
	04-17-97	1010	584	882	8.4	7.5	5	--	350	97	27
	05-23-97	0850	1,340	847	8.4	10.0	8	8	360	99	27
	06-10-97	1025	1,300	940	8.3	14.0	8	11	380	110	29
	08-12-97	1235	917	993	8.2	15.5	8	9	420	120	30
GUN6	12-01-92	1300	1,140	1,150	8.3	1.5	9	--	480	120	44
	05-26-93	1020	15,500	274	8.0	13.0	1	--	110	30	7.8
	07-27-93	0955	1,800	888	8.3	18.0	6	--	390	110	28
	09-08-93	1235	2,290	967	8.4	17.5	5	--	440	120	34
	11-23-93	1025	2,270	812	8.4	5.5	6	--	330	84	29
	02-24-94	1105	977	1,030	8.3	4.0	7	--	400	95	39
	05-25-94	1130	5,510	423	8.0	13.5	2	--	160	44	12
	06-23-94	1120	2,460	865	8.3	20.5	5	--	360	98	27
	08-17-94	0925	1,260	1,120	8.3	20.0	6	--	470	130	36
	09-07-94	1230	1,790	1,110	8.3	16.5	8	--	470	130	36

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
UC16	09-26-95	58	2.9	176	390	6.3	0.50	15	751	1,250	1.9
	10-26-95	70	3.3	177	440	7.7	.5	13	809	1,100	--
	11-24-95	110	3.5	203	630	11	.4	12	1,110	933	--
	01-10-96	110	3.9	224	650	12	.7	15	1,160	672	--
	02-05-96	120	3.7	216	640	13	.5	14	1,150	616	--
	03-07-96	120	3.7	204	--	--	--	--	--	--	--
	04-09-96	83	3.8	165	530	9.7	.6	14	919	524	--
	05-07-96	51	2.6	141	330	6.3	.4	13	626	814	--
	06-06-96	74	3.6	177	490	8.2	.6	15	877	1,000	--
	07-02-96	66	2.9	170	440	7.0	.6	15	819	1,040	--
	08-08-96	100	4.0	232	710	12	.9	18	1,260	479	--
	08-20-96	96	4.1	220	660	10	.8	18	1,170	658	--
	09-16-96	64	3.2	184	430	7.2	.6	15	807	1,310	--
	10-16-96	76	3.2	191	500	8.3	.6	16	900	925	--
	11-12-96	110	3.8	201	680	12	.6	14	1,200	926	--
	01-07-97	130	4.2	214	730	14	.7	14	1,280	599	--
	03-11-97	100	3.8	195	610	12	.5	12	1,060	732	--
	04-17-97	48	3.3	141	290	6.3	.4	11	572	902	--
	05-23-97	50	3.4	130	300	6.1	.4	14	584	2,110	--
	06-10-97	55	3.5	142	340	6.3	.4	15	639	2,240	--
	08-12-97	54	2.9	160	350	6.2	.5	16	677	1,680	--
GUN6	12-01-92	76	4.4	180	450	11	.5	14	831	2,830	1.3
	05-26-93	12	1.8	79	62	2.3	.2	12	166	7,490	.18
	07-27-93	48	3.0	125	340	6.9	.4	14	651	3,170	1.4
	09-08-93	50	4.0	156	380	7.0	.5	15	703	4,400	1.2
	11-23-93	46	3.4	145	290	6.1	.3	12	559	3,430	.76
	02-24-94	68	4.1	163	380	11	.4	11	712	1,940	.84
	05-25-94	18	1.9	90	110	2.8	.2	13	257	4,200	.38
	06-23-94	44	3.2	138	300	6.3	.4	15	577	3,830	--
	08-17-94	59	3.2	166	430	8.4	.4	14	762	2,810	1.5
	09-07-94	59	4.2	167	410	7.9	.5	16	764	3,690	--

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
GUN6	10-27-94	1210	1,730	1,060	8.4	9.5	6	--	410	110	34
	12-19-94	1300	1,400	920	8.5	1.5	6	--	360	90	33
	01-24-95	1015	1,080	860	8.5	.5	6	--	350	86	32
	05-17-95	1033	11,400	350	7.8	10.0	2	--	140	38	10
	06-19-95	1400	13,900	348	8.0	13.0	2	--	140	38	10
	07-21-95	0900	11,500	352	8.9	14.5	<2	--	140	40	10
	10-30-95	1120	2,800	794	8.4	10.5	5	--	320	83	27
	12-12-95	1200	2,750	651	8.2	6.5	4	--	250	63	23
	01-23-96	1015	1,670	806	8.1	1.0	5	--	320	79	29
	02-21-96	1115	2,020	755	8.3	5.5	5	--	260	61	25
	03-26-96	1200	2,710	553	8.1	5.5	3	--	210	54	18
	05-20-96	1030	6,990	336	8.1	12.5	2	--	130	37	10
	05-29-96	1045	2,740	686	8.3	13.0	4	--	280	75	22
	06-11-96	1430	2,700	627	8.2	17.5	4	--	240	65	19
	07-03-96	1315	3,620	530	8.4	18.5	3	--	200	55	16
	07-16-96	1130	2,310	675	8.6	19.0	4	--	270	72	21
	08-07-96	1230	1,230	992	8.5	20.0	7	--	410	110	33
	08-21-96	1150	1,410	1,040	8.3	20.5	7	--	410	110	34
	09-05-96	1140	1,500	1,030	8.4	18.0	7	--	440	120	33
	09-16-96	1535	2,170	1,010	8.1	17.0	7	--	450	120	37
	09-17-96	0730	2,120	1,020	8.2	14.5	7	7	450	120	36
	10-04-96	1300	2,910	1,120	8.3	13.5	6	--	450	120	37
	11-13-96	1300	2,070	794	8.6	7.0	5	--	300	76	27
	12-20-96	1030	1,930	692	8.2	.0	5	--	280	72	25
	01-17-97	1300	2,310	572	8.4	2.5	3	--	220	58	19
	02-24-97	1330	2,510	540	8.4	2.5	2	--	200	50	18
	03-31-97	1245	5,670	386	8.1	7.0	1	--	160	43	12
	04-25-97	1030	6,130	384	8.2	7.5	1	--	150	40	13
	04-28-97	1245	6,760	382	8.3	11.0	2	--	150	40	12
	05-16-97	0830	9,130	302	8.2	12.5	1	--	120	33	8.8

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
GUN6	10-27-94	58	3.4	156	370	8.0	0.5	14	691	3,230	--
	12-19-94	54	3.2	153	300	7.7	.3	12	592	2,400	--
	01-24-95	52	3.1	153	300	7.8	.4	12	590	1,800	0.91
	05-17-95	15	1.9	90	76	2.2	.2	11	199	6,890	.16
	06-19-95	15	1.9	77	88	2.0	.2	13	212	8,370	.28
	07-21-95	13	1.6	81	82	2.2	.2	13	211	7,140	--
	10-30-95	42	2.7	133	270	6.1	.3	12	519	4,170	.56
	12-12-95	34	2.4	119	200	5.3	.3	12	408	3,170	.56
	01-23-96	44	2.9	139	260	7.2	.3	14	521	2,510	.77
	02-21-96	50	2.9	129	240	7.3	.3	11	469	2,800	.59
	03-26-96	28	2.0	116	150	6.0	.3	12	339	2,660	.28
	05-20-96	14	1.7	76	84	2.1	.2	13	207	4,020	.36
	05-29-96	34	2.5	116	230	5.2	.3	14	444	3,650	.77
	06-11-96	30	2.1	102	200	4.5	.3	12	394	3,090	.50
	07-03-96	23	2.0	102	160	3.4	.3	13	335	3,480	.62
	07-16-96	32	2.6	119	220	4.8	.3	12	431	2,830	.87
	08-07-96	51	3.5	151	370	7.9	.5	11	671	2,440	1.4
	08-21-96	56	3.5	159	390	7.4	.5	13	707	2,850	1.6
	09-05-96	53	3.5	158	390	7.1	.5	13	714	3,040	1.5
	09-16-96	58	3.7	167	390	7.4	.5	14	731	4,280	--
	09-17-96	57	3.6	168	390	7.3	.5	14	729	4,170	--
	10-04-96	65	4.8	161	420	10	.5	13	765	6,240	1.1
	11-13-96	44	2.5	135	260	6.0	.4	10	508	3,010	.76
	12-20-96	41	2.4	132	230	6.0	.4	13	473	2,600	.85
	01-17-97	28	2.0	114	160	4.5	.2	12	352	2,330	.46
	02-24-97	27	2.1	116	160	4.5	.3	10	339	2,460	.36
	03-31-97	17	1.8	100	92	2.9	.2	11	232	3,810	.24
	04-25-97	18	2.0	93	99	3.0	.2	11	239	4,330	.30
	04-28-97	17	2.0	97	94	2.9	.2	11	227	4,530	.32
	05-16-97	12	1.6	76	69	2.0	.2	11	180	4,810	.21

Table 2. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
GUN6	05-24-97	1540	10,600	358	8.0	11.0	2	140	37	11	16
	06-12-97	1230	9,240	412	8.1	14.5	2	160	43	13	19
	07-03-97	1240	5,360	376	8.2	15.0	2	140	39	11	15
	07-18-97	1130	2,780	616	8.3	19.0	3	210	58	16	26
	08-12-97	1140	3,480	880	8.3	17.0	5	350	96	28	44
	09-05-97	1215	2,790	888	8.4	18.5	5	370	99	29	46

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
GUN6	05-24-97	1.8	80	93	2.3	0.2	13	221	6,810	0.30
	06-12-97	2.0	86	110	2.5	.2	14	258	6,840	.24
	07-03-97	1.8	83	98	2.3	.2	13	230	3,630	.26
	07-18-97	2.0	109	200	4.3	.3	11	372	3,230	.71
	08-12-97	3.2	143	300	5.6	.4	15	567	5,980	1.1
	09-05-97	3.2	147	300	6.1	.5	14	581	4,840	1.1

Table 3. Trace-element data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97

[All sites on pl. 1, except site GUN6, which is on pl. 2; totals are concentrations in unfiltered samples, in micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Aluminum, dissolved	Antimony, dissolved	Arsenic, total	Arsenic, dissolved	Barium, dissolved	Beryllium, total	Beryllium, dissolved	Cadmium, total
GUN1	09-19-95	1120	5	<1	--	<1	33	--	<1	--
GUN4	10-28-92	1310	--	--	--	--	--	--	--	--
	04-07-93	0945	--	--	--	--	--	--	--	--
	06-15-93	1730	--	--	--	--	--	--	--	--
	08-12-93	0805	--	--	--	--	--	--	--	--
UC1	10-28-92	0730	--	--	--	--	--	--	--	--
	04-08-93	1220	--	--	--	--	--	--	--	--
	06-15-93	1020	--	--	--	--	--	--	--	--
	08-12-93	1410	--	--	--	--	--	--	--	--
UC16	10-28-92	1010	--	--	--	--	--	--	--	--
	04-07-93	1355	--	--	--	--	--	--	--	--
	06-15-93	1500	--	--	--	--	--	--	--	--
	08-11-93	1520	--	--	--	--	--	--	--	--
	08-12-97	1235	--	--	3	<1	--	<10	<.5	<1
GUN6	12-01-92	1300	30	--	--	--	49	--	--	--
	05-26-93	1020	350	--	--	--	41	--	--	--
	07-27-93	0955	<10	--	--	--	47	--	--	--
	09-08-93	1235	10	--	--	--	40	--	--	--
	11-23-93	1025	20	--	--	--	41	--	--	--
	02-24-94	1105	30	--	--	--	43	--	--	--
	05-25-94	1130	20	--	--	--	39	--	--	--
	08-17-94	0925	<10	--	--	--	46	--	--	--
	01-24-95	1015	20	--	--	--	40	--	--	--
	05-17-95	1033	50	--	--	--	49	--	--	--

Table 3. Trace-element data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Cadmium, dissolved	Chro-mium, total	Chro-mium, dissolved	Cobalt, dissolved	Copper, total	Copper, dissolved	Iron, total	Iron, dissolved
GUN1	09-19-95	<1	--	<1	<1	--	<1	--	14
GUN4	10-28-92	<1	--	--	--	--	<1	450	--
	04-07-93	<1	--	--	--	--	<1	4,800	--
	06-15-93	<1	--	--	--	--	<1	4,200	--
	08-12-93	<1	--	--	--	--	2	1,200	--
UC1	10-28-92	<1	--	--	--	--	2	150	--
	04-08-93	<1	--	--	--	--	<1	170	--
	06-15-93	<1	--	--	--	--	2	3,500	--
	08-12-93	<1	--	--	--	--	3	590	--
UC16	10-28-92	<1	--	--	--	--	<1	2,600	--
	04-07-93	<1	--	--	--	--	<1	9,000	--
	06-15-93	<1	--	--	--	--	<1	6,700	--
	08-11-93	<1	--	--	--	--	2	8,100	--
	08-12-97	<1	5	<1	--	15	2	6,700	<3
GUN6	12-01-92	--	--	--	<3	--	--	--	19
	05-26-93	--	--	--	<3	--	--	--	72
	07-27-93	--	--	--	<3	--	--	--	3
	09-08-93	--	--	--	<3	--	--	--	8
	11-23-93	--	--	--	<3	--	--	--	16
	02-24-94	--	--	--	<3	--	--	--	13
	05-25-94	--	--	--	<3	--	--	--	15
	08-17-94	--	--	--	<3	--	--	--	<3
	01-24-95	--	--	--	<3	--	--	--	16
	05-17-95	--	--	--	<3	--	--	--	48

Table 3. Trace-element data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Lead, total	Lead, dissolved	Lithium, dissolved	Manganese, total	Manganese, dissolved	Mercury, total	Mercury, dissolved	Molybdenum, dissolved
GUN1	09-19-95	--	<1	--	--	2	--	--	<1
GUN4	10-28-92	--	<1	--	50	26	--	<0.1	--
	04-07-93	--	<1	--	150	18	--	<.1	--
	06-15-93	--	<1	--	140	12	--	<.1	--
	08-12-93	--	<1	--	70	28	--	<.1	--
UC1	10-28-92	--	<1	--	40	12	--	<.1	--
	04-08-93	--	<1	--	40	4	--	<.1	--
	06-15-93	--	<1	--	230	13	--	<.1	--
	08-12-93	--	<1	--	40	7	--	<.1	--
UC16	10-28-92	--	<1	--	140	22	--	<.1	--
	04-07-93	--	<1	--	260	25	--	<.1	--
	06-15-93	--	<1	--	300	20	--	<.1	--
	08-11-93	--	<1	--	350	43	--	<.1	--
	08-12-97	20	<1	--	300	19	<0.1	<.1	--
GUN6	12-01-92	--	--	71	--	41	--	--	<10
	05-26-93	--	--	10	--	9	--	--	<10
	07-27-93	--	--	46	--	11	--	--	<10
	09-08-93	--	--	57	--	13	--	--	<10
	11-23-93	--	--	42	--	22	--	--	<10
	02-24-94	--	--	56	--	56	--	--	<10
	05-25-94	--	--	16	--	5	--	--	<10
	08-17-94	--	--	58	--	15	--	--	10
	01-24-95	--	--	48	--	40	--	--	<10
	05-17-95	--	--	22	--	9	--	--	<10

Table 3. Trace-element data for sites on the Gunnison and Uncompahgre Rivers, water years 1993–97—Continued

Site code	Date	Nickel, total	Nickel, dissolved	Silver, dissolved	Stron-tium, dissolved	Uranium natural, dissolved	Vana-dium, dissolved	Zinc, total	Zinc, dissolved
GUN1	09-19-95	--	<1	<1	--	<1.0	--	--	1
GUN4	10-28-92	--	--	<.2	--	--	--	--	<3
	04-07-93	--	--	<.2	--	--	--	--	<3
	06-15-93	--	--	<.2	--	--	--	--	<3
	08-12-93	--	--	<.2	--	--	--	--	10
UC1	10-28-92	--	--	<.2	--	--	--	--	<3
	04-08-93	--	--	<.2	--	--	--	--	4
	06-15-93	--	--	<.2	--	--	--	--	<3
	08-12-93	--	--	<.2	--	--	--	--	<3
UC16	10-28-92	--	--	<.2	--	--	--	--	<3
	04-07-93	--	--	<.2	--	--	--	--	<3
	06-15-93	--	--	<.2	--	--	--	--	9
	08-11-93	--	--	<.2	--	--	--	--	5
	08-12-97	10	1	--	--	--	3	60	<3
GUN6	12-01-92	--	2	<1	1,300	--	<6	--	--
	05-26-93	--	1	<1	270	--	<6	--	--
	07-27-93	--	<1	<1	1,100	--	<6	--	--
	09-08-93	--	1	<1	1,100	--	<6	--	--
	11-23-93	--	<1	<1	840	--	<6	--	--
	02-24-94	--	<1	<1	1,000	--	<6	--	--
	05-25-94	--	<1	<1	410	--	<6	--	--
	08-17-94	--	1	<1	1,300	--	<6	--	--
	01-24-95	--	<1	<1	900	--	<6	--	--
	05-17-95	--	<1	<1	340	--	<6	--	--

Table 4. Dissolved iron and manganese data for sites on the Gunnison River, water years 1995–97

[For the samples listed in this table, the only trace-element analyses (other than selenium) were for dissolved iron and manganese; site GUN1 on pl. 1, site GUN6 on pl. 2; concentrations in micrograms per liter; <, less than]

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
GUN1	12-13-94	1250	<10	<10
	01-18-95	1150	9	<1
	02-21-95	1515	8	4
	03-15-95	1415	11	12
	04-20-95	1245	5	2
	05-10-95	1220	16	2
	05-24-95	1300	37	2
	06-29-95	1245	52	3
	07-10-95	1025	51	5
	08-23-95	1100	38	2
	10-16-95	1420	15	3
	12-01-95	1110	6	<1
	12-11-95	1305	6	<1
	01-22-96	1315	5	<1
	02-29-96	1100	4	1
	03-20-96	1215	<3	2
	03-28-96	1045	<3	2
	04-17-96	1345	5	<1
	05-22-96	1345	13	2
	05-31-96	1245	12	2
	06-14-96	1150	13	2
	07-02-96	1010	7	1
	07-19-96	1300	5	2
	08-19-96	1310	8	2
	09-04-96	1250	6	3
	10-15-96	1400	5	2
	11-25-96	1550	<3	<1
	12-19-96	1200	<3	<1
	01-16-97	1350	<3	<1
	02-26-97	1230	<3	<1

Table 4. Dissolved iron and manganese data for sites on the Gunnison River, water years 1993–97—Continued

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
GUN1	03-28-97	1015	<3	4
	04-10-97	1230	<3	3
	04-29-97	1315	<3	<1
	05-14-97	0840	12	<1
	05-24-97	1145	9	<1
	06-16-97	1400	11	3
	06-30-97	1240	6	2
	07-22-97	1330	9	<1
	08-18-97	1305	13	1
	09-24-97	1230	11	2
GUN6	12-19-94	1300	15	33
	02-23-95	0925	9	49
	03-20-95	1455	9	26
	06-19-95	1400	62	9
	07-21-95	0900	44	9
	10-30-95	1120	18	9
	12-12-95	1200	5	13
	01-23-96	1015	5	27
	02-21-96	1115	<3	16
	03-26-96	1200	4	16
	04-18-96	1245	5	14
	05-20-96	1030	16	4
	05-29-96	1045	5	13
	06-11-96	1430	5	5
	07-03-96	1315	3	4
	07-16-96	1130	<3	5
	08-07-96	1230	4	18
	08-21-96	1150	<3	24
	09-05-96	1140	<3	15
	10-04-96	1300	<3	6

Table 4. Dissolved iron and manganese data for sites on the Gunnison River, water years 1993–97—Continued

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
GUN6	11-13-96	1300	6	12
	12-20-96	1030	<3	23
	01-17-97	1300	<3	13
	02-24-97	1330	<3	11
	03-31-97	1245	4	9
	04-25-97	1030	19	9
	04-28-97	1245	8	8
	05-16-97	0830	12	4
	05-24-97	1540	11	6
	06-12-97	1230	5	4
	07-03-97	1240	6	4
	07-18-97	1130	<3	4
	08-12-97	1140	<3	2
	09-05-97	1215	3	6

Table 5. Dry-weight selenium concentrations in fish-tissue samples collected from the Gunnison and Uncompahgre Rivers, water years 1995–96

[Sites on pl. 1, except site GUN6, which is on pl. 2; --, no data]

Site code	Matrix	Species	Date (month-year)	Average length, (millimeters)	Percent moisture	Selenium (micrograms per gram)
GUN1	Whole body	Bluehead sucker	04-95	423	68.4	3.7
	Whole body	Bluehead sucker	04-95	411	63.6	2.2
	Whole body	Bluehead sucker	04-95	403	64.7	1.9
	Whole body	Bluehead sucker	04-95	400	72.3	2.7
	Whole body	Bluehead sucker	04-95	354	67.1	2.2
	Whole body	Longnose sucker	04-96	363	71.6	2.5
	Whole body	Longnose sucker	04-96	370	70.9	2.3
	Whole body	Longnose sucker	04-96	370	71.4	2.6
	Whole body	Longnose sucker	04-96	340	75.8	2.0
	Whole body	Longnose sucker	04-96	353	72.2	2.1
	Whole body	Longnose sucker	04-96	386	72.6	1.7
	Eggs	Longnose sucker	04-96	--	70.4	1.7
	Whole body	White sucker	04-96	450	73.7	2.4
	Whole body	White sucker	04-96	405	73	1.9
	Whole body	White sucker	04-96	438	73.7	2.3
	Whole body	White sucker	04-96	418	72.2	1.5
	Whole body	White sucker	04-96	460	70.7	1.5
	Whole body	White sucker	04-96	455	70.7	1.6
	Eggs	White sucker	04-96	--	64	1.8
	Whole body	Speckled dace	04-95	80	72.5	11.0
	Whole body	Speckled dace	04-95	72	73.8	10.0
	Whole body	Speckled dace	04-95	102	73.4	10.0
	Whole body	Speckled dace	04-95	101	70.2	13.0
	Whole body	Speckled dace	04-95	117	69.6	11.0
	Whole body	Mottled sculpin	04-96	80	72.7	4.5
	Whole body	Mottled sculpin	04-96	110	72.2	4.5
	Whole body	Mottled sculpin	04-96	85	72.9	4.1
	Whole body	Mottled sculpin	04-96	75	74.4	4.1
	Whole body	Mottled sculpin	04-96	108	74.3	5.0
GUN4	Whole body	Bluehead sucker	04-96	387	57.6	1.7
	Whole body	Bluehead sucker	04-96	397	64.6	2.1
	Whole body	Bluehead sucker	04-96	382	61.8	1.4
	Whole body	Bluehead sucker	04-96	365	63.7	1.8
	Whole body	Bluehead sucker	04-96	361	66.3	2.2

Table 5. Dry-weight selenium concentrations in fish-tissue samples collected from the Gunnison and Uncompahgre Rivers, water years 1995–96—Continued

Site code	Matrix	Species	Date (month-year)	Average length, (millimeters)	Percent moisture	Selenium (micrograms per gram)
UC1	Whole body	Bluehead sucker	03-95	336	72.5	1.9
	Whole body	Bluehead sucker	03-95	312	75	1.2
	Whole body	Bluehead sucker	03-95	316	74.2	1.3
	Whole body	Bluehead sucker	03-95	316	74	1.3
	Whole body	Bluehead sucker	03-95	332	75.1	1.6
	Whole body	Mottled sculpin	03-95	111	75.8	4.6
	Whole body	Mottled sculpin	03-95	111	77.3	4.2
	Whole body	Mottled sculpin	03-95	111	77.6	5.0
	Whole body	Mottled sculpin	03-95	103	75.5	4.2
	Whole body	Mottled sculpin	03-95	107	75.8	4.3
	Whole body	Mottled sculpin	03-96	106	76.3	4.6
	Whole body	Mottled sculpin	03-96	110	76.6	5.0
	Whole body	Mottled sculpin	03-96	112	73.8	4.5
	Whole body	Mottled sculpin	03-96	110	74.5	3.5
	Whole body	Mottled sculpin	03-96	99	74.4	4.1
UC16	Whole body	Bluehead sucker	03-95	273	70.3	3.1
	Whole body	Bluehead sucker	03-95	314	68.3	2.8
	Whole body	Bluehead sucker	03-95	348	69	2.8
	Whole body	Bluehead sucker	03-95	282	73.3	4.2
	Whole body	Bluehead sucker	03-95	383	66.1	2.2
	Whole body	Bluehead sucker	03-96	380	65.9	2.3
	Whole body	Flannelmouth sucker	03-96	422	67.9	3.0
	Whole body	Flannelmouth sucker	03-96	370	68.3	4.8
	Whole body	Flannelmouth sucker	03-96	462	68.7	3.4
	Whole body	Flannelmouth sucker	03-96	459	69.7	3.5
	Whole body	Flannelmouth sucker	03-96	445	68.8	5.3
	Whole body	White sucker	03-96	340	71.6	3.1
	Whole body	White sucker	03-96	385	70.5	4.6
	Whole body	White sucker	03-96	345	69.4	12.2
	Whole body	White sucker	03-96	367	71.1	10.6
	Whole body	White sucker	03-96	330	76.3	6.3
	Whole body	Sucker cross	03-96	375	71.6	2.9
	Whole body	Sucker cross	03-96	365	71.2	2.7
	Whole body	Sucker cross	03-96	487	73.2	4.3
	Whole body	Speckled dace	03-95	130	66.8	12.0
	Whole body	Speckled dace	03-96	87	72	13.9
	Whole body	Speckled dace	03-96	72	72.6	9.8

Table 5. Dry-weight selenium concentrations in fish-tissue samples collected from the Gunnison and Uncompahgre Rivers, water years 1995–96—Continued

Site code	Matrix	Species	Date (month-year)	Average length, (millimeters)	Percent moisture	Selenium (micrograms per gram)
UC16	Whole body	Speckled dace	03-96	85	71.2	14.7
	Whole body	Speckled dace	03-96	70	73	9.5
	Whole body	Speckled dace	03-96	77	72.8	11.9
	Whole body	Common carp	03-95	535	76	9.0
GUN6	Whole body	Bluehead sucker	04-95	342	64.3	2.6
	Whole body	Bluehead sucker	04-95	398	62.3	2.8
	Whole body	Bluehead sucker	04-95	366	65	3.0
	Whole body	Bluehead sucker	04-95	374	61.5	2.8
	Whole body	Bluehead sucker	04-95	357	67	3.1
	Whole body	Bluehead sucker	04-96	424	63.7	2.7
	Whole body	Bluehead sucker	04-96	394	59.6	2.1
	Whole body	Bluehead sucker	04-96	395	61	2.0
	Whole body	Bluehead sucker	04-96	394	66.1	3.0
	Whole body	Bluehead sucker	04-96	335	65.8	1.9
	Whole body	Bluehead sucker	04-96	431	62.3	2.3
	Eggs	Bluehead sucker	04-96	--	61.8	3.6
	Whole body	Flannelmouth sucker	04-96	380	62.5	3.2
	Whole body	Flannelmouth sucker	04-96	375	67.7	3.6
	Whole body	Sucker cross	04-96	318	69.1	3.2
	Whole body	Speckled dace	04-96	65	67.7	7.0

Table 6. List of sampling sites and types of data collected for tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–1997

[X, data type collected; UVWUA, Uncompahgre Valley Water Users Association; --, data type not collected]

Site code (pl. 1)	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sediment	Biota
SOC2	382853107452901	South Canal at UVWUA gage	X	--	--
NFK	09136100	North Fork Gunnison River at mouth	X	--	--
RFC	384605107570401	Relief Canal upstream from Peach Valley Arroyo	X	--	--
PVA1	384604107570701	Peach Valley Arroyo near mouth	X	--	--
BFC	384626107574801	Bonafide Canal at Highway 92, near Read	X	--	--
RD1	384551107591901	Unnamed drainage at Highway 92, near Read	X	X	X
NGTR	384858108010601	Unnamed tributary of Negro Creek, near Orchard City	X	--	--
GL1	384452108032901	Ditch from Garnet lateral at Crawford Road, at Delta	X	--	--
BFD	384459108033201	Bonafide Ditch at Highway 92, at Delta	X	--	--
CFP	384502108042701	Drainage ditch at Confluence Park, at Delta	X	--	--
DCC3	382430107472701	Dry Cedar Creek above South Canal, at Kinkin Road	X	--	--
DCC1	382711107520101	Dry Cedar Creek at Highway 550, near mouth	X	X	X
CD4	382908107445601	Cedar Creek at AB lateral	X	--	--
MA2	382802107513301	Montrose Arroyo at East Niagara Street	X	X	X
CD1	383041107544201	Cedar Creek downstream from Highway 550, near mouth	X	--	--
LF1	383113107492301	Unnamed drainage at Landfill Road, near Montrose	X	--	--
LZA6	383357107521701	Loutsenhizer Arroyo at upper Holly Road	X	--	--
LZC	383316107523801	Loutsenhizer Canal at Holly Road	X	--	--
LZA5B	383328107525501	Loutsenhizer Arroyo downstream from Loutsenhizer Canal	X	--	--
LZA5	383408107535101	Loutsenhizer Arroyo at 6400 Road	X	--	--
LZA1	383946107595301	Loutsenhizer Arroyo at North River Road	X	X	X
GCDD1	384232108010101	Drainage ditch #1 at Garnet Canal, south of Sweitzer Lake	X	--	--
GCDD2	384231108010201	Drainage ditch #2 at Garnet Canal, south of Sweitzer Lake	X	--	--
DRY2	09149480	Dry Creek at Begonia Road	X	--	--
DRY1	384202108032001	Dry Creek at D10 Road, near mouth	X	--	--
LGW2	384457108055801	Drainage ditch near 1400 Road, at mouth	X	--	--
LGW1	384450108052701	Drainage ditch at G25 Road, near Delta	X	--	--
CMG1	384448108070301	Cummings Gulch at mouth	X	--	--
SEP1	384408108091501	Seep Creek at G Road, near mouth	X	--	--
RB3	384013108091401	Roubideau Creek upstream from Ironstone Canal	X	--	--
RB1	09150500	Roubideau Creek at mouth	X	--	--
AKC	384510108111801	Alkali Creek downstream from Highway 50, west of Delta	X	--	--
WGL	384636108171501	Wells Gulch at Fools Hill at Highway 50, west of Delta	X	--	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97

[All sites on pl. 1; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; µg/L, micrograms per liter; mg/L, milligrams per liter; <, less than; --, no data; E, estimated; all chemical concentrations for dissolved constituents unless noted]

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
SOC2	07-13-93	1600	960	180	8.3	11.0	<1	--	72	21	4.7
	08-13-93	0640	1,050	192	8.0	11.0	<1	--	82	24	5.3
	09-08-93	1645	814	188	8.1	12.5	<1	--	82	24	5.3
NFK	02-22-96	0940	633	883	8.4	3.0	3	4	350	74	41
	03-19-96	1005	498	544	8.5	2.0	1	--	240	58	22
	07-16-96	0935	154	1,350	8.2	18.5	4	--	640	150	65
	08-20-96	0940	115	1,630	8.2	17.0	4	--	800	190	7?
	09-16-96	0825	186	1,480	8.2	13.0	4	--	730	170	75
	11-12-96	0850	250	943	8.6	3.0	6	--	420	98	42
RFC	08-11-93	0910	45	439	8.3	15.0	1	--	190	48	16
	09-09-93	1125	46	457	8.4	14.5	1	--	220	56	19
PVA1	07-14-93	1220	13	987	8.2	17.5	5	--	350	97	2?
	08-11-93	0820	24	844	8.0	17.5	6	--	330	94	22
	09-09-93	1210	6.1	1,480	8.3	15.0	7	--	580	160	44
BFC	08-11-93	1115	56	621	8.2	17.0	3	--	250	66	2?
	09-09-93	1350	57	587	8.5	16.0	2	--	250	64	21
RD1	07-14-93	1335	31	1,670	8.2	19.5	24	--	590	150	53
	08-11-93	1210	78	1,390	8.2	19.0	18	--	530	140	44
	09-09-93	1440	51	1,600	8.3	17.0	22	--	620	160	53
	12-19-94	1415	3.0	7,060	8.2	2.0	150	--	2,300	470	27?
	01-18-95	1300	2.3	7,450	7.9	3.5	170	--	2,300	430	29?
	02-15-95	1120	2.2	7,800	8.4	5.5	150	--	2,400	450	32?
	03-15-95	1135	1.7	7,970	8.3	10.0	200	230	2,200	410	29?
	04-25-95	1435	39	1,580	8.3	10.5	15	--	470	120	42
	05-23-95	1440	70	1,100	8.1	14.0	10	--	370	97	32
	06-22-95	0825	67	1,320	8.2	13.5	16	--	430	110	38

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
SOC2	07-13-93	4.9	1.4	67	20	1.0	0.2	14	107	278	--
	08-13-93	5.2	1.4	71	22	1.0	.2	14	116	328	--
	09-08-93	5.2	1.5	73	21	1.0	.2	12	114	250	--
NFK	02-22-96	55	4.0	142	300	8.9	.2	11	579	990	--
	03-19-96	29	2.4	151	130	4.4	.2	11	348	467	--
	07-16-96	64	5.6	229	520	9.3	.5	18	970	403	--
	08-20-96	79	8.1	238	650	8.9	.6	22	1,180	366	--
	09-16-96	70	6.2	254	590	9.0	.6	20	1,090	549	--
	11-12-96	47	3.8	198	300	6.4	.4	14	630	425	--
RFC	08-11-93	16	2.2	100	120	3.0	.2	13	278	34.0	--
	09-09-93	19	2.1	107	130	2.7	.2	12	305	37.7	--
PVA1	07-14-93	74	3.4	147	380	6.3	.5	14	689	23.5	--
	08-11-93	53	4.0	143	300	6.1	.4	14	579	37.2	--
	09-09-93	140	3.6	186	610	8.3	.4	14	1,090	18.0	--
BFC	08-11-93	32	2.9	118	190	5.4	.3	14	401	60.1	--
	09-09-93	30	2.3	116	190	4.5	.3	13	395	61.2	--
RD1	07-14-93	140	5.2	144	730	8.5	.4	14	1,190	99.7	--
	08-11-93	110	5.3	174	570	10	.4	15	999	211	--
	09-09-93	130	3.9	187	680	8.4	.4	13	1,160	159	--
	12-19-94	1,200	16	340	4,200	59	.3	9.1	6,500	52.3	17
	01-18-95	1,200	16	340	4,400	70	.3	7.7	6,690	42.5	17
	02-15-95	1,400	16	319	4,500	73	.4	6.8	7,040	41.6	18
	03-15-95	1,400	15	261	4,300	68	.4	4.9	6,720	30.7	17
	04-25-95	160	4.6	166	600	11	.4	10	1,050	110	1.4
	05-23-95	94	3.7	136	420	6.7	.3	11	750	143	.85
	06-22-95	110	4.1	148	520	7.5	.4	13	898	162	1.3

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Dis-charge (ft^3/s)	Spe-cific conduct-ance (µS/cm)	pH, (stand-ard units)	Temper-ature (°C)	Sele-nium (µg/L as Se)	Sele-nium, total (µg/L as Se)	Hard-ness (mg/L as $CaCO_3$)	Cal-clum (mg/L as Ca)	Magne-sium (mg/L as Mg)
RD1	07-25-95	0835	29	1,490	8.1	16.0	19	16	560	140	50
	08-23-95	1440	53	1,470	8.3	21.0	20	--	510	130	46
	09-26-95	1430	41	1,780	8.4	12.5	25	24	620	150	60
	10-25-95	1415	76	1,290	8.5	7.5	16	--	470	120	42
	11-21-95	0815	11	2,770	8.3	4.0	51	--	840	180	94
	12-11-95	1425	2.1	6,810	8.2	4.0	140	--	2,200	430	280
	01-18-96	1415	2.3	7,620	8.5	1.0	190	--	2,400	430	330
	02-14-96	1205	2.3	7,470	8.3	3.5	140	--	2,300	450	290
	03-13-96	1245	2.0	7,730	8.2	9.5	190	170	2,200	420	280
	04-10-96	0810	41	1,080	8.4	9.0	11	--	330	83	30
	05-20-96	1220	45	1,270	8.4	14.0	17	--	460	120	40
	06-26-96	1315	47	1,510	8.3	16.5	19	--	550	140	49
	07-22-96	0915	24	2,030	8.1	16.5	41	--	760	190	70
	08-20-96	0800	45	1,630	8.3	17.0	29	--	610	160	51
	09-16-96	0950	48	1,810	8.3	14.0	34	--	650	160	62
	10-16-96	1330	35	1,990	8.3	10.0	28	--	650	150	68
	11-12-96	1000	17	2,540	8.4	5.0	52	--	870	200	90
	01-07-97	1045	1.9	7,020	8.3	.5	140	--	1,900	400	230
	03-11-97	0750	2.2	7,610	8.2	5.0	160	--	2,300	450	280
	05-15-97	1245	28	1,400	8.2	15.0	14	--	430	110	38
	07-10-97	1300	52	1,510	8.2	17.5	23	--	520	130	46
NGTR	02-14-96	1100	.06	3,950	8.5	.5	10	--	1,800	360	210
GL1	07-14-93	1450	5.9	2,190	7.8	18.0	30	--	1,000	290	66
	08-11-93	1325	7.2	2,160	8.0	18.0	24	--	930	270	62
	09-09-93	0830	8.0	2,000	8.0	14.0	26	--	930	270	62

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—*Continued*

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
RD1	07-25-95	140	4.2	161	650	8.0	0.3	12	1,110	86.1	1.5
	08-23-95	120	4.7	177	590	8.2	.4	13	1,020	147	1.4
	09-26-95	160	4.5	182	770	9.7	.3	12	1,290	143	2.2
	10-25-95	110	3.8	154	540	7.8	.3	11	927	190	--
	11-21-95	370	6.0	192	1,300	17	.3	9.6	2,090	61.0	--
	12-11-95	1,100	15	261	4,100	56	.2	8.4	6,150	35.0	--
	01-18-96	1,400	19	386	4,500	72	.4	7.2	6,990	43.4	--
	02-14-96	1,300	16	354	4,500	66	.3	5.7	6,840	42.5	--
	03-13-96	1,300	16	354	4,600	69	.3	5.1	6,900	37.6	--
	04-10-96	98	3.5	129	410	7.3	.3	11	720	79.8	--
	05-20-96	110	4.7	148	510	7.2	.4	13	894	108	--
	06-26-96	130	5.0	162	620	8.2	.4	13	1,060	133	--
	07-22-96	190	6.2	211	920	12	.5	14	1,530	101	--
	08-20-96	130	4.4	182	690	8.6	.4	13	1,170	141	--
	09-16-96	170	5.3	195	800	11	.4	13	1,340	174	--
	10-16-96	190	4.8	193	890	13	.4	12	1,440	137	--
	11-12-96	330	5.9	190	1,300	18	.3	10	2,070	96.6	--
	01-07-97	1,100	16	368	4,300	63	.4	7.8	6,340	32.2	--
	03-11-97	1,300	15	345	4,700	69	.3	6.0	7,030	41.0	--
	05-15-97	129	5.0	147	570	9.6	.3	12	961	71.8	--
	07-10-97	130	4.9	169	600	8.1	.3	13	1,030	146	--
NGTR	02-14-96	410	6.3	260	2,200	30	.4	18	3,390	.55	--
GL1	07-14-93	150	4.6	235	1,000	13	.9	18	1,680	26.6	--
	08-11-93	160	4.9	225	1,000	15	.8	20	1,670	32.5	--
	09-09-93	150	4.0	199	950	12	.7	16	1,580	34.0	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Dis-charge (ft^3/s)	Spe-cific conduct-ance (µS/cm)	pH, (stand-ard units)	Temper-ature (°C)	Sele-nium (µg/L as Se)	Sele-nium, total (µg/L as Se)	Hard-ness (mg/L as $CaCO_3$)	Cal-cium (mg/L as Ca)	Magne-sium (mg/L as Mg)
BFD	07-15-93	1535	64	1,700	8.2	20.5	17	--	730	210	50
	08-11-93	1435	115	1,470	8.1	20.0	11	--	630	180	43
	09-09-93	0945	105	1,480	8.1	14.0	13	--	660	190	46
	09-16-96	1140	133	1,560	8.2	14.5	16	--	660	180	51
	11-12-96	1130	42	1,570	8.5	6.5	10	--	580	160	45
	12-05-96	1225	30	1,370	8.4	3.0	7	--	520	140	41
	01-07-97	0940	4.6	4,320	8.2	1.0	45	--	1,800	490	150
	02-06-97	0915	4.0	4,480	8.2	5.5	44	--	1,900	480	170
	03-11-97	0850	39	674	8.6	3.0	4	--	230	60	19
CFP	07-15-93	1420	4.7	2,490	8.2	20.0	37	--	1,200	330	80
	08-12-93	1320	4.9	2,410	8.2	19.0	28	--	1,100	300	74
	09-10-93	1235	3.9	2,390	8.2	17.5	29	--	1,100	340	72
DCC3	11-21-95	1500	E.20	4,300	8.4	2.5	86	--	2,000	340	270
	02-15-96	0740	E.02	4,790	8.2	.0	62	--	2,200	400	300
DCC1	07-13-93	1120	23	876	8.2	15.0	11	--	290	73	27
	08-12-93	1500	11	1,690	8.0	18.0	15	--	660	160	63
	09-08-93	1350	24	1,070	8.2	15.0	11	--	430	110	38
	12-20-94	0900	2.1	4,510	8.3	.0	43	--	2,100	470	230
	01-19-95	1140	2.0	4,820	7.7	.5	61	--	2,200	450	260
	02-16-95	1050	1.5	4,810	8.3	3.0	48	--	2,100	440	250
	03-15-95	1500	2.7	4,720	8.1	10.0	61	--	2,100	400	260
	04-25-95	0840	8.4	1,420	8.2	6.5	14	--	510	120	52
	05-23-95	0820	9.7	1,520	8.4	10.0	10	--	560	130	58
	06-22-95	1015	8.9	1,450	8.4	14.0	8	--	540	130	53
	07-25-95	1310	9.3	1,480	8.1	17.5	9	13	580	140	57
	08-23-95	0900	17	1,290	8.0	15.5	11	--	480	120	44
	09-26-95	0845	27	1,000	8.4	10.5	8	8	390	94	37
	10-25-95	0845	15	1,340	8.2	6.0	11	--	510	120	52
	11-22-95	0805	2.7	4,250	8.2	4.5	56	--	1,900	410	210

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
BFD	07-15-93	110	4.4	200	750	9.0	0.6	15	1,270	218	--
	08-11-93	90	4.9	176	630	10	.5	17	1,080	337	--
	09-09-93	94	3.5	91	660	8.1	.5	15	1,070	305	--
	09-16-96	110	4.5	188	680	9.5	.5	15	1,160	418	--
	11-12-96	120	3.4	154	670	9.0	.4	13	1,110	127	--
	12-05-96	110	3.2	149	590	8.6	.4	13	996	79.3	--
	01-07-97	570	8.4	307	2,500	35	.7	17	3,960	49.4	--
	02-06-97	540	7.4	284	2,600	37	.7	12	4,020	43.4	--
	03-11-97	47	2.2	107	230	4.5	.3	11	438	46.4	--
CFP	07-15-93	170	4.1	226	1,200	17	1.1	20	1,960	24.6	--
	08-12-93	180	4.2	218	1,200	14	1.0	21	1,920	25.3	--
	09-10-93	170	3.4	203	1,200	13	1.0	20	1,940	20.5	--
DCC3	11-21-95	440	11	247	2,600	23	.3	14	3,850	--	--
	02-15-96	540	12	330	2,900	30	.2	14	4,390	--	--
DCC1	07-13-93	57	2.5	119	320	5.6	.2	15	572	35.7	--
	08-12-93	130	4.6	199	750	11	.4	20	1,260	39.1	--
	09-08-93	70	3.2	132	420	5.5	.3	14	740	47.8	--
	12-20-94	480	8.2	242	2,600	41	.6	18	4,010	22.8	4.0
	01-19-95	530	8.2	275	2,800	51	.5	17	4,300	23.3	4.2
	02-16-95	520	8.5	281	2,800	51	.6	15	4,270	16.7	4.3
	03-15-95	530	8.3	216	2,600	53	.6	14	4,010	29.7	3.9
	04-25-95	120	3.2	155	560	12	.3	9.3	971	21.9	.28
	05-23-95	130	3.8	166	620	12	.4	13	1,070	28.0	.38
	06-22-95	110	4.3	175	600	9.9	.4	16	1,030	24.7	.19
	07-25-95	120	3.6	164	620	9.0	.3	15	1,070	26.7	.41
	08-23-95	81	3.3	163	480	7.5	.4	16	851	38.9	.35
	09-26-95	60	2.5	129	380	5.2	.2	13	671	48.4	.42
	10-25-95	99	3.0	142	560	9.0	.3	12	940	39.4	--
	11-22-95	440	7.8	293	2,400	36	.4	15	3,690	27.0	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
DCC1	12-11-95	0840	2.4	4,470	8.2	2.0	86	--	2,100	430	240
	01-18-96	0910	1.9	4,520	8.4	.0	66	--	2,200	440	260
	02-15-96	0835	3.1	5,280	8.1	1.5	63	--	2,300	430	290
	03-13-96	0920	1.9	4,840	8.1	6.5	70	--	2,100	400	270
	04-10-96	1150	19	955	8.3	9.0	8	--	340	83	33
	05-21-96	0815	7.8	1,510	8.3	11.0	13	--	590	140	59
	06-26-96	0820	20	899	8.2	12.5	6	--	330	86	29
	07-23-96	0820	26	842	8.1	13.0	6	--	320	81	28
	08-21-96	1140	15	1,290	8.3	15.0	10	--	520	130	48
	09-17-96	0925	20	1,170	8.2	11.0	11	--	490	120	46
CD4	03-03-93	0830	8.8	1,670	8.4	1.5	22	--	--	--	--
	03-23-93	0940	16	1,690	8.2	4.0	23	--	--	--	--
	07-13-93	1535	11	1,460	8.3	20.0	19	--	620	140	65
	08-13-93	0730	8.9	1,450	8.2	12.0	14	--	670	160	66
	09-08-93	1630	9.4	1,490	8.3	17.5	17	--	680	160	68
MA2	07-13-93	1430	24	1,560	8.2	17.5	20	--	640	160	58
	08-12-93	1610	25	1,600	7.9	18.0	20	--	680	170	62
	09-08-93	1520	17	1,840	8.0	15.5	33	--	840	210	77
	12-20-94	1030	2.0	4,950	8.1	1.0	130	--	2,400	520	270
	01-19-95	1305	1.5	5,170	7.7	2.0	120	--	2,400	490	290
	02-16-95	0900	2.0	5,570	8.4	1.5	100	--	2,400	460	310
	03-15-95	1420	1.6	5,740	8.2	10.0	100	--	2,400	450	310
	04-25-95	0955	7.1	1,980	8.3	6.5	37	--	770	180	78
	05-23-95	1010	21	1,490	8.3	10.0	19	--	590	140	58
	06-22-95	1130	19	1,600	8.1	13.0	26	--	680	170	61
	07-25-95	1430	20	1,800	7.8	16.0	25	25	820	210	71
	08-23-95	1035	26	1,580	8.0	15.5	19	--	640	160	58
	09-26-95	1030	19	1,740	8.1	10.0	26	28	780	190	73
	10-25-95	1020	14	2,400	8.2	6.0	40	--	1,100	250	110
	11-21-95	1400	3.5	4,640	8.2	6.0	91	--	2,200	480	240

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
DCC1	12-11-95	480	4.2	304	2,600	41	0.4	17	3,990	25.6	--
	01-18-96	520	9.2	319	2,600	49	.6	15	4,090	21.2	--
	02-15-96	700	11	334	3,300	73	.4	14	5,020	42.3	--
	03-13-96	550	9.1	306	2,800	54	.5	12	4,280	22.3	--
	04-10-96	68	3.9	127	370	7.0	.2	9.9	651	32.7	--
	05-21-96	130	24	167	650	11	.4	14	1,130	23.8	--
	06-26-96	54	3.0	124	320	4.7	.3	16	586	31.5	--
	07-23-96	50	2.4	125	300	4.3	.3	14	555	39.4	--
	08-21-96	83	3.4	159	540	7.4	.4	16	924	38.2	--
	09-17-96	73	3.1	148	490	6.8	.3	13	841	46.5	--
CD4	03-03-93	--	--	--	--	--	--	--	--	--	--
	03-23-93	--	--	--	--	--	--	--	--	--	--
	07-13-93	90	5.3	289	540	8.6	.4	23	1,050	30.8	--
	08-13-93	91	5.3	308	540	9.0	.5	23	1,080	25.9	--
	09-08-93	96	5.1	289	530	8.7	.4	23	1,060	27.0	--
MA2	07-13-93	88	5.4	172	690	8.1	.3	15	1,130	72.8	--
	08-12-93	97	5.1	174	720	8.9	.4	15	1,180	79.8	--
	09-08-93	130	5.0	167	860	9.7	.3	13	1,410	65.6	--
	12-20-94	550	11	298	3,000	42	.5	11	4,600	25.1	3.7
	01-19-95	600	11	339	3,100	53	.5	9.4	4,770	20.0	3.7
	02-16-95	660	12	325	3,200	56	.6	8.5	4,920	26.3	3.1
	03-15-95	550	11	248	3,300	65	.6	7.5	4,860	21.4	3.3
	04-25-95	160	5.6	185	920	15	.4	9.2	1,480	28.5	.60
	05-23-95	110	4.4	168	620	10	.4	12	1,060	60.8	.35
	06-22-95	99	4.3	171	710	8.4	.4	14	1,170	59.8	.36
	07-25-95	110	5.6	175	820	8.4	.4	14	1,350	74.6	.88
	08-23-95	91	4.2	173	660	8.5	.4	13	1,100	78.2	.48
	09-26-95	110	4.3	173	800	9.2	.3	12	1,310	65.9	.66
	10-25-95	190	6.0	209	1,200	15	.3	10	1,910	70.5	--
	11-21-95	440	9.6	316	2,700	35	.4	8.9	4,100	38.8	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature (^oC)	Selenium ($\mu g/L$ as Se)	Selenium, total ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
MA2	12-11-95	0940	2.7	4,740	8.1	3.5	110	--	2,300	490	260
	01-18-96	1005	2.2	5,110	8.2	0.0	100	--	2,600	540	310
	02-15-96	1010	2.5	5,630	8.2	2.5	120	--	2,500	480	310
	03-13-96	1015	1.8	5,610	8.2	6.0	95	120	2,500	470	330
	04-10-96	1310	11	1,560	8.2	9.5	18	--	570	130	60
	05-21-96	0910	22	1,320	8.2	10.5	16	--	560	140	51
	06-26-96	0915	23	1,350	7.7	14.0	16	--	620	160	54
	07-23-96	0925	21	1,460	8.0	13.0	17	--	630	160	56
	08-21-96	1245	20	1,550	7.9	15.5	21	--	700	180	60
	09-17-96	1100	27	1,390	8.3	11.5	17	--	600	150	55
	10-16-96	0835	16	2,170	8.4	10.0	30	--	930	220	92
	11-06-96	1130	5.1	4,210	8.2	6.5	77	--	2,000	420	230
	01-08-97	1105	2.5	5,440	8.2	2.5	88	--	2,500	490	310
	03-11-97	1330	2.8	5,640	8.2	8.0	100	--	2,200	410	290
	05-15-97	0810	22	1,320	8.3	10.5	14	--	510	130	46
	07-10-97	0825	31	1,140	8.0	13.0	18	--	500	130	41
CD1	03-03-93	0950	19	2,660	8.3	2.5	42	--	--	--	--
	03-23-93	0840	37	2,350	8.4	5.0	27	--	--	--	--
	07-13-93	0920	162	817	8.1	13.0	7	--	310	81	26
	08-13-93	0940	208	738	8.1	13.5	7	--	300	81	24
	09-08-93	1250	128	942	8.2	14.5	11	--	380	99	32
	11-21-95	1220	18	2,840	8.3	5.0	32	--	1,300	290	130
	12-11-95	1115	18	2,850	8.3	2.5	42	--	1,200	280	130
	02-15-96	1145	16	3,160	8.4	3.5	30	--	1,300	290	150
	03-13-96	0810	15	3,080	8.2	5.5	43	--	1,300	250	160
	04-16-96	0850	151	961	8.5	5.0	10	--	340	78	35
	05-21-96	1100	149	784	8.2	10.0	9	--	310	81	25
	07-23-96	1145	179	725	8.1	14.0	6	--	280	75	22
	08-21-96	0950	191	731	8.3	14.0	7	--	290	78	23
	09-17-96	1220	197	749	8.3	12.0	6	--	300	78	25
	10-16-96	0940	41	1,790	8.3	10.0	14	--	790	200	71

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
MA2	12-11-95	510	10	289	2,900	40	0.4	9.4	4,390	31.8
	01-18-96	630	12	360	3,100	50	.6	9.2	4,870	28.9
	02-15-96	740	12	378	3,000	64	.4	8.6	4,840	32.9
	03-13-96	700	12	362	3,300	60	.6	7.1	5,100	24.5
	04-10-96	120	4.3	156	670	11	.3	11	1,100	32.4
	05-21-96	89	4.4	152	560	7.8	.4	13	957	55.5
	06-26-96	85	3.9	158	580	6.8	.4	13	998	61.4
	07-23-96	86	4.5	166	660	7.2	.4	13	1,090	61.9
	08-21-96	91	4.2	166	710	8.0	.4	12	1,170	64.2
	09-17-96	88	4.1	155	630	8.1	.3	11	1,040	74.7
	10-16-96	170	4.7	196	1,100	15	.4	11	1,730	72.9
	11-06-96	460	8.8	290	2,400	40	.6	9.1	3,740	51.1
	01-08-97	710	12	378	3,300	60	.6	9.1	5,120	35.2
	03-11-97	710	11	323	3,500	67	.5	6.2	5,190	38.9
	05-15-97	93	4.5	148	570	9.1	.3	14	954	56.7
	07-10-97	65	3.6	140	480	5.7	.3	13	824	68.5
CD1	03-03-93	--	--	--	--	--	--	--	--	--
	03-23-93	--	--	--	--	--	--	--	--	--
	07-13-93	43	2.8	67	290	4.4	.3	15	503	219
	08-13-93	39	2.5	120	260	4.1	.3	15	498	279
	09-08-93	55	3.0	143	340	4.9	.3	14	634	219
	11-21-95	250	6.6	243	1,400	22	.4	16	2,260	110
	12-11-95	260	6.6	225	1,400	22	.5	18	2,250	110
	02-15-96	340	7.4	286	1,600	31	.4	18	2,610	110
	03-13-96	310	11	314	1,500	33	.5	16	2,470	98.7
	04-16-96	71	3.5	127	350	8.1	.3	12	634	259
	05-21-96	47	4.8	121	270	5.4	.3	14	520	209
	07-23-96	37	2.6	119	240	3.6	.3	13	465	225
	08-21-96	38	2.5	116	250	3.4	.3	13	478	246
	09-17-96	42	2.6	120	260	4.0	.3	12	496	264
	10-16-96	130	4.6	203	850	12	.4	12	1,400	155

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature ($^{\circ}C$)	Selenium ($\mu g/L$ as Se)	Selenium, total ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
CD1	11-06-96	1000	27	2,600	8.4	5.5	40	--	1,200	270	120
	12-05-96	1020	21	2,930	8.2	.5	39	--	1,400	320	140
	01-08-97	1000	20	2,970	8.4	.0	40	--	1,300	300	130
	03-11-97	1210	19	2,740	8.4	6.5	30	33	1,100	240	120
	05-15-97	0920	92	1,040	8.3	10.5	9	--	400	110	34
	07-10-97	0950	199	652	8.1	12.0	6	--	250	69	20
	08-12-97	0910	180	802	8.3	12.5	9	13	320	85	25
LF1	11-21-95	1550	E.05	11,100	8.5	4.5	1,500	--	2,800	380	440
	02-14-96	1545	.01	10,600	8.3	4.0	1,700	--	2,400	350	370
LZA6	05-14-93	0940	.88	3,040	8.3	11.0	96	--	980	180	130
LZC	07-14-93	0705	7.5	406	8.4	13.0	4	--	150	42	10
	08-13-93	1100	16	443	8.3	15.0	5	--	170	48	11
	09-08-93	1000	3.3	488	7.9	12.5	7	--	170	46	13
LZA5B	07-14-93	0820	8.3	591	8.5	13.5	12	--	200	52	17
	08-13-93	1200	17	552	8.3	15.5	8	--	200	55	15
	09-08-93	1050	5.5	1,190	8.1	14.0	19	--	400	96	40
LZA5	03-02-93	1120	1.4	4,010	8.1	5.0	190	--	--	--	--
	03-23-93	1225	28	1,150	8.3	8.0	21	--	--	--	--
	05-14-93	1050	3.9	472	8.2	11.0	2	--	--	--	--
	10-03-96	0730	--	1,470	8.5	--	26	27	480	120	43
LZA1	03-02-93	1200	9.9	5,480	8.3	5.5	200	--	--	--	--
	03-23-93	1340	41	2,470	8.2	9.5	56	--	--	--	--
	07-14-93	1035	108	1,500	8.1	15.5	27	--	570	150	48
	08-13-93	1415	112	1,590	8.1	17.5	23	--	660	180	50
	09-08-93	0830	109	1,670	8.0	15.0	31	--	690	180	58

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
CD1	11-06-96	240	6.3	279	1,300	23	0.6	16	2,140	157	--
	12-05-96	280	9.0	333	1,600	28	.6	18	2,600	147	--
	01-08-97	270	6.3	322	1,400	26	.6	19	2,350	125	--
	03-11-97	277	8.3	263	1,400	31	.5	14	2,260	114	--
	05-15-97	66	4.4	144	390	7.3	.3	15	711	176	--
	07-10-97	34	2.4	105	210	3.3	.2	13	413	222	--
	08-12-97	48	2.7	116	290	4.8	.3	15	540	262	--
LF1	11-21-95	2100	18	281	5,900	350	.5	3.9	9,360	--	--
	02-14-96	2100	18	303	5,500	330	.5	6.4	8,860	.26	--
LZA6	05-14-93	340	7.2	218	1,400	35	.7	18	2,280	5.41	7.9
LZC	07-14-93	22	1.8	88	110	2.6	.3	13	254	5.17	--
	08-13-93	23	1.9	94	120	2.9	.3	13	276	11.7	--
	09-08-93	34	2.1	96	150	3.3	.2	11	317	2.83	--
LZA5B	07-14-93	42	2.3	111	180	4.6	.2	14	379	8.46	--
	08-13-93	35	2.3	105	160	4.2	.3	13	348	15.8	--
	09-08-93	110	4.0	146	450	10	.3	16	814	12.0	--
LZA5	03-02-93	--	--	--	--	--	--	--	--	--	--
	03-23-93	--	--	--	--	--	--	--	--	--	--
	05-14-93	--	--	--	--	--	--	--	--	--	--
	10-03-96	140	4.3	159	600	14	.3	11	1,030	--	--
LZA1	03-02-93	--	--	--	--	--	--	--	--	--	--
	03-23-93	--	--	--	--	--	--	--	--	--	--
	07-14-93	100	4.8	178	640	9.5	.5	14	1,070	314	--
	08-13-93	110	4.8	177	700	11	.4	15	1,180	354	--
	09-08-93	130	1.2	191	750	12	.4	14	1,260	369	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
LZA1	12-20-94	1250	19	4,720	8.3	0.0	130	--	1,900	410	220
	01-18-95	1100	15	4,530	7.8	.5	150	200	1,800	370	220
	02-15-95	1440	5.3	5,660	8.5	5.0	180	180	2,500	470	310
	03-15-95	1300	9.1	5,770	8.2	9.5	190	180	2,200	420	280
	04-25-95	1150	83	1,350	8.2	8.5	16	--	500	130	42
	05-23-95	1245	99	1,350	8.4	12.5	20	33	500	130	43
	06-22-95	1350	108	1,320	8.2	16.5	23	--	500	130	42
	08-23-95	1240	120	1,500	8.1	19.0	24	24	570	150	47
	07-25-95	1110	129	1,390	8.0	16.0	17	21	580	160	43
	09-26-95	1245	114	1,500	8.3	12.0	27	30	590	150	53
	10-25-95	1220	108	1,510	8.4	7.0	24	32	590	150	53
	11-21-95	1015	24	4,370	8.4	4.0	120	140	1,800	380	20C
	12-11-95	1250	17	4,690	8.3	3.0	180	190	2,000	410	23C
	01-18-96	1230	11	5,380	8.4	.0	180	200	2,400	500	28C
	02-14-96	1410	10	5,720	8.3	4.0	180	200	2,300	460	28C
	03-13-96	1120	11	5,540	8.3	7.5	170	180	2,200	410	29C
	04-10-96	0945	89	1,240	8.2	9.0	24	35	490	130	39
	05-20-96	1035	102	1,430	8.1	13.0	32	37	610	160	50
	06-26-96	1130	96	1,680	8.1	16.5	37	40	720	190	59
	07-22-96	1100	86	1,710	8.3	17.0	39	37	690	180	58
	08-21-96	0755	74	1,920	8.1	17.0	39	39	800	210	67
	09-17-96	1350	95	1,580	8.4	13.5	32	29	610	150	5C
	10-16-96	1120	80	1,750	8.4	10.5	24	33	690	170	64
	11-[illegible]96	0845	26	3,030	8.3	6.0	64	68	1,300	300	13C
	12-05-96	0915	13	5,240	8.3	.5	180	190	2,200	480	25C
	01-07-97	1220	12	5,260	8.3	.0	150	180	2,100	430	24C
	02-06-97	1020	10	5,200	8.3	2.5	160	140	2,000	410	24C
	03-11-97	1100	11	4,780	8.4	4.5	150	140	1,800	390	21C
	04-17-97	0855	62	1,570	8.3	8.0	27	30	610	150	5C
	05-15-97	1125	95	1,460	8.1	13.5	34	33	580	160	4C

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
LZA1	12-20-94	560	11	276	2,600	49	0.5	13	4,070	213	9.8
	01-18-95	540	11	294	2,600	50	.5	14	4,030	160	9.8
	02-15-95	750	14	316	3,200	62	.5	9.1	5,060	72.7	12
	03-15-95	760	13	279	3,100	70	.5	5.9	4,870	119	12
	04-25-95	98	4.1	151	510	11	.4	9.5	902	201	1.4
	05-23-95	100	4.0	149	540	10	.4	11	934	250	1.5
	06-22-95	95	3.9	147	540	8.9	.4	13	927	270	1.3
	08-23-95	100	4.8	173	590	10	.4	13	1,030	333	1.8
	07-25-95	92	4.0	149	580	8.8	.3	12	996	347	1.5
	09-26-95	110	4.2	169	640	11	.3	13	1,090	336	2.0
	10-25-95	120	4.3	170	640	11	.3	11	1,090	318	--
	11-21-95	530	11	300	2,400	43	.3	11	3,760	247	--
	12-11-95	580	11	303	2,600	47	.4	12	4,070	190	--
	01-18-96	720	15	336	3,200	63	.5	8.6	4,990	152	--
	02-14-96	770	15	317	3,300	64	.3	7.6	5,090	141	--
	03-13-96	730	14	308	3,200	65	.4	7.4	4,900	152	--
	04-10-96	89	4.0	138	520	9.9	.4	12	887	213	--
	05-20-96	110	5.5	160	600	11	.4	13	1,050	288	--
	06-26-96	130	5.4	168	740	12	.5	13	1,250	323	--
	07-22-96	120	5.8	189	750	13	.5	14	1,250	292	--
	08-21-96	140	6.0	204	860	14	.5	14	1,430	285	--
	09-17-96	120	5.1	183	690	13	.4	13	1,160	297	--
	10-16-96	150	4.6	184	750	14	.4	12	1,280	274	--
	11-06-96	310	7.3	254	1,600	31	.5	11	2,540	181	--
	12-05-96	660	13	339	3,200	58	.5	9.9	4,870	174	--
	01-07-97	650	12	346	3,100	59	.5	10	4,710	155	--
	02-06-97	590	10	321	3,100	59	.5	8.3	4,610	124	--
	03-11-97	600	11	292	2,900	56	.5	8.6	4,350	125	--
	04-17-97	129	6.0	163	700	14	.4	9.9	1,170	196	--
	05-15-97	99	5.1	163	610	11	.4	13	1,040	267	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
LZA1	06-10-97	1240	164	1,350	8.3	15.0	25	25	510	130	43
	07-10-97	1140	81	1,590	8.2	16.0	30	29	670	180	53
	08-12-97	1100	118	1,520	8.2	15.0	23	26	640	170	53
	09-24-97	0855	92	1,610	8.4	13.0	28	42	630	150	61
GCDD1	03-24-93	0950	.01	8,410	7.9	7.0	73	--	--	--	--
GCDD2	03-02-93	0920	E.15	15,100	8.2	.0	600	--	--	--	--
	03-24-93	1010	.06	15,600	8.4	8.5	520	--	--	--	--
DRY2	03-23-96	1043	52	835	8.1	8.0	4	--	330	88	26
	04-01-96	1230	25	751	8.5	10.5	3	--	320	88	24
	05-09-96	1103	100	655	8.1	11.5	2	--	290	85	19
	06-05-96	1300	13	1,230	8.6	19.0	8	--	610	180	38
	06-28-96	0800	21	1,240	8.2	13.5	6	--	600	180	36
	07-11-96	0917	20	1,270	8.3	15.5	6	--	580	170	37
	07-26-96	1124	15	1,280	8.3	18.0	5	--	640	190	39
	08-29-96	1031	48	1,240	8.1	16.0	5	--	570	170	36
	09-06-96	1148	57	1,250	8.2	16.5	4	--	610	180	38
	10-21-96	1031	220	803	8.2	6.0	2	--	350	100	24
	10-28-96	1015	240	715	8.3	--	2	--	310	91	21
	11-18-96	1108	49	1,570	8.5	7.0	4	--	760	210	56
	12-17-96	1013	33	1,520	8.4	.0	6	--	750	210	55
	01-21-97	1650	30	1,460	8.5	4.0	5	--	700	190	54
	02-25-97	1305	21	1,440	8.5	4.0	4	--	660	170	57
	03-19-97	1120	82	862	8.1	8.0	2	--	400	110	30
	03-25-97	1340	155	726	8.0	6.0	4	--	300	79	26
	04-08-97	0910	75	612	8.2	4.5	1	--	270	76	19
	04-22-97	0840	243	385	8.1	6.0	<1	--	160	44	12
	05-14-97	0930	246	427	8.0	9.5	2	--	180	53	12

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
LZA1	06-10-97	107	5.0	154	570	11	.3	14	975	432	--
	07-10-97	108	5.5	169	700	11	.4	13	1,170	258	--
	08-12-97	114	4.9	173	660	12	.4	15	1,130	360	--
	09-24-97	137	4.6	172	760	15	.4	12	1,250	310	--
GCDD1	03-24-93	--	--	--	--	--	--	--	--	--	18
GCDD2	03-02-93	--	--	--	--	--	--	--	--	--	74
	03-24-93	--	--	--	--	--	--	--	--	--	61
DRY2	03-23-96	42	3.1	148	270	6.4	.4	12	537	80.0	1.2
	04-01-96	36	2.8	141	240	4.7	.4	13	492	34.5	1.1
	05-09-96	23	2.2	115	210	3.9	.4	12	422	119	1.6
	06-05-96	52	2.6	194	440	9.1	.9	17	885	32.3	5.0
	06-28-96	50	2.6	212	450	7.8	.9	20	900	55.0	6.1
	07-11-96	51	2.7	225	450	8.6	1.0	19	887	52.3	6.4
	07-26-96	53	2.5	218	460	7.9	.9	21	939	39.4	5.7
	08-29-96	47	2.7	222	450	5.9	.9	20	882	120	3.9
	09-06-96	46	3.6	228	460	6.7	.9	21	904	143	3.6
	10-21-96	30	2.5	159	250	4.3	.6	15	522	330	1.6
	10-28-96	25	2.1	150	220	3.5	.5	15	465	305	1.4
	11-18-96	70	3.3	211	610	8.5	1.3	22	1,170	156	7.3
	12-17-96	64	2.5	238	580	8.0	1.1	21	1,120	99.5	6.0
	01-21-97	65	2.9	228	550	8.4	1.1	18	1,060	87.9	5.5
	02-25-97	67	3.1	226	550	8.5	1.0	17	1,040	61.0	5.5
	03-19-97	36	3.2	171	290	5.9	.6	12	584	136	1.5
	03-25-97	38	3.0	129	240	6.0	.3	11	479	215	1.1
	04-08-97	23	2.4	127	190	4.1	.4	9.8	405	85.9	.69
	04-22-97	14	2.2	96	100	2.7	.2	8.6	241	171	.50
	05-14-97	14	1.8	114	120	2.4	.3	9.0	266	191	.68

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, (standard units)	Temperature (^oC)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
DRY2	06-10-97	1330	183	733	--	15.0	2	320	93	22	27
	07-07-97	1040	36	1,230	8.4	16.0	6	500	150	30	43
	08-06-97	1100	110	965	8.3	16.0	4	460	140	29	35
	09-09-97	1310	156	923	8.2	16.0	4	440	130	28	34
DRY1	12-13-94	1320	60	1,350	8.4	4.0	3	650	180	48	61
	01-17-95	1315	58	1,230	8.0	3.5	4	580	160	43	53
	02-15-95	1310	56	1,200	8.5	6.0	4	570	160	42	53
	03-08-95	1205	49	1,340	8.5	6.5	5	620	170	47	65
LGW2	07-20-93	0910	9.0	1,890	8.0	14.5	11	900	260	60	100
	08-12-93	1145	6.6	2,110	7.9	16.0	10	1,000	290	71	120
	09-10-93	1110	7.7	1,910	8.0	15.5	9	1,000	310	63	100
LGW1	07-15-93	1235	3.0	1,990	8.0	18.0	12	1,000	310	58	79
CMG1	07-15-93	1130	26	1,780	8.2	17.5	7	920	290	48	61
	08-12-93	1040	85	1,670	8.1	17.0	7	860	270	46	59
	09-10-93	1015	40	1,670	8.2	15.5	7	900	280	49	61
	12-13-94	1140	6.5	2,510	8.2	5.5	7	1,400	430	78	110
	01-17-95	1130	3.8	2,560	7.6	4.0	14	1,400	420	83	120
	02-15-95	0820	3.5	2,620	8.4	2.0	14	1,400	430	83	120
	03-08-95	0800	3.5	2,690	8.3	2.5	10	1,400	430	89	130
SEP1	07-15-93	0835	16	2,090	8.2	15.0	6	1,000	300	70	120
	08-12-93	0855	28	2,110	8.0	16.0	6	990	290	65	130
	09-10-93	0845	20	2,070	8.1	14.0	6	1,000	300	70	130

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
DRY2	06-10-97	2.4	140	240	4.4	0.5	15	495	259	2.0
	07-07-97	2.2	196	450	8.2	.9	15	845	91.6	5.0
	08-06-97	2.8	180	320	5.0	.7	18	661	218	3.0
	09-09-97	2.3	182	300	4.4	.7	18	622	292	2.0
DRY1	12-13-94	3.7	163	530	7.6	.8	17	946	153	--
	01-17-95	2.8	172	460	7.0	.7	16	860	134	3.2
	02-15-95	3.0	168	440	7.2	.8	15	835	126	3.0
	03-08-95	3.7	211	500	8.4	.8	17	954	126	3.6
LGW2	07-20-93	3.7	238	840	11	1.0	21	1,440	34.9	--
	08-12-93	4.6	253	970	15	1.1	23	1,650	29.5	--
	09-10-93	3.8	247	870	12	.9	22	1,530	31.6	--
LGW1	07-15-93	3.7	233	920	10	1.3	21	1,540	12.7	--
CMG1	07-15-93	2.7	237	760	9.2	1.4	24	1,340	95.0	--
	08-12-93	3.0	219	730	9.0	1.3	26	1,280	291	--
	09-10-93	2.3	193	720	8.1	1.1	23	1,260	136	--
	12-13-94	3.1	148	1,300	18	1.6	26	2,110	37.2	12
	01-17-95	2.3	190	1,300	21	1.6	23	2,140	21.7	13
	02-15-95	2.6	180	1,300	23	1.6	17	2,140	20.4	13
	03-08-95	4.2	195	1,400	26	1.6	15	2,270	21.4	13
SEP1	07-15-93	4.1	250	980	8.8	1.1	20	1,650	70.1	--
	08-12-93	4.8	235	1,000	11	1.0	21	1,660	125	--
	09-10-93	3.8	241	1,000	9.1	1.0	20	1,680	88.8	--

Table 7. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams, ditches, and canals in the Uncompahgre Project area, water years 1993–97—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH, (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
RB3	07-15-93	0950	5.1	611	8.5	20.0	<1	190	54	13	48
RB1	07-15-93	0720	45	1,560	8.2	16.0	2	730	200	57	70
	08-12-93	0810	120	1,430	8.1	16.0	3	710	200	50	62
	09-10-93	0750	128	1,350	8.3	14.0	3	690	200	47	51
	12-13-94	0950	31	1,810	8.3	2.5	3	910	240	75	87
	01-17-95	0950	21	1,890	8.0	1.5	4	930	240	80	97
	02-15-95	0950	33	1,950	8.4	2.5	4	910	230	81	110
	03-08-95	0920	24	1,710	8.6	3.5	3	780	200	69	100
AKC	11-24-95	1100	.14	4,140	8.2	.5	18	2,000	390	240	430
	02-14-96	0900	.13	4,210	8.1	.0	21	2,000	400	240	440
WGL	11-24-95	1010	.01	2,670	8.1	1.5	<1	890	190	100	350
	02-14-96	0820	.01	2,380	8.2	.0	<1	810	180	87	300

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
RB3	07-15-93	2.9	155	120	28	0.3	7.5	367	5.01	--
RB1	07-15-93	3.4	229	660	9.3	1.3	18	1,160	142	--
	08-12-93	4.5	221	590	9.3	1.0	23	1,070	347	--
	09-10-93	2.9	248	530	6.2	1.0	22	1,010	349	--
	12-13-94	3.7	212	790	15	1.4	23	1,360	115	--
	01-17-95	3.1	207	850	18	1.4	22	1,470	82.0	7.2
	02-15-95	3.3	184	860	21	1.4	21	1,470	131	6.9
	03-08-95	5.3	206	710	19	1.2	18	1,270	81.3	5.4
AKC	11-24-95	3.6	312	2,400	58	.3	23	3,730	1.41	--
	02-14-96	1.7	352	2,400	58	.5	21	3,770	1.32	--
WGL	11-24-95	3.3	331	1,200	31	.5	30	2,100	.07	--
	02-14-96	3.0	357	990	25	.5	28	1,830	.05	--

Table 8. *Trace-element data for tributary streams in the Uncompahgre Project, August 1997*

[Sites on pl. 1; totals are concentrations in unfiltered samples; concentrations in micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Arsenic, total	Arsenic, dissolved	Beryllium, total	Beryllium, dissolved	Cadmium, total	Cadmium, dissolved	Chromium, total
CD1	08-12-97	0910	4	<1	<10	<0.5	3	<1	24
LZA1	08-12-97	1100	2	1	<10	<.5	<1	<1	5

Site code	Date	Chromium, dissolved	Copper, total	Copper, dissolved	Iron, total	Iron, dissolved	Lead, total	Lead, dissolved	Manganese, total
CD1	08-12-97	<1	36	1	35,000	<3	44	<1	600
LZA1	08-12-97	<1	7	2	4,900	4	7	<1	100

Site code	Date	Manganese, dissolved	Mercury, total	Mercury, dissolved	Nickel, total	Nickel, dissolved	Vanadium, dissolved	Zinc, total	Zinc, dissolved
CD1	08-12-97	9.5	<0.1	<0.1	47	2	3	180	6
LZA1	08-12-97	13	<.1	<.1	10	3	4	40	4

Table 9. Dissolved iron and manganese data for site DRY2 on Dry Creek, Uncompahgre Project, water years 1996–97

[Site DRY2 on pl. 1; concentrations in micrograms per liter; <, less than]

Date	Time	Iron	Manganese	Date	Time	Iron	Manganese
10-26-95	1055	<3	37	10-28-96	1015	<3	20
11-29-95	1051	18	46	11-18-96	1108	7	74
01-16-96	1342	4	84	12-17-96	1013	<3	93
02-06-96	1325	6	92	01-21-97	1650	8	79
03-07-96	1257	8	120	02-25-97	1305	15	110
03-23-96	1043	<3	97	03-19-97	1120	<3	92
04-01-96	1230	<3	53	03-25-97	1340	5	56
05-09-96	1103	16	30	04-08-97	0910	<3	30
06-05-96	1300	4	49	04-22-97	0840	19	18
06-28-96	0800	6	52	05-14-97	0930	26	17
07-11-96	0917	4	39	06-10-97	1330	4	17
07-26-96	1124	8	52	07-07-97	1040	<3	44
08-29-96	1031	<3	67	08-06-97	1100	<3	62
09-06-96	1148	<3	68	09-09-97	1310	<3	30
10-21-96	1031	<3	22				

Table 10. Selenium concentrations in bottom-sediment samples from tributary streams in the Uncompahgre Project, July 1995

[Sites on pl. 1; concentrations in micrograms per gram]

Site	Sample description	Date of sample	Selenium concentration
RD1	Stream sediments in pool by trestle. Primarily sand.	07-25-95	5.1
DCC1	Stream sediments at water-sampling site. Mostly sand with some silt.	07-25-95	5.2
MA2	Stream sediments collected along left bank. Silt, sand, and clay.	07-25-95	24
LZA1	Stream sediments from pooled area below culvert. Mostly sand.	07-25-95	5.1

Table 11. Dry-weight selenium concentrations in aquatic-invertebrate and fish-tissue samples collected from tributary streams in the Uncompahgre Project, water years 1995–97

[--, no data]

Site code (pl. 1)	Matrix	Species	Date (month-day-year)	Average length, (millimeters)	Percent moisture	Selenium, (micrograms per gram)
RD1	Aquatic invertebrate	Crayfish	03-15-95	64	71.8	6.5
	Aquatic invertebrate	Invertebrates	03-14-96	--	74.0	12
	Aquatic invertebrate	Invertebrates	03-11-97	--	90.2	11
	Whole body	White sucker	08-02-95	359	70.9	17
	Whole body	White sucker	08-02-95	190	74.6	4.2
	Whole body	White sucker	03-14-96	280	75.9	17.5
	Whole body	White sucker	03-14-96	158	76.7	4.6
	Whole body	White sucker	03-11-97	240	74.5	7.5
	Whole body	White sucker	03-11-97	199	74.9	4.9
	Whole body	Bluehead sucker	03-15-95	128	74.1	8.4
	Whole body	Bluehead sucker	03-14-96	101	73.5	4.5
	Whole body	Bluehead sucker	03-11-97	138	74.1	4.3
	Whole body	Bluehead sucker	03-11-97	208	71.9	5.0
	Whole body	Fathead minnow	03-11-97	65	76	16
	Whole body	Speckled dace	03-15-95	53	75.4	11
	Whole body	Speckled dace	08-02-95	94	71.4	13
	Whole body	Speckled dace	03-14-96	73	74.7	8.5
	Whole body	Green sunfish	08-02-95	93	75.7	18
	Whole body	Green sunfish	03-11-97	93	77.1	20
	Whole body	Mottled sculpin	03-14-96	50	71.8	14
DCC1	Whole body	White sucker	08-02-95	231	75.2	13
	Whole body	White sucker	03-13-96	196	78.3	18
	Whole body	Bluehead sucker	03-16-95	258	75.9	14
	Whole body	Bluehead sucker	08-02-95	226	77.4	14
	Whole body	Bluehead sucker	03-13-96	256	73.4	10
MA2	Aquatic invertebrate	Invertebrates	03-13-96	--	76.4	16
	Aquatic invertebrate	Invertebrates	03-11-97	--	89.0	20
	Aquatic invertebrate	Crayfish	03-11-97	--	75.2	9.3
	Whole body	Suckers—mixed species	08-02-95	244	77.1	21
	Whole body	Flannelmouth sucker	03-11-97	455	76.1	25
	Whole body	Bluehead sucker	03-16-95	305	72.4	19
	Whole body	Bluehead sucker	03-16-95	242	76.9	28
	Whole body	Bluehead sucker	03-13-96	247	75.7	20
MA2	Whole body	White sucker	03-13-96	284	78.2	25

Table 11. Dry-weight selenium concentrations in aquatic-invertebrate and fish-tissue samples collected from tributary streams in the Uncompahgre Project, water years 1995–97—Continued

Site code (pl. 1)	Matrix	Species	Date (month-day-year)	Average length, (millimeters)	Percent moisture	Selenium, (micrograms per gram)
	Whole body	White sucker	03-11-97	180	77.6	29
	Whole body	Fathead minnow	03-16-95	55	77.5	29
	Whole body	Fathead minnow	08-02-95	70	78.1	50
	Whole body	Fathead minnow	03-13-96	65	76.2	32
	Whole body	Fathead minnow	03-11-97	61	76.5	28
LZA1	Aquatic invertebrate	Invertebrates	03-13-96	--	77.1	19
	Aquatic invertebrate	Invertebrates	03-11-97	--	76.1	45
	Aquatic invertebrate	Crayfish	03-11-97	--	71.0	9.5
	Whole body	Bluehead sucker	03-13-96	266	70.1	17
	Whole body	Bluehead sucker	03-11-97	169	73.0	23
	Whole body	White sucker	03-13-96	299	72.5	15
	Whole body	Speckled dace	03-13-96	115	70.4	31
	Whole body	Speckled dace	03-13-96	115	74.6	34
	Whole body	Brown trout	03-13-96	242	78.4	39

Table 12. List of sampling sites and types of data collected for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through December 1997

[Sites MKP through WVF2 are on pl.1 and sites WWB1, LG1, and LG2 are on pl. 2; Cheney Reservoir (sites CHY1 and CHY2) is located about 6 miles south-southwest of Juniata Reservoir on pl. 2; X, data type collected; --, data type not collected]

Site code	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sedi-ment	Biota
		SITES IN THE UNCOMPAHGRE RIVER BASIN			
MKP	383337107555101	Markley Pond near Olathe	X	X	X
OV1	384137108011401	Drainage ditch near Highway 50, Overholt wetlands	X	--	--
OV2	384140108013601	Drainage ditch #2 at Overholt wetlands	X	--	--
OV3	384145108014401	Pond at Overholt wetlands	X	X	X
OV4	384148108014401	North pond area at Overholt wetlands	X	X	X
SWLSE	384244108012301	Slough at southeast corner of Sweitzer Lake	X	X	X
		SITES IN THE UNCOMPAHGRE PROJECT AREA, EXCLUDING THE UNCOMPAHGRE RIVER BASIN			
FRP	384743107533801	Ferriers Pond near Austin	X	X	X
JP1	384528108050401	Slough on Parker bottomland area	X	X	X
JP2	384532108045401	Pond #2, bird site, Parker bottomland area	X	X	X
JP3	384527108050401	Gunnison River backwater at Parker bottomland area	X	--	X
DSP1	384521108055001	East pool at Delta sewer plant bottomland area	X	X	--
DSP2	384522108055201	Mud flat pool, Delta sewer plant bottomland area	X	X	--
DSP3	384517108055901	Pool #3 at Delta sewer plant bottomland area	X	X	X
DSP4	384520108060201	Drainage ditch at Delta sewer plant bottomland area	X	--	--
JS2	384456108073501	Upper pool at G50 Road, Johnson bottomland area	X	X	X
JS3	384436108072401	Gunnison River backwater at Johnson bottomland area	X	--	X
JS1	384434108074301	Lower pool at Johnson bottomland area	X	X	X
JS1B	384434108074302	Lower pool, site 2, Johnson bottomland area	X	--	--
ESC1	384449108083301	Isolated pool along G50 Road at Escalante State Wildlife Area	X	X	--
ESC2	384437108085801	Gunnison River backwater at Escalante State Wildlife Area	X	--	X
WVF3	384425108084001	Drainage ditch at Westervelt bottomland area	X	--	--
WVF1	384427108084601	Pond at outflow of drainage ditch, Westervelt bottomland area	X	X	X
WVF2	384427108084501	Pond #2 at Westervelt bottomland area	X	X	X
CHY1	385308108191901	Cheney Reservoir	X	X	X
CHY2	385306108190701	Cheney Reservoir near inflow	X	X	--
WWB1	385912108273601	Gravel pit near Whitewater (Craig property)	X	X	--
LG1	390130108315401	Lower Gunnison River backwater, beaver dam site	X	--	X
LG2	390152108321701	Lower Gunnison River backwater, island site	X	--	X

Table 13. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through December 1997

[All sites on pl. 1, except sites WWB1, LG1, and LG2, which are on pl. 2, and Cheney Reservoir (sites CHY1 and CHY2), which is about 6 miles south-southwest of Juniata Reservoir on pl. 1; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; E, estimated; <, less than]

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance, (µS/cm)	pH (standard units)	Temperature, (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
				SITES WITHIN THE UNCOMPAHGRE PROJECT						
MKP	04-13-95	1245	--	6,460	8.2	12.0	10.8	125	8	--
	06-14-95	1400	--	3,140	9.1	20.0	14.0	191	3	--
	06-05-96	0920	--	2,290	8.3	20.0	13.2	182	4	4
OV1	02-29-96	1130	0.50	2,850	8.2	10.5	--	--	71	--
OV2	02-29-96	1210	E.10	4,050	7.7	4.5	--	--	26	--
OV3	02-29-96	1230	--	3,110	7.9	6.5	9.6	95	59	--
	06-05-96	1055	--	2,900	7.9	20.5	5.9	80	47	51
OV4	06-05-96	1120	--	1,600	7.9	15.0	6.8	82	22	15
SWLSE	04-13-95	1050	--	7,140	7.6	15.0	4.7	57	5	--
	06-14-95	1140	--	1,430	7.9	18.5	6.9	89	24	--
				SITES OUTSIDE THE UNCOMPAHGRE PROJECT						
FRP	06-05-96	1320	--	2,670	8.4	21.0	11.1	152	15	18
JP1	03-15-95	0940	--	1,490	7.7	8.0	2.4	24	2	--
	06-14-95	0945	--	217	7.9	12.0	8.1	90	<1	--
	06-14-95	1030	--	339	8.2	16.0	--	--	<1	--
	08-10-95	0930	--	1,220	7.4	16.5	2.0	25	<2	<2
	08-26-97	1000	--	1,110	7.9	--	--	--	2	--
JP2	04-13-95	0930	--	1,180	8.2	12.0	3.9	43	<1	--
	06-14-95	0915	--	1,110	7.5	20.0	3.6	48	<1	--
JP3	08-26-97	1200	--	960	8.0	--	--	--	3	--
DSP1	10-22-97	1400	--	4,290	8.1	13.0	8.6	99	160	--
DSP2	10-22-97	1420	--	5,310	8.6	17.5	--	--	110	--

Table 13. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through December 1997—Continued

Site code	Date	Time	Specific conductance, (µS/cm)	pH (standard units)	Temperature, (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
SITES OUTSIDE THE UNCOMPAHGRE PROJECT--CONTINUED									
DSP3	10-22-97	1450	4,520	8.0	15.0	7.1	86	160	--
DSP4	10-22-97	1510	1,030	8.3	12.0	--	--	5	--
JS2	12-12-95	1130	812	9.6	5.5	12.7	121	4	--
JS3	07-16-97	1100	1,140	8.0	--	--	--	5	--
JS1	12-12-95	1020	2,300	8.1	5.0	7.5	70	1	--
	08-27-97	1030	1,200	8.0	--	--	--	4	--
JS1B	08-27-97	1100	1,440	8.2	--	--	--	5	--
ESC1	03-15-95	0905	4,080	7.6	9.0	--	--	16	--
ESC2	07-16-97	1400	601	8.1	--	--	--	3	--
WVF3	10-22-97	1300	2,550	8.1	9.0	--	--	9	--
WVF1	10-22-97	1140	2,580	7.3	8.5	5.8	60	7	--
WVF2	10-22-97	1220	2,090	7.3	9.0	4.4	46	4	--
CHY1	03-12-96	1530	806	8.4	12.5	8.8	101	<1	--
	07-07-97	1030	264	9.0	20.0	8.3	111	1	--
CHY2	07-07-97	1115	267	9.0	20.0	--	--	<1	--
WWB1	05-21-97	1345	1,270	8.4	19.5	9.1	118	<1	--
LG1	08-28-97	1130	894	8.5	--	--	--	5	--
LG2	08-29-97	1300	908	8.4	--	--	--	6	--

Table 14. Major-ion and dissolved-solids data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through December 1997

[All sites on pl. 1, except site WWB1, which is on pl. 2, and Cheney Reservoir (sites CHY1 and CHY2), which is about 6 miles south-southwest of Juniata Reservoir on pl. 2; all concentrations are for dissolved constituents; mg/L, milligrams per liter; --, no data]

Site code	Date	Time	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)
			SITES WITHIN THE UNCOMPAHGRE PROJECT					
MKP	04-13-95	1245	2,600	400	390	770	21	270
	06-14-95	1400	1,100	130	190	370	9.8	67
OV1	02-29-96	1130	1,400	370	110	200	3.2	254
OV2	02-29-96	1210	1,900	450	200	370	5.8	381
SWLSE	04-13-95	1050	1,900	330	250	1,200	14	366
	06-14-95	1140	530	140	44	110	4.4	163
			SITES OUTSIDE THE UNCOMPAHGRE PROJECT					
JP2	04-13-95	0930	480	110	49	77	6.0	241
	06-14-95	0915	450	99	50	79	5.7	246
DSP1	10-22-97	1400	1,600	560	48	540	20	90
DSP2	10-22-97	1420	1,900	640	61	680	22	63
DSP3	10-22-97	1450	1,700	570	57	550	21	139
DSP4	10-22-97	1510	420	100	40	57	8.1	159
WVF3	10-22-97	1300	1,300	370	94	210	4.6	211
WVF1	10-22-97	1140	1,400	390	98	171	5.5	305
WVF2	10-22-97	1220	1,100	330	78	125	5.6	320
CHY1	03-12-96	1530	350	98	25	35	7.3	150
	07-07-97	1030	100	27	9.0	11	2.9	89
WWB1	5-21-97	1345	470	110	50	108	6.6	170

Table 14. Major-ion and dissolved-solids data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through December 1997—Continued

Site code	Date	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load, (tons per day)
		SITES WITHIN THE UNCOMPAHGRE PROJECT--CONTINUED					
MKP	04-13-95	3,900	55	0.5	0.60	5,700	--
	06-14-95	1,700	20	.4	9.1	2,470	--
OV1	02-29-96	1,400	20	.7	20	2,280	3.07
OV2	02-29-96	2,300	38	.5	14	3,610	--
SWLSE	04-13-95	3,900	61	.5	9.7	5,980	--
	06-14-95	570	11	.4	14	992	--
		SITES OUTSIDE THE UNCOMPAHGRE PROJECT--CONTINUED					
JP2	04-13-95	360	13	.3	4.7	765	--
	06-14-95	340	11	.3	21	754	--
DSP1	10-22-97	2,300	76	.4	1.9	3,620	--
DSP2	10-22-97	3,200	99	.3	3.2	4,740	--
DSP3	10-22-97	2,500	83	.3	5.3	3,910	--
DSP4	10-22-97	380	7.3	.4	17	708	--
WVF3	10-22-97	1,400	12	.9	16	2,250	--
WVF1	10-22-97	1,400	15	1.0	19	2,290	--
WVF2	10-22-97	1,000	13	1.1	22	1,800	--
CHY1	03-12-96	260	9.3	.3	.4	525	--
	07-07-97	40	1.9	.2	8.0	153	--
WWB1	05-21-97	500	18	.5	9.5	896	--

Table 15. Dissolved trace-element data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, July-October 1997

[All sites on pl. 1, except sites LG1 and LG2, which are on pl. 2; concentrations in micrograms per liter; <, less than; --, no data]

Site code	Date	Time	Aluminum, dissolved	Antimony, dissolved	Arsenic, dissolved	Barium, dissolved	Beryllium, dissolved	Boron, dissolved	Cadmium, dissolved
JP1	08-26-97	1000	4	<1	<1	38	<1	117	<1
JP3	08-26-97	1200	2	<1	2	76	<1	98	<1
DSP4	10-22-97	1510	<5	--	1	--	--	126	<1
JS3	07-16-97	1100	--	--	2	50	--	--	<1
JS1	08-27-97	1030	2	<1	1	54	<1	129	<1
JS1B	08-27-97	1100	--	--	--	--	--	153	--
ESC2	07-16-97	1400	--	--	1	41	--	--	<1
WVF3	10-22-97	1300	<5	--	<1	--	--	239	<1
WVF2	10-22-97	1220	<5	--	<1	--	--	283	<1
LG1	08-28-97	1130	4	<1	1	45	<1	90	<1
LG2	08-29-97	1300	3	<1	2	88	<1	99	<1

Table 15. Dissolved trace-element data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, July-October 1997—Continued

Site code	Date	Chromium, dissolved	Cobalt, dissolved	Copper, dissolved	Iron, dissolved	Lead, dissolved	Manganese, dissolved	Mercury, dissolved
JP1	08-26-97	3	<1	2	8	<1	95	<0.1
JP3	08-26-97	2	<1	2	7	<1	239	<.1
DSP4	10-22-97	<1	--	1	5	<1	5	<.1
JS3	07-16-97	<1	--	1	4	<1	63	<.1
JS1	08-27-97	2	<1	2	5	<1	49	<.1
JS1B	08-27-97	--	--	--	--	--	--	--
ESC2	07-16-97	<1	--	1	5	<1	22	<.1
WVF3	10-22-97	<1	--	<1	<9	<1	23	<.1
WVF2	10-22-97	<1	--	<1	<9	<1	789	<.1
LG1	08-28-97	<1	<1	2	<3	<1	14	<.1
LG2	08-29-97	1	<1	2	<3	<1	146	<.1

Table 15. Dissolved-trace element data for sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, July–October 1997—Continued

Site code	Date	Molybdenum, dissolved	Nickel, dissolved	Silver, dissolved	Uranium, dissolved	Vanadium, dissolved	Zinc, dissolved
JP1	08-26-97	2	2	<1	2.8	1	9
JP3	08-26-97	3	2	<1	4.1	2	2
DSP4	10-22-97	4	1	--	--	3	<3
JS3	07-16-97	--	--	<1	--	--	8
JS1	08-27-97	5	3	<1	7.9	3	18
JS1B	08-27-97	--	--	--	--	--	13
ESC2	07-16-97	--	--	<1	--	--	<3
WVF3	10-22-97	5	5	--	--	<1	33
WVF2	10-22-97	5	2	--	--	<1	<9
LG1	08-28-97	3	2	<1	5.6	2	2
LG2	08-29-97	4	2	<1	5.4	2	2

Table 16. Selenium concentrations in bottom-sediment and other samples collected at sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through October 1997

[Sites on pl. 1, except site WWB1, which is on pl. 2, and Cheney Reservoir (sites CHY1 and CHY2), which is about 6 miles south-southwest of Juniata Reservoir on pl. 2; selenium concentrations in micrograms per gram; all selenium analyses by the Branch of Geochemistry laboratory except samples coded with NWQL, which were analyzed by the National Water Quality Laboratory in Arvada, Colorado. Selenium results from the two laboratories are not equivalent because different acid-digestion methods are used by the two laboratories]

Site code	Sample description	Date of sample	Selenium concentration
	SITES WITHIN THE UNCOMPAHGRE PROJECT		
MKP	Bottom sediment near north shore of pond.	04-13-95	14
MKP	Bottom sediment near cattails along west side.	04-13-95	43
MKP	Bottom sediment about 100 feet from southwest shore.	06-14-95	21
MKP	Bottom sediment near cattails, southwest-west shore area.	06-14-95	4.5
MKP	Bottom sediment, east center of pond. Strong odor.	06-05-96	40
MKP	Bottom sediment, cattail area near southwest side. Silty clay.	06-05-96	21
OV3	Bottom sediment near the inflow end. NWQL analysis.	02-29-96	11
OV3	Bottom sediment at nest site LW3. Sandy silt and clay.	06-05-96	29
OV4	Bottom sediment near nest site LW8. Silty clay.	06-05-96	23
SWLSE	Bottom sediment, slough at southeast corner of Sweitzer Lake.	04-13-95	23
SWLSE	Bottom sediment from cattail area, slough area.	04-13-95	31
SWLSE	Salt crust near the slough area.	04-13-95	1.1
SWLSE	Bottom sediment from the slough area.	06-14-95	31
SWLSE	Salt crust near the slough.	06-14-95	26
	SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN		
FRP	Bottom sediment, site "A", southwest cattail area. Sandy silt and clay.	06-05-96	63
FRP	Bottom sediment, site "B", west-central area about 150 feet from shore. Sandy silt, some clay.	06-05-96	41
FRP	Bottom sediment, site "C", southwest corner, about 100 feet from bank. Sandy silt, clay. Has odor.	06-05-96	64

Table 16. Selenium concentrations in bottom-sediment and other samples collected at sites associated with ponds and with backwater and bottomland areas in the Uncompahgre Project area, water year 1995 through October, 1997—Continued

Site code	Sample description	Date of sample	Selenium concentration
	SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN--CONTINUED		
JP1	Bottom sediment, slough by corrals.	03-15-95	3.5
JP1	Bottom sediment, slough by corrals.	06-14-95	3.6
JP1	Bottom sediment, lower pool by corrals.	08-10-95	2.8
JP2	Bottom sediment, near middle of pond.	04-13-95	1.9
JP2	Bottom sediment near cattail area.	04-13-95	3.0
JP2	Bottom sediment, near middle of pond.	06-14-95	1.8
JP2	Bottom sediment near cattails.	06-14-95	8.3
DSP1	Bottom sediment, southwest corner of pool. Unconsolidated muck.	10-22-97	3.1
DSP2	Bottom sediment from south side of remnant pool. Unconsolidated muck over firm clay layer.	10-22-97	3.1
DSP3	Bottom sediment from small pool. Unconsolidated sediment over a firm clay bottom.	10-22-97	3.4
JS2	Bottom sediment from the pool upstream from G50 Road. Mostly tan clay sediment. NWQL analysis.	12-12-95	4
JS1	Bottom sediment from lower pool of slough area. Black mud. NWQL analysis.	12-12-95	4
ESC1	Bottom sediment from pool by road.	03-15-95	3.5
WVF1	Bottom sediment, just below outflow from drainage ditch. Mostly sand.	10-22-97	.84
WVF2	Bottom sediment, second pool. Sample mostly sand.	10-22-97	.46
CHY1	Bottom sediment from the east-center area. Clay, silt, some gravel. NWQL analysis.	03-12-96	2
CHY1	Bottom sediment, near midlake.	07-07-97	2.4
CHY2	Bottom sediment from near the inflow into reservoir.	07-07-97	2.3
WWB1	Bottom sediment, site "A," near boat ramp area.	05-21-97	.30
WWB1	Bottom sediment, site "B," in vegetated area to west of site "A."	05-21-97	.41

Table 17. Selected inorganic-element concentrations in bottom-sediment samples collected at sites associated with two bottomland areas in the Uncompahgre Project area, October 1997

[Samples collected October 22, 1997; sites on pl. 1; %, percent; µg/g, micrograms per gram; <, less than]

Element	Concentration				
	Site DSP1	Site DSP2	Site DSP3	Site WVF1	Site WVF2
Aluminum (%)	7.4	6.4	6.9	6.1	5.7
Calcium (%)	6.1	6.1	5.9	2.4	2.0
Iron (%)	2.9	2.7	2.7	2.7	2.0
Magnesium (%)	2.2	2.1	2.0	.60	.44
Phosphorus (%)	.11	.11	.11	.08	.06
Potassium (%)	2.2	1.9	2.1	2.2	2.2
Sodium (%)	.49	.53	.51	1.7	1.5
Titanium (%)	.31	.27	.29	.26	.19
Arsenic (µg/g)	11	11	10	4.6	3.7
Barium (µg/g)	410	420	410	800	810
Beryllium (µg/g)	2	1	2	1	1
Bismuth (µg/g)	<10	<10	<10	<10	<10
Cadmium (µg/g)	<2	<2	<2	<2	<2
Cesium (µg/g)	59	55	59	59	48
Chromium (µg/g)	89	77	84	19	13
Cobalt (µg/g)	7	7	7	7	4
Copper (µg/g)	27	27	26	14	8
Lanthanum (µg/g)	37	34	35	35	29
Lead (µg/g)	22	21	21	29	18
Lithium (µg/g)	52	44	47	17	14
Manganese (µg/g)	250	250	270	430	330
Mercury (µg/g)	.04	.04	.04	<.02	<.02
Molybdenum (µg/g)	5	4	4	<2	<2
Nickel (µg/g)	34	32	33	10	8
Selenium (µg/g)	3.1	3.1	3.4	.84	.46
Silver (µg/g)	<2	<2	<2	<2	<2
Strontium (µg/g)	220	240	240	430	360
Tin (µg/g)	<5	<5	<5	<5	<5
Vanadium (µg/g)	200	170	200	70	48
Yttrium (µg/g)	24	22	22	17	15
Zinc (µg/g)	120	120	120	83	53

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997

[Sites on pl. 1, except sites LG1 and LG2, which are on pl. 2, and site CHY1, which is about 6 miles south-southwest of Juniata Reservoir on pl. 2; --, no data; <, less than]

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
		SITES WITHIN THE UNCOMPAHGRE PROJECT				
MKP	Aquatic plant	Filamentous algae	06-14-95	--	90.2	2.0
	Aquatic plant	Ceratophyllum	04-13-95	--	73.2	10.7
	Aquatic plant	Ceratophyllum	06-14-95	--	86.5	4.1
	Aquatic plant	Typha stem	04-13-95	--	88.5	1.3
	Aquatic plant	Typha	06-14-95	--	93.5	2.1
	Aquatic invertebrate	Invertebrates	04-13-95	--	77.3	21
	Aquatic invertebrate	Invertebrates	06-04-96	--	86.6	28
	Fish, whole body	Fathead minnow	06-14-95	80	79.5	29
	Fish, whole body	Fathead minnow	06-14-95	70	77.7	32
	Fish, whole body	Fathead minnow	06-04-96	76	79.5	38
	Fish, whole body	Fathead minnow	06-04-96	60	77.1	35
	Fish, whole body	Fathead minnow	06-04-96	73	78.2	40
	Fish, whole body	Green sunfish	06-14-95	165	74.4	29
	Fish, whole body	Green sunfish	06-14-95	142	74.8	20.7
	Fish fillet	Green sunfish	06-14-95	192	79.1	25
	Fish eggs	Green sunfish	06-14-95	--	65.7	46
	Fish, whole body	Green sunfish	06-04-96	178	76.8	30
	Amphibian, whole body	Leopard frog, tadpole	05-31-95	--	87.5	41
	Amphibian, whole body	Leopard frog, adult	05-31-95	--	76.8	11.1
	Bird liver	Mallard duckling	06-14-95	--	72.0	39
	Bird liver	Mallard duckling	06-14-95	--	70.7	50
	Bird eggs	American coot	05-31-95	--	74.6	18.8
	Bird eggs	American coot	06-16-97	--	76.8	11
	Bird eggs	American coot	06-16-97	--	76.4	11
	Bird eggs	American coot	06-16-97	--	74.4	10.4
	Bird eggs	American coot	06-16-97	--	73.9	11.3
	Bird eggs	American coot	06-25-97	--	74.9	14
	Bird eggs	American coot	06-25-97	--	75.4	14
OV3	Aquatic invertebrate	Invertebrate	06-04-96	--	82.8	21
	Aquatic invertebrate	Crayfish	06-04-96	--	81.2	10

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
		SITES WITHIN THE UNCOMPAHGRE PROJECT—Continued				
OV3	Amphibian, whole body.	Tadpole	06-04-96	--	89.1	17
	Fish, whole body	Fathead minnow	06-04-96	64	75.4	15
	Fish, whole body	Fathead minnow	06-04-96	58	75.6	13
OV4	Aquatic invertebrate	Invertebrates	06-04-96	--	88.4	23
	Aquatic invertebrate	Crayfish	06-04-96	--	75.7	17
	Fish, whole body	Fathead minnow	06-04-96	75	79.1	28
	Fish, whole body	Fathead minnow	06-04-96	63	74.3	25
	Fish, whole body	Fathead minnow	06-04-96	72	78.3	28
	Fish, whole body	Green sunfish	06-04-96	30	75.3	16
	Bird eggs	Cinnamon teal	05-24-96	--	69.8	11.6
	Bird eggs	Cinnamon teal	05-24-96	--	65.4	9.4
	Bird eggs	Cinnamon teal	05-24-96	--	48.1	6.2
	Bird liver	Cinnamon teal	05-24-96	--	69.2	24
	Bird liver	Cinnamon teal	06-11-96	--	77.5	82
	Bird eggs	Mallard	06-14-96	--	80.9	3.1
	Bird eggs	Mallard	06-14-96	--	81.4	3.2
SWLSE	Aquatic plant	Filamentous algae	06-14-95	--	74.0	11
	Aquatic plant	Typha stem	04-13-95	--	90.5	5.5
	Aquatic invertebrate	Invertebrates	04-13-95	--	80.7	26
	Aquatic invertebrate	Invertebrates	06-14-95	--	80.0	21
	Aquatic invertebrate	Crayfish	06-14-95	100	76.2	12
	Aquatic invertebrate	Crayfish	06-14-95	--	69.1	8.9
	Fish, whole body	Fathead minnow	06-14-95	75	76.4	62
	Fish, whole body	Fathead minnow	06-14-95	50	75.5	31
	Fish, whole body	Plains killifish	04-13-95	61	76.0	42
	Fish, whole body	Plains killifish	06-14-95	70	76.6	40.7
	Fish, whole body	Black bullhead	06-14-95	175	78.3	29
	Fish, whole body	Leopard frog	06-5-95	--	78.6	10.3
	Bird eggs	American avocet	06-14-95	--	75.5	24.6
	Bird eggs	American avocet	06-14-95	--	75.7	22.8
	Bird eggs	American avocet	06-14-95	--	74.3	26.1

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
		SITES WITHIN THE UNCOMPAHGRE PROJECT—Continued				
SWLSE	Bird eggs	American avocet	06-14-95	--	74.4	31
	Bird eggs	American avocet	06-14-95	--	74.5	32
	Bird eggs	American avocet	06-14-95	--	74.7	27.3
	Bird eggs	American avocet	06-14-95	--	73.4	30
	Bird eggs	American avocet	06-14-95	--	74.2	23.4
	Bird, whole body	Mallard duckling	06-14-95	--	76.4	20
		SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN				
FRP	Aquatic invertebrate	Invertebrates	06-04-96	--	79.2	47
	Aquatic invertebrate	Crayfish	06-04-96	--	72.6	17
	Fish, whole body	Fathead minnow	06-04-96	67	79.6	83.3
	Fish, whole body	Fathead minnow	06-04-96	61	75.1	54
	Fish, whole body	Fathead minnow	06-04-96	61	76.5	63
	Amphibian, whole body	Tadpoles	06-04-96	--	89.7	37
	Bird, whole body	American coot	07-05-95	--	80.3	23.9
	Bird eggs	American coot	07-05-95	--	73.6	26.8
	Bird eggs	American coot	07-02-96	--	75.7	31
	Bird eggs	American coot	07-02-96	--	75.5	31
	Bird eggs	American coot	07-09-96	--	77.1	30
	Bird eggs	Pied-billed grebe	07-05-95	--	75.3	39
	Bird eggs	Pied-billed grebe	07-05-95	--	77.6	39
	Bird liver	Pied-billed grebe	07-02-96	--	74.1	23
	Bird liver	Western grebe	05-28-97	--	77.4	81
	Bird eggs	Killdeer	07-12-95	--	72.8	38
	Bird eggs	Killdeer	07-12-95	--	72.3	37
	Bird, whole body	Yellow-headed blackbird	07-05-95	--	29.1	33
	Bird, whole body	Yellow-headed blackbird	07-05-95	--	71.8	35
JP1	Aquatic plant	Typha stems	06-14-95	--	93.0	.3
	Aquatic plant	Potamogeton	03-15-95	--	82.7	29
	Aquatic invertebrate	Invertebrate	03-15-95	--	77.7	14.3
	Aquatic invertebrate	Zooplankton	08-13-97	--	97.7	6.3
	Aquatic invertebrate	Invertebrate	08-13-97	--	97.7	10

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
	SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN—Continued					
JP1	Fish, whole body	Common carp (female)	06-14-95	487	76.6	8.9
	Fish, whole body	Common carp (male)	06-14-95	470	74.6	9.9
	Fish eggs	Common carp	06-14-95	--	71.1	11
	Fish, whole body	White sucker	03-15-95	151	75.3	11
	Fish, whole body	White sucker	06-14-95	405	69.3	6.9
	Fish, whole body	Fathead minnow	03-15-95	80	76.5	9.1
	Fish, whole body	Fathead minnow	03-15-95	72	77.7	14
	Fish, whole body	Fathead minnow	06-14-95	73	78.9	9.9
	Fish, whole body	Fathead minnow	08-10-95	60	79.5	8.8
	Fish, whole body	Plains killifish	03-15-95	50	73.7	13
	Fish, whole body	Plains killifish	08-13-97	--	76.0	11
	Fish, whole body	Black bullhead	03-15-95	189	78.2	9.4
	Fish, whole body	Green sunfish	03-15-95	132	72.7	17
	Fish, whole body	Green sunfish	08-10-95	93	77.2	7.8
	Amphibian whole body	Leopard frog, tadpole	03-15-95	70	89.8	27
	Amphibian, whole body	Leopard frog, tadpole	08-10-95	124	81.9	6.3
	Amphibian, whole body	Leopard frog	08-10-95	--	76.3	7.5
JP2	Aquatic plant	Typha stems	04-13-95	--	93.9	<.1
	Aquatic plant	Typha stems	06-14-95	--	94.4	.3
	Aquatic plant	Ceratophyllum	04-13-95	--	86.8	5.1
	Aquatic plant	Potamogeton	06-14-95	--	87.5	.4
	Aquatic invertebrate	Invertebrate	04-13-95	--	84.4	1.8
	Fish, whole body	Common carp	06-14-95	555	73.2	6.2
	Fish, whole body	Common carp	06-14-95	490	74.0	6.6
	Fish eggs	Common carp	06-14-95	--	66.3	5.7
	Fish, whole body	Fathead minnow	06-14-95	78	77.1	4.1
	Fish, whole body	Black bullhead	06-14-95	111	79.7	4.3
	Fish, whole body	Green sunfish	04-13-95	65	79.2	4.8
	Fish, whole body	Green sunfish	06-14-95	67	78.7	4.0
	Amphibian, whole body	Bullfrog tadpole	06-14-95	170	77.4	3.8
JP3	Aquatic invertebrate	Invertebrates	08-26-97	--	--	5.2

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN—Continued						
DSP3	Aquatic invertebrate	Invertebrates	10-22-97	--	68.8	8.0
JS2	Fish, whole body	Common carp	12-12-95	110	75.4	10.2
	Fish, whole body	Fathead minnow	12-12-95	80	76.1	10.6
JS2	Fish, whole body	Fathead minnow	12-12-95	70	72.8	10.5
	Fish, whole body	Green sunfish	12-12-95	120	73.9	12.7
	Fish, whole body	Green sunfish	12-12-95	65	75.9	12.3
JS3	Aquatic invertebrate	Invertebrates	07-16-97	--	--	5.2
JS1	Aquatic invertebrate	Invertebrates	08-27-97	--	--	8.3
	Fish, whole body	--	08-27-97	--	--	17
	Fish, whole body	Fathead minnow	12-12-95	90	78.1	20.2
	Fish, whole body	Green sunfish	12-12-95	170	74.9	14.2
	Fish, whole body	Green sunfish	12-12-95	85	75.8	14.8
	Amphibian, whole body	Tadpoles	12-12-95	162	82.5	13
ESC2	Aquatic invertebrate	Invertebrates	07-16-97	--	--	7.8
WVF1	Aquatic invertebrate	Invertebrates	10-22-97	--	79.7	8.1
	Fish, whole body	Bluehead sucker	10-22-97	--	79.1	15.3
	Fish, whole body	Fathead minnow	10-22-97	--	78.3	20.4
WVF2	Aquatic invertebrate	Invertebrates	10-22-97	--	81.3	13.8
	Fish, whole body	White sucker	10-22-97	--	79.9	23.5
	Fish, whole body	Fathead minnow	10-22-97	--	76.7	19.7
CHY1	Aquatic plant	Aquatic plants	06-19-97	--	92.0	2.5
	Aquatic invertebrate	Snails	06-19-97	--	87.6	1.2
	Aquatic invertebrate	Damselflies	06-19-97	--	92.8	4.2
	Bird eggs	Eared grebe	06-17-97	--	76.2	7.4
	Bird eggs	Eared grebe	06-17-97	--	75.6	7.6
	Bird eggs	American coot	06-18-97	--	76.2	3.9
	Bird eggs	American coot	06-18-97	--	77.3	4.4
	Bird eggs	American coot	06-18-97	--	76.1	6.2

Table 18. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Uncompahgre Project and adjacent areas in the lower Gunnison River Basin, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
SITES OUTSIDE THE UNCOMPAHGRE PROJECT, LOWER GUNNISON RIVER BASIN—Continued						
CHY1	Bird eggs	American coot	06-18-97	--	75.3	4.8
	Bird eggs	American coot	06-18-97	--	74.7	4.2
	Bird eggs	American coot	06-18-97	--	75.3	4.1
	Bird eggs	American coot	06-18-97	--	76.7	6.4
	Bird eggs	American coot	06-18-97	--	75.2	3.3
	Bird eggs	American coot	06-18-97	--	75.7	16
	Bird eggs	American coot	06-18-97	--	72.6	8.6
	Bird eggs	American coot	06-18-97	--	75.9	7.5
	Bird eggs	American coot	06-18-97	--	72.8	7.0
	Bird eggs	American coot	06-19-97	--	75.5	18
	Bird eggs	American coot	06-19-97	--	72.3	19
LG1	Aquatic invertebrate	Invertebrates	08-29-97	--	--	3.8
	Aquatic invertebrate	Invertebrates	08-29-97	--	--	4.4
	Fish, whole body	--	08-29-97	--	--	7.8
LG2	Aquatic invertebrate	Invertebrates	08-29-97	--	--	3.0
	Aquatic invertebrate	Invertebrates	08-29-97	--	--	4.0
	Aquatic invertebrate	Invertebrates	08-29-97	--	--	3.9
	Fish, whole body	--	08-29-97	--	--	7.7
	Fish, whole body	--	08-29-97	--	--	7.9

DATA FOR THE GRAND VALLEY

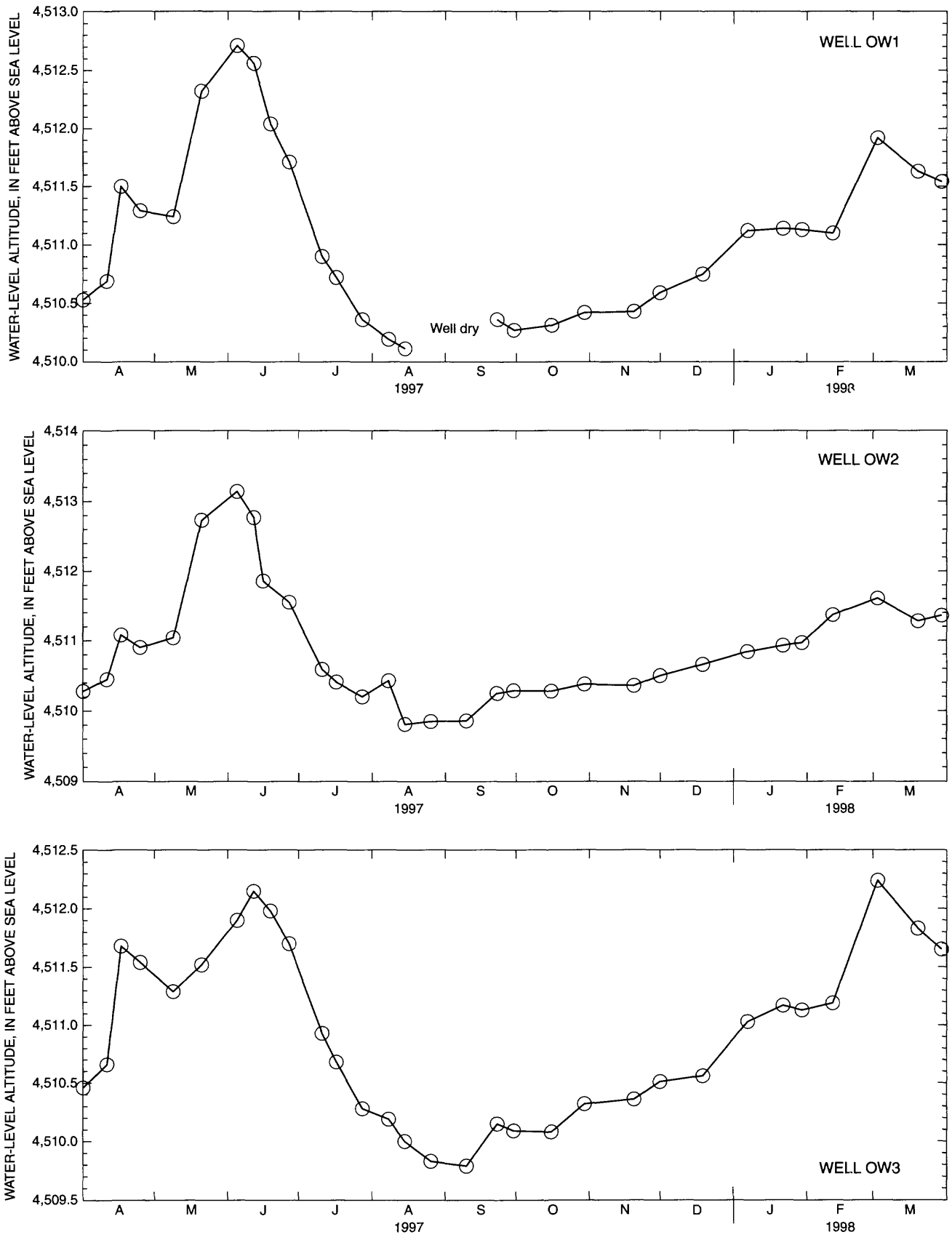


Figure 3. Water-level measurements for wells OW1, OW2, and OW3 at Walter Walker State Wildlife Area, April 1997 through March 1998.

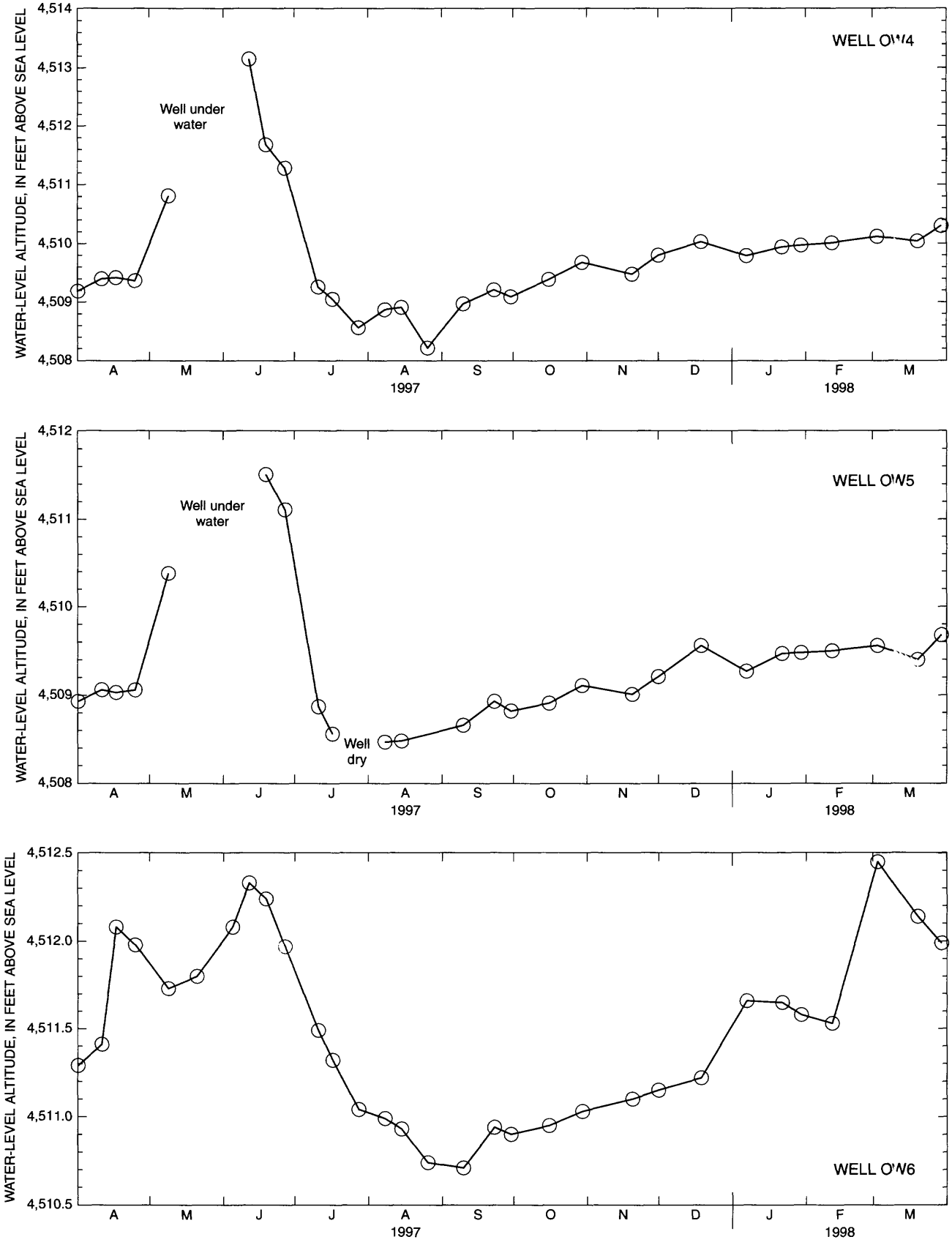


Figure 4. Water-level measurements for wells OW4, OW5, and OW6 at Walter Walker State Wildlife Area, April 1997 through March 1998.

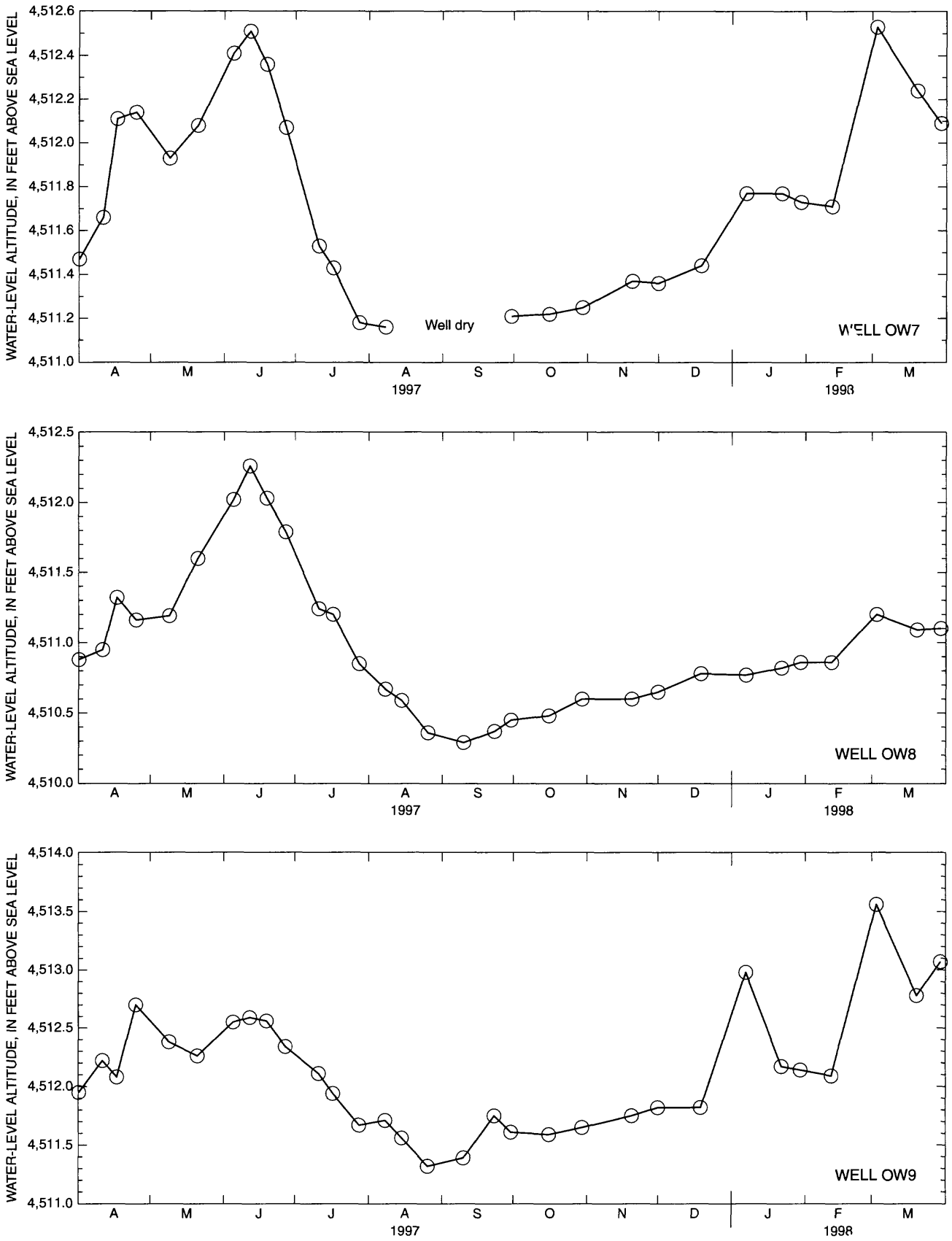


Figure 5. Water-level measurements for wells OW7, OW8, and OW9 at Walter Walker State Wildlife Area, April 1997 through March 1998.

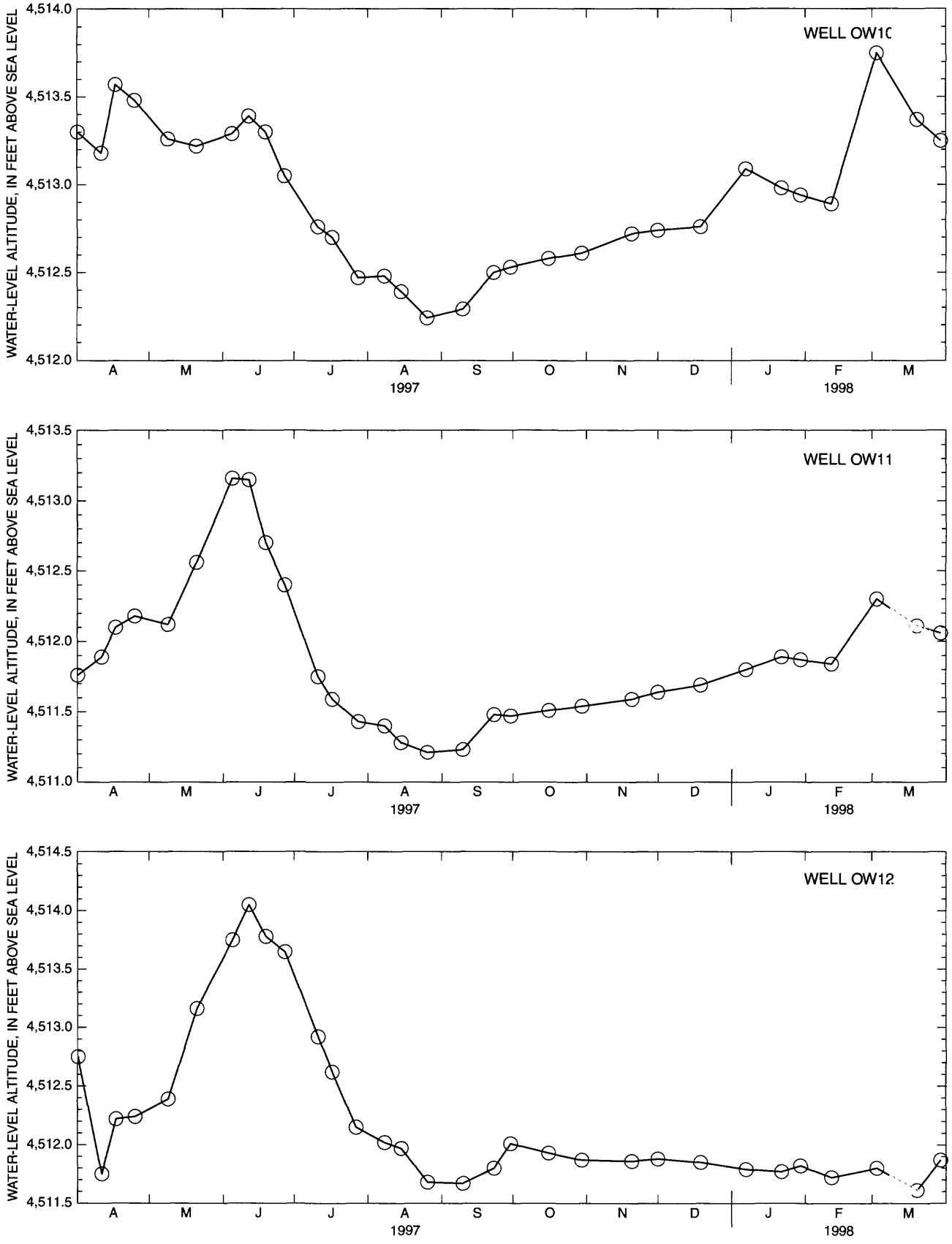


Figure 6. Water-level measurements for wells OW10, OW11, and OW12 at Walter Walker State Wildlife Area, April 1997 through March 1998.

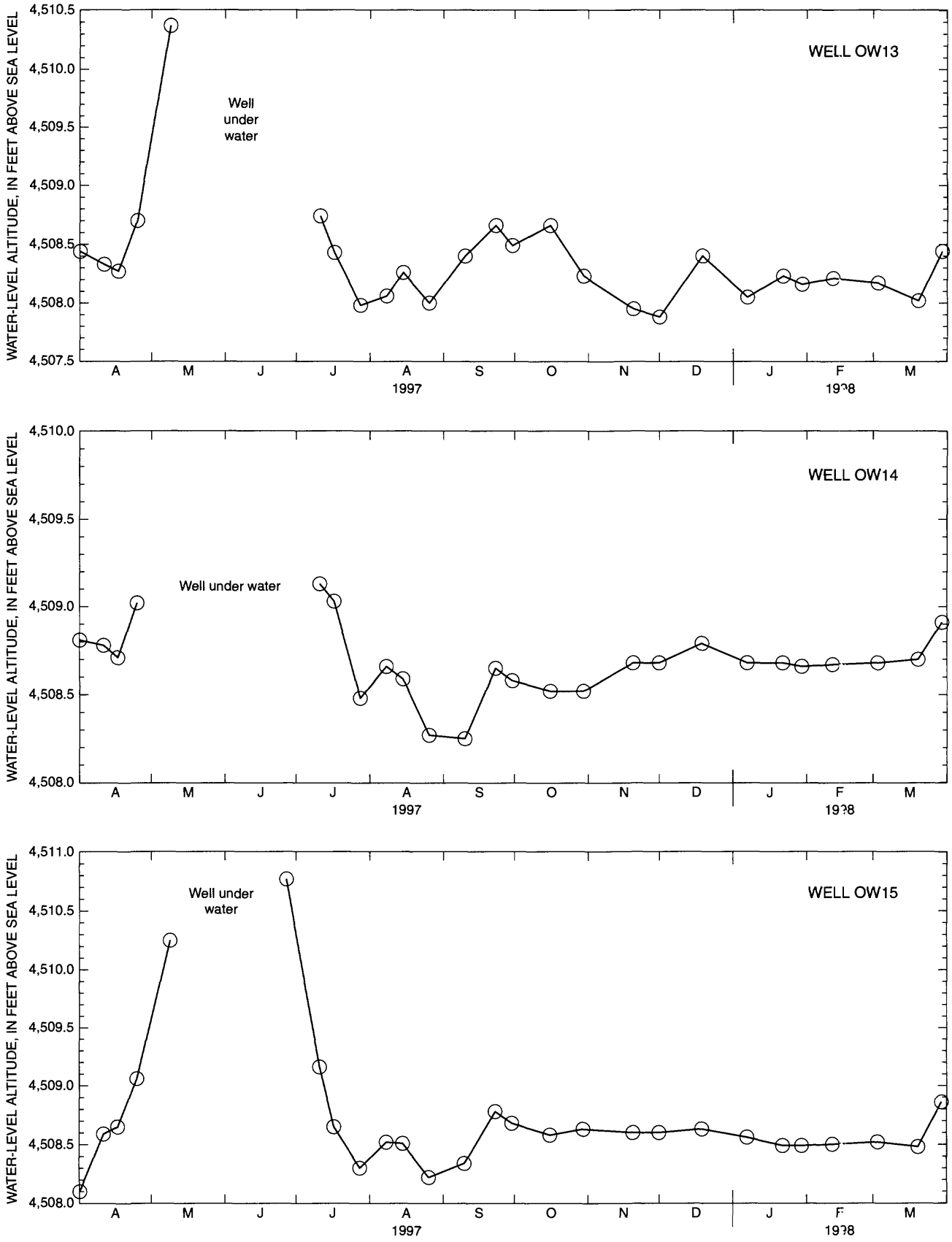
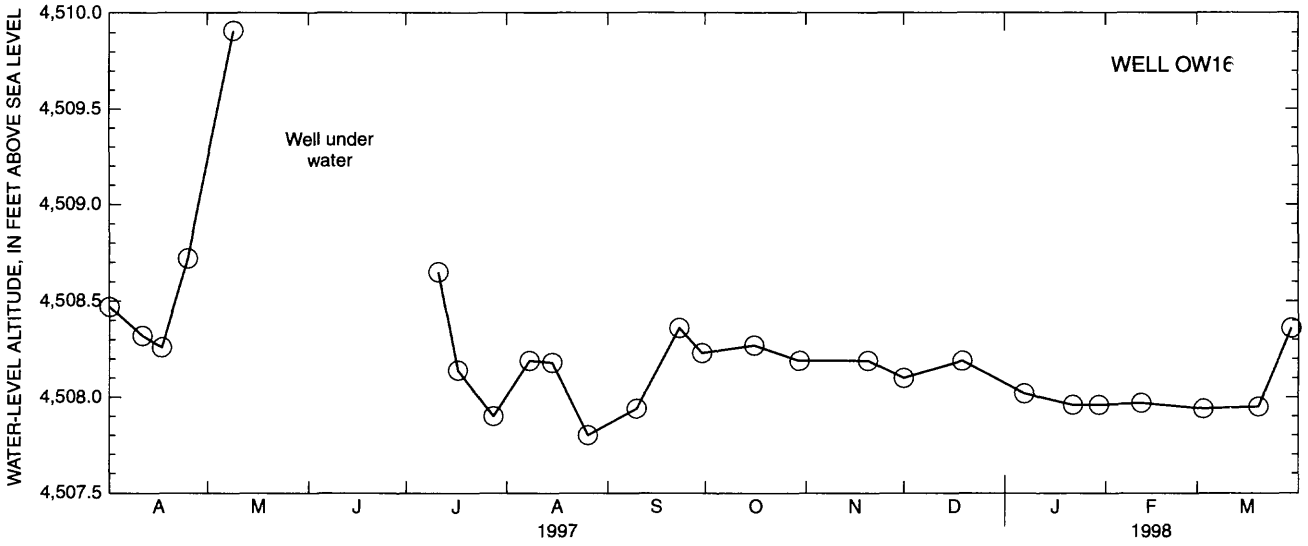
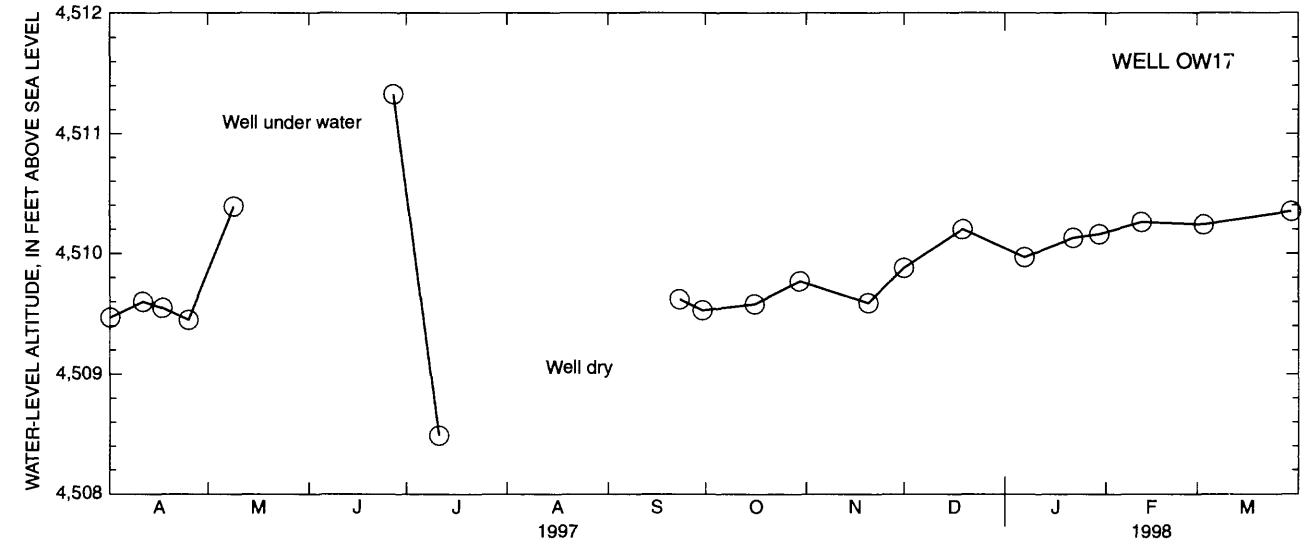


Figure 7. Water-level measurements for wells OW13, OW14, and OW15 at Walter Walker State Wildlife Area, April 1997 through March 1998.





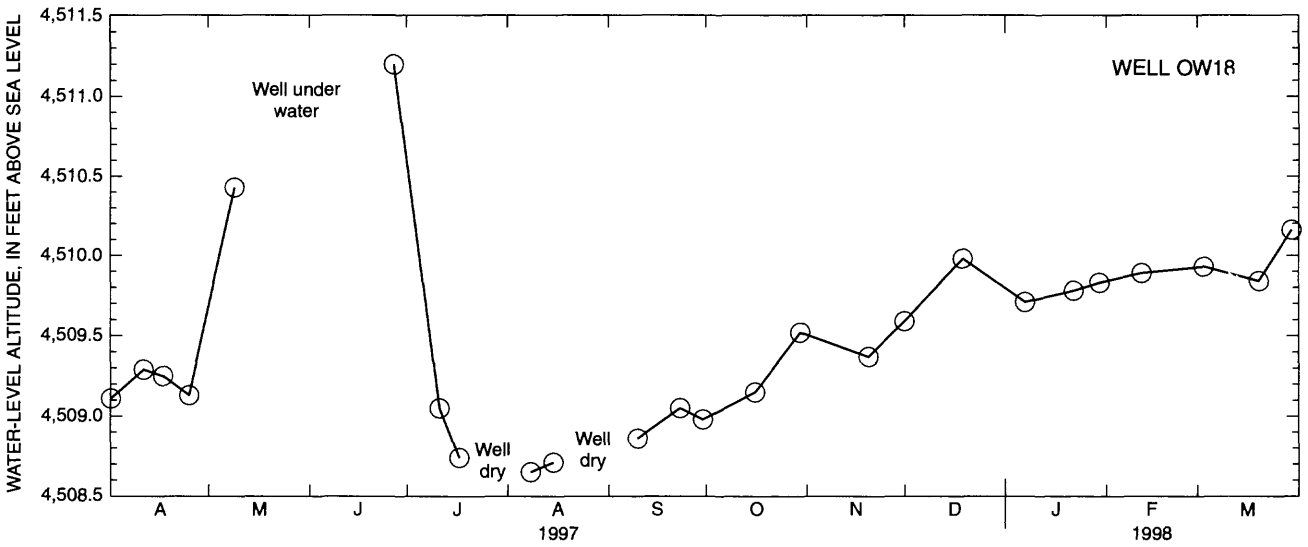


Figure 8. Water-level measurements for wells OW16, OW17, and OW18 at Walter Walker State Wildlife Area, April 1997 through March 1998.

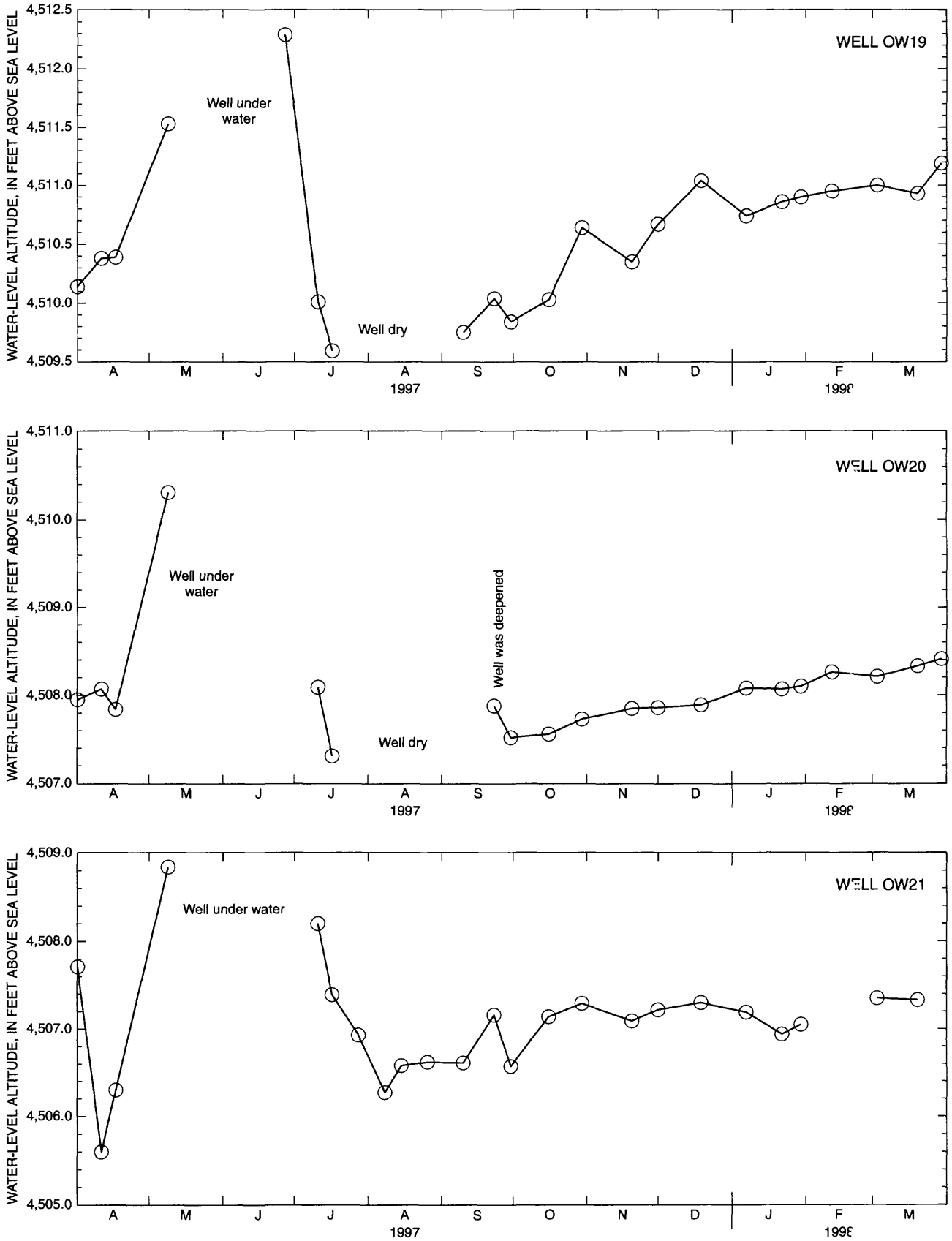


Figure 9. Water-level measurements for wells OW19, OW20, and OW21 at Walter Walker State Wildlife Area. April 1997 through March 1998.

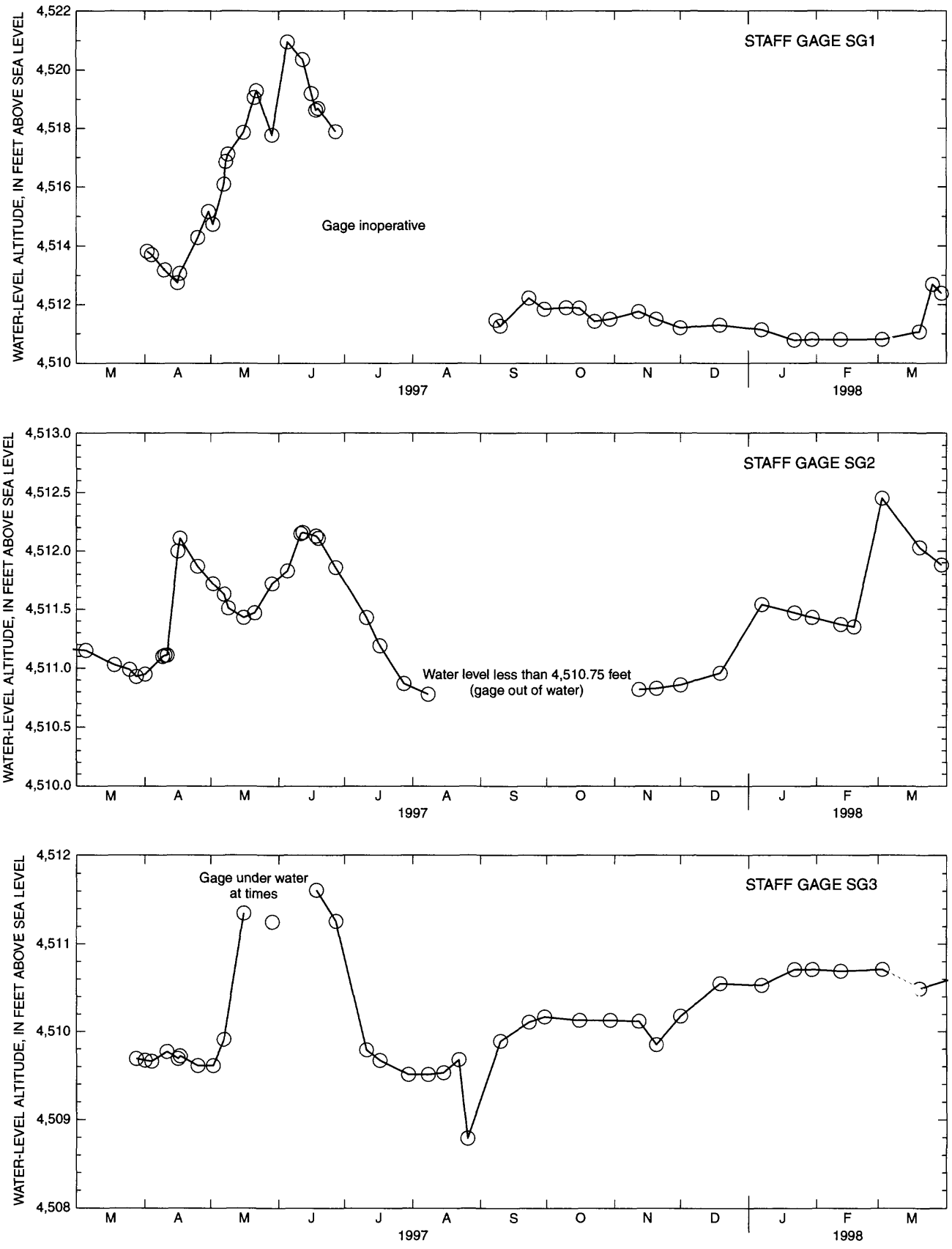


Figure 10. Water-level measurements for staff gages SG1, SG2, and SG3 at Walter Walker State Wildlife Area, March 1997 through March 1998.

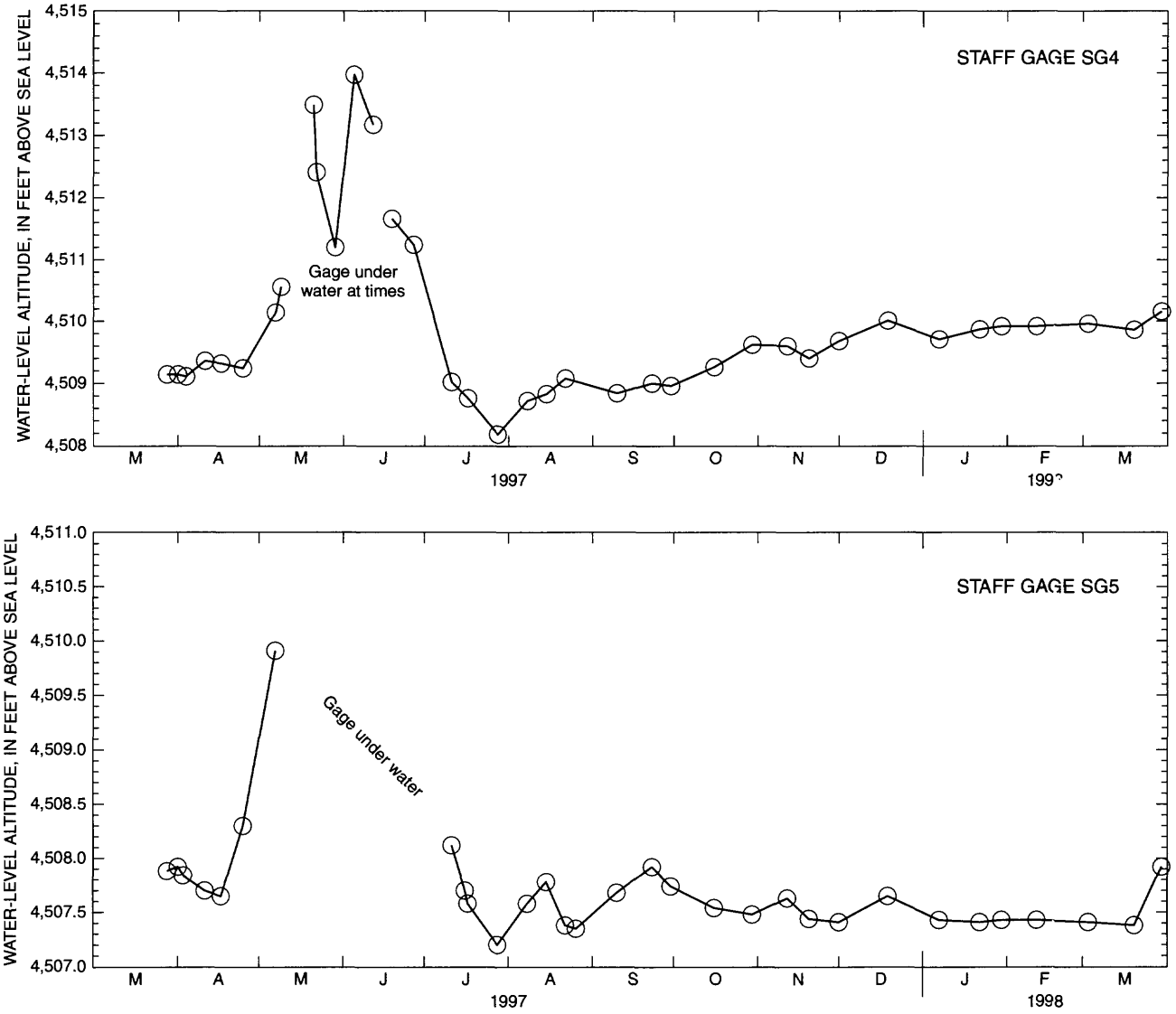


Figure 11. Water-level measurements for staff gages SG4 and SG5 at Walter Walker State Wildlife Area, March 1997 through March 1998.

Table 19. List of sampling sites and types of data collected for the Colorado River and Plateau Creek, Grand Valley area, water years 1993–1997

[X, data type collected; --, data type not collected]

Site code (pl. 2)	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sedi-ment	Biota
COL2	09095000	Colorado River near Cameo	X	--	X
PLT	09105000	Plateau Creek near mouth	X	--	--
COL3B	390622108205400	Colorado River at Palisade	X	--	--
COL3	09106150	Colorado River below the Grand Valley Canal, near Palisade	X	--	--
COL4	390318108273200	Colorado River at 32 Road, near Clifton	X	--	--
COL5	09106500	Colorado River upstream from Gunnison River, at Grand Junction	X	--	--
COL6	390521108373300	Colorado River at Redlands Parkway, near Grand Junction	X	--	--
COL7	09153000	Colorado River at Fruita	X	--	--
COL8	09163500	Colorado River near Colorado-Utah State line	X	--	X

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97

[Sites on pl. 2; all chemical concentrations for dissolved constituents unless noted otherwise; ft^3/s), cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, less than; E, estimated]

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
COL2	07-21-94	1330	2,360	942	8.6	22.0	<1	220	66	14
	08-15-94	1600	2,400	954	--	22.5	<1	220	64	14
	09-02-94	1935	2,460	995	8.5	20.5	<1	220	67	14
	09-03-94	0740	2,460	1,010	8.1	18.5	<1	230	70	13
	09-04-94	0715	2,460	1,090	8.2	17.5	<1	--	--	--
	09-07-94	1505	2,190	996	8.7	20.0	<1	240	74	14
	10-03-94	1035	2,160	1,040	8.4	13.0	<1	250	72	17
	12-21-94	0915	1,470	1,290	8.4	.0	1	290	82	20
	11-21-94	1230	1,720	1,190	8.7	2.5	1	280	81	19
	01-13-95	1130	1,540	1,250	--	2.5	1	250	70	18
	02-16-95	1130	1,440	1,330	--	2.0	1	260	74	19
	04-19-95	0945	2,290	859	--	9.5	1	210	61	15
	06-05-95	1320	14,700	345	8.0	12.5	<1	130	37	8.7
	06-29-95	1045	20,500	268	8.2	11.5	<1	96	29	5.8
	07-21-95	1130	15,500	288	8.2	14.0	<1	98	30	5.6
	05-11-95	1515	3,000	774	8.1	13.0	1	210	56	16
	08-08-95	0930	6,330	465	8.0	16.5	<1	130	40	7.5
	09-05-95	1405	3,420	823	8.3	20.5	<1	220	63	14
	10-20-95	1145	2,680	918	8.3	8.5	<1	230	66	15
	02-05-96	1500	1,870	1,080	8.3	1.0	1	230	66	17
	03-05-96	1300	2,350	966	8.2	5.5	1	220	62	16
	05-13-96	1437	13,800	331	8.1	13.5	<1	110	34	7.2
	05-20-96	1545	21,200	263	7.9	12.0	<1	97	29	5.9
	08-28-96	0911	2,380	914	8.6	19.0	<1	210	60	14
	09-09-96	1204	2,280	962	8.7	17.0	<1	230	67	15
PLT	11-04-93	1015	132	698	8.7	3.5	<1	280	55	34
	03-17-94	1115	172	663	8.6	7.0	<1	230	50	26
	06-09-94	1250	133	485	8.7	17.0	<1	190	43	20
	08-19-94	1315	55	699	8.7	21.0	<1	270	44	40
	10-27-94	1035	94	728	8.7	6.5	<1	290	55	37

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
COL2	07-21-94	110	3.5	134	110	140	0.3	7.2	531	3,410	--
	08-15-94	110	3.5	125	120	150	.3	8.4	545	3,460	--
	09-02-94	110	3.7	128	120	160	.3	8.6	560	3,720	<0.05
	09-03-94	110	4.6	143	120	150	.3	8.7	563	3,740	.14
	09-04-94	--	--	--	--	--	--	--	--	--	.14
	09-07-94	110	3.9	130	120	150	.3	8.4	559	3,410	<.05
	10-03-94	120	3.4	145	130	160	.3	9.3	599	3,560	--
	12-21-94	150	4.4	168	170	210	.3	8.7	746	3,090	--
	11-21-94	140	3.9	156	160	190	.3	7.8	696	3,310	--
	01-13-95	130	4.2	156	150	190	.3	6.9	663	2,990	--
	02-16-95	150	4.6	160	170	210	.3	8.3	732	2,970	--
	04-19-95	98	3.2	152	110	130	.3	8.6	517	3,310	--
	06-05-95	20	1.4	104	41	18	.2	9.3	198	8,330	--
	06-29-95	14	1.1	76	29	15	.1	6.9	147	8,460	--
	07-21-95	17	1.2	71	33	20	.2	6.9	157	6,910	--
	05-11-95	79	2.8	145	95	98	.3	9.2	443	3,590	--
	08-08-95	38	1.6	87	59	49	.2	6.6	254	4,340	--
	09-05-95	81	2.7	128	110	110	.2	8.1	466	4,300	--
	10-20-95	85	3.0	136	120	130	.2	7.2	493	3,800	.06
	02-05-96	120	3.4	138	130	170	.4	9.6	592	3,110	.26
	03-05-96	100	3.2	133	120	140	.3	8.4	524	3,520	.21
	05-13-96	20	1.4	89	40	22	.2	8.6	178	7,560	.14
	05-20-96	12	1.3	78	31	14	.2	8.0	145	8,870	.14
	08-28-96	97	3.4	129	120	140	.3	7.9	519	3,350	<.05
	09-09-96	100	3.6	135	130	140	.3	7.8	540	3,450	.07
PLT	11-04-93	54	4.1	318	79	6.6	.6	29	453	161	--
	03-17-94	51	3.6	277	80	7.4	.4	20	405	188	--
	06-09-94	31	3.7	224	43	3.9	.4	22	301	108	--
	08-19-94	56	6.2	305	62	6.0	.5	32	430	63.8	--
	10-27-94	57	5.0	327	75	6.6	.6	27	459	117	--

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (^oC)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
PLT	03-14-95	1350	112	670	8.7	10.0	1	260	56	28
	06-05-95	1015	1,830	262	8.1	9.5	<1	120	31	9.3
	06-29-95	1335	1,800	187	8.2	11.5	<1	77	20	6.5
	07-19-95	1240	530	418	8.4	18.5	<1	150	42	12
	08-25-95	1300	155	644	8.6	19.0	<1	--	--	--
	11-01-95	1530	180	618	8.8	10.0	<1	260	53	30
	04-04-96	1445	202	512	8.4	10.5	<1	200	50	19
	06-04-96	1145	201	470	8.6	15.0	<1	190	43	19
	08-12-96	1010	68	713	8.8	18.0	<1	270	43	40
COL3B	07-19-94	1100	681	958	--	22.5	<1	230	64	17
	08-16-94	0930	615	939	--	20.5	<1	220	61	17
	09-06-94	1130	689	966	--	18.0	<1	230	65	16
	10-04-94	1115	774	1,010	--	13.5	<1	260	70	20
	11-09-94	1520	1,300	1,220	--	8.5	<1	270	76	20
	12-20-94	1400	555	1,260	--	1.0	1	290	80	23
	01-10-95	1050	746	1,190	--	.5	1	260	71	20
	02-15-95	1700	800	1,240	--	3.5	1	240	66	18
	03-16-95	1630	1,720	1,060	--	.0	1	260	71	19
	04-19-95	1425	854	856	--	13.0	1	210	58	17
COL3	11-04-93	1445	1,340	946	8.6	5.5	<1	240	67	18
	03-17-94	1440	2,240	985	8.3	10.5	<1	220	58	18
	06-09-94	1530	5,250	421	8.3	15.5	<1	120	36	7.6
	08-15-94	1315	627	997	8.3	23.5	<1	220	63	14
	07-19-94	1215	506	973	--	23.0	<1	230	66	15
	09-06-94	1300	728	985	--	20.0	<1	220	67	14
	10-04-94	1405	915	1,050	--	15.0	<1	250	73	17
	10-27-94	1325	859	1,070	8.5	10.0	<1	250	71	17
	11-10-94	1300	1,520	1,240	--	7.5	<1	280	78	21
	12-21-94	1200	1,190	1,310	--	1.0	1	290	81	21

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
PLT	03 14-95	54	3.5	266	86	7.1	0.4	22	417	130
	06-05-95	12	1.9	125	15	1.4	.2	14	160	835
	06-29-95	8.3	1.4	86	10	1.0	.1	14	113	588
	07-19-95	28	2.7	157	57	2.6	.3	17	256	381
	08-25-95	--	--	--	--	--	--	--	--	--
	11-01-95	44	4.4	279	60	5.9	.5	25	390	190
	04-04-96	36	3.4	225	56	5.4	.3	16	321	175
	06-04-96	30	3.1	211	41	3.3	.3	19	285	155
	08-12-96	56	5.9	316	67	5.6	.6	26	434	80.0
COL3B	07-19-94	110	3.7	151	110	130	.3	9.4	535	1,010
	08-16-94	100	3.5	142	110	140	.4	11	528	847
	09-06-94	96	3.8	152	120	130	.3	12	534	928
	10-04-94	100	3.7	176	130	140	.4	13	583	1,230
	11-09-94	130	4.0	167	150	180	.3	8.0	668	2,460
	12-20-94	140	4.4	186	160	180	.3	11	710	1,110
	01-10-95	130	4.5	175	140	170	.3	9.2	650	1,390
	02-15-95	140	4.6	178	180	170	.4	9.4	695	1,600
	03-16-95	130	3.9	168	150	180	.3	11	666	3,170
	04-19-95	82	3.4	167	100	94	.3	11	466	1,100
COL3	11-04-93	100	3.1	157	140	120	.3	9.4	552	2,000
	03-17-94	110	3.7	150	140	140	.3	9.4	569	3,440
	06-09-94	32	1.5	91	48	41	.2	7.5	228	3,240
	08-15-94	110	3.7	131	130	140	.3	7.3	547	970
	07-19-94	110	3.3	136	110	140	.3	8.6	535	757
	09-06-94	100	3.5	133	120	150	.3	10	545	1,090
	10-04-94	110	3.7	153	130	150	.3	9.6	585	1,500
	10-27-94	120	3.3	153	140	170	.3	6.8	620	1,440
	11-10-94	130	4.5	166	160	180	.3	7.7	681	2,860
	12-21-94	150	4.5	170	160	200	.3	9.4	728	2,440

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
COL3	01-10-95	1400	1,540	1,230	--	1.5	1	260	72	19
	02-14-95	1100	1,370	1,220	--	5.5	1	230	64	16
	03-15-95	1030	1,680	1,140	8.3	10.0	1	260	73	20
	04-19-95	1025	834	884	--	17.0	1	210	58	16
	05-11-95	1300	1,930	739	--	14.5	<1	190	53	15
	06-06-95	1125	17,700	331	8.0	12.0	<1	120	36	8.5
	07-17-95	1415	17,100	272	8.2	16.5	<1	93	28	5.6
	08-08-95	1020	4,770	462	7.9	19.0	<2	130	40	8.0
	08-25-95	0955	3,120	661	8.2	19.0	<1	180	52	13
	09-05-95	1500	1,410	816	8.0	21.5	<1	220	63	14
	10-31-95	1515	1,370	925	8.5	10.0	<1	230	64	17
	04-04-96	1100	4,520	580	8.2	10.0	<1	170	47	12
	06-05-96	1200	11,100	330	8.1	14.0	<1	110	32	6.9
	08-13-96	0925	790	925	8.6	21.0	<1	220	65	15
COL4	07-19-94	1400	685	1,110	--	26.0	2	290	81	22
	08-16-94	1130	700	1,100	--	23.0	2	280	80	20
	09-06-94	1430	856	1,100	--	21.0	1	280	81	19
	10-04-94	1530	1,000	1,090	--	16.5	1	290	81	21
	11-08-94	1010	1,370	1,250	--	7.5	1	300	81	23
	12-22-94	0945	1,110	1,330	--	.0	1	300	84	23
	01-11-95	1600	1,540	1,230	--	3.0	1	270	74	20
	02-14-95	1335	1,490	1,230	--	5.5	2	230	65	16
	03-14-95	1435	1,640	1,220	--	7.5	2	280	76	21
	04-18-95	1325	1,180	949	--	11.0	1	230	64	17
COL5	07-20-94	0900	734	1,200	--	20.0	2	330	91	26
	08-18-94	1015	794	1,230	--	22.5	2	350	96	26
	09-08-94	0845	945	1,260	--	17.0	2	350	97	25
	10-03-94	1355	1,110	1,200	--	14.0	1	330	91	24
	11-10-94	1045	1,700	1,260	--	7.5	1	300	84	23

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
COL3	01-10-95	140	4.3	162	150	190	0.3	7.8	681	2,920
	02-14-95	150	4.1	158	160	190	.4	7.6	687	2,600
	03-15-95	130	3.9	169	150	170	.3	10	659	3,130
	04-19-95	86	3.4	154	100	110	.3	11	477	1,120
	05-11-95	73	2.8	153	88	87	.3	11	422	2,200
	06-06-95	18	1.5	104	36	16	.2	9.8	188	9,610
	07-17-95	16	1.2	73	31	17	.2	7.2	150	6,920
	08-08-95	37	1.7	91	59	49	.2	6.9	256	3,300
	08-25-95	59	2.8	120	96	72	.3	8.2	375	3,240
	09-05-95	79	2.8	137	100	100	.3	8.4	450	1,710
	10-31-95	90	3.1	150	120	120	.3	9.3	514	1,900
	04-04-96	52	2.7	113	82	62	.3	9.1	335	4,090
	06-05-96	21	1.2	85	36	25	.2	7.9	181	5,430
	08-13-96	97	4.1	137	120	140	.3	8.5	532	1,130
COL4	07-19-94	120	3.6	142	180	140	.3	8.6	641	1,180
	08-16-94	110	3.8	136	180	140	.5	9.3	625	1,200
	09-06-94	110	3.6	144	180	150	.3	11	641	1,610
	10-04-94	110	3.5	159	170	150	.4	10	641	1,860
	11-08-94	130	3.8	175	180	180	.3	9.1	712	2,720
	12-22-94	150	4.6	178	180	200	.3	9.9	759	2,320
	01-11-95	130	4.2	164	160	190	.3	7.6	684	2,960
	02-14-95	150	4.1	161	160	180	.4	8.0	680	2,880
	03-14-95	130	4.0	171	160	160	.3	11	665	3,210
	04-18-95	93	2.8	142	130	120	.3	8.7	521	1,720
COL5	07-20-94	120	3.7	151	220	150	.4	7.9	710	1,420
	08-18-94	120	3.8	144	240	150	.4	8.5	731	1,610
	09-08-94	120	3.6	149	230	160	.4	9.2	735	1,940
	10-03-94	130	4.2	162	210	170	.4	10	737	2,270
	11-10-94	130	3.8	162	190	180	.3	7.8	716	3,420

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
COL5	12-20-94	1030	1,740	1,360	--	1.0	2	320	87	24
	01-11-95	0945	1,510	1,270	--	2.0	1	280	77	21
	02-14-95	0920	1,390	1,270	--	4.5	1	280	76	22
	03-14-95	1010	1,350	1,270	--	8.5	1	290	78	22
	04-17-95	1030	1,090	1,040	--	11.5	2	260	73	19
	05-10-95	0945	2,210	811	--	11.5	2	220	59	18
	06-07-95	1130	18,900	317	--	13.5	<1	120	35	8.3
	07-21-95	1305	14,400	306	8.2	15.0	<1	100	31	6.5
	08-07-95	1330	5,290	489	8.3	20.5	<2	150	43	9.3
	09-07-95	0945	1,660	944	8.2	19.5	1	260	74	19
COL6	07-20-94	1200	2,120	1,130	--	23.0	5	370	100	30
	08-17-94	1345	2,060	1,190	--	23.5	5	440	120	34
	09-07-94	1435	2,670	1,450	--	20.0	6	430	120	31
	10-05-94	1330	3,340	1,180	--	14.5	4	410	110	34
	11-07-94	1200	2,490	1,290	--	7.5	4	420	110	36
	12-19-94	1415	2,800	1,180	--	1.0	3	340	90	29
	01-09-95	1110	2,880	1,190	--	2.0	4	310	83	26
	02-13-95	0920	2,730	1,200	--	3.5	3	320	82	27
	03-14-95	1100	3,630	970	--	8.0	3	270	72	23
	04-17-95	1145	4,240	702	--	11.0	2	220	61	17
	05-10-95	1510	9,480	--	8.2	11.5	2	180	50	14
	06-08-95	1100	32,500	319	8.1	12.0	<1	120	35	8.8
	07-19-95	1050	26,000	322	7.9	18.0	<1	120	35	8.2
	08-09-95	0930	9,230	546	8.3	19.5	1	180	51	13
	09-08-95	1330	4,060	1,000	8.3	23.0	4	370	100	30
COL7	07-20-94	1530	3,100	1,100	--	24.0	5	410	110	32
	08-17-94	1130	2,400	1,250	--	24.0	6	450	120	36
	09-07-94	1245	2,940	1,210	--	19.5	6	440	120	33
	10-03-94	1520	3,300	1,300	--	14.5	5	450	120	36
	11-07-94	1645	2,950	1,340	--	8.0	5	430	110	38

Table 20. *Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued*

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
COL5	12-20-94	150	4.5	179	190	200	0.3	10	773	3,740
	01-11-95	130	4.1	166	170	180	.3	7.5	689	2,990
	02-14-95	140	4.4	170	180	180	.4	9.2	714	2,790
	03-14-95	140	4.1	169	170	180	.3	11	707	2,670
	04-17-95	96	3.4	147	160	130	.3	8.2	578	1,760
	05-10-95	75	3.1	153	120	79	.3	9.7	456	2,720
	06-07-95	16	1.4	100	36	14	.2	9.3	180	9,210
	07-21-95	20	1.2	74	38	20	.3	7.1	168	6,550
	08-07-95	38	1.7	92	72	49	.2	7.1	275	3,930
	09-07-95	86	2.9	145	150	110	.3	8.6	538	2,410
COL6	07-20-94	76	3.4	147	310	57	.4	11	676	4,170
	08-17-94	91	4.1	157	350	73	.2	13	779	4,510
	09-07-94	85	3.4	159	340	71	.5	14	760	5,830
	10-05-94	89	4.0	171	330	65	.5	13	748	7,220
	11-07-94	110	3.9	170	340	93	.4	11	806	5,750
	12-19-94	110	4.0	166	250	120	.3	11	714	5,620
	01-09-95	110	3.9	163	230	130	.3	9.7	691	5,700
	02-13-95	120	4.0	160	230	140	.3	9.5	709	5,470
	03-14-95	87	3.2	146	200	90	.3	12	575	5,910
	04-17-95	49	2.6	122	150	42	.3	11	406	4,900
	05-10-95	32	2.3	115	110	20	.2	11	308	7,900
	06-08-95	15	1.4	93	48	10	.2	10	184	16,200
	07-1	18	1.4	77	56	13	.3	9.3	187	13,200
	08-09-95	34	1.9	100	120	32	.2	9.2	321	8,010
	09-08-95	68	3.3	157	290	48	.4	13	647	7,090
COL7	07-20-94	87	3.6	148	320	69	.4	9.9	721	6,190
	08-17-94	93	4.1	162	380	74	.4	13	818	5,560
	09-07-94	87	3.5	163	360	67	.5	14	783	6,660
	10-03-94	100	5.0	176	370	80	.5	14	831	7,860
	11-07-94	110	4.0	173	360	98	.4	11	835	7,150

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance µS/cm	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
COL7	12-19-94	1250	3,020	1,190	--	0.5	5	--	360	93	30
	01-09-95	1630	2,900	1,170	--	2.5	3	--	320	84	27
	02-13-95	1350	2,770	1,190	--	4.5	3	--	330	85	29
	03-15-95	1500	4,000	939	--	10.5	3	--	260	69	22
	04-18-95	0900	4,810	709	--	8.5	3	--	220	60	18
	06-09-95	1100	E31,600	321	8.1	11.5	<1	--	120	35	8.9
	07-18-95	1120	E30,600	313	8.1	16.5	<1	--	120	34	8.0
	05-12-95	1150	10,600	553	--	10.5	2	--	190	51	15
	08-09-95	1300	E8,840	570	8.1	21.0	<1	--	190	53	14
	09-08-95	0915	E4,220	1,150	8.2	19.0	4	--	410	110	33
COL8	10-14-92	1230	3,000	1,290	8.5	13.0	8	--	450	120	37
	04-14-93	1300	6,730	780	8.3	8.5	3	--	260	65	23
	06-24-93	1300	24,700	350	8.2	14.5	1	--	140	40	10
	08-18-93	1025	4,300	1,090	8.2	19.5	5	--	400	110	31
	11-24-93	1115	4,600	1,040	8.5	4.0	5	--	370	94	32
	12-07-93	1110	4,440	985	8.6	1.5	4	--	330	86	28
	01-19-94	1155	3,300	1,020	8.5	.5	4	--	300	77	26
	03-02-94	1155	3,770	1,090	8.2	7.0	3	--	330	83	30
	03-30-94	1335	3,400	987	8.1	8.0	4	--	310	81	26
	05-04-94	1050	4,530	910	8.3	13.5	4	--	300	81	24
	05-24-94	1300	12,400	486	8.0	15.0	2	--	160	45	12
	06-22-94	1200	6,880	760	8.3	21.5	3	--	270	74	20
	07-22-94	1045	2,790	1,210	8.4	23.0	8	--	450	120	37
	08-16-94	1330	3,130	1,330	8.3	24.0	7	--	470	130	36
	09-08-94	0940	3,360	1,290	8.4	19.0	6	7	490	140	35
	10-04-94	1340	3,960	1,340	8.3	14.5	5		460	120	38
	11-07-94	1140	3,530	1,360	8.4	7.0	5	--	460	120	38
	12-20-94	1325	3,130	1,210	8.4	.5	6	--	390	99	34
	01-12-95	1315	3,070	1,180	--	4.5	5	--	340	86	30
	02-17-95	1030	2,580	1,260	8.3	4.0	5	--	340	87	29

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N
COL7	12-19-94	110	4.1	169	260	120	0.3	11	730	6,150	--
	01-09-95	100	3.7	161	250	110	.3	9.7	681	5,730	--
	02-13-95	110	4.1	159	250	120	.3	9.8	704	5,590	--
	03-15-95	79	3.1	143	190	79	.3	12	540	6,290	--
	04-18-95	49	2.7	123	150	40	.3	11	405	5,570	--
	06-09-95	15	1.4	90	51	9.6	.2	10	185	E15,800	--
	07-18-95	17	1.4	76	56	12	.3	9.6	184	E15,200	--
	05-12-95	37	2.3	116	110	27	.2	10	322	9,220	--
	08-09-95	38	2.0	102	120	36	.2	8.9	333	E9,750	--
	09-08-95	82	3.5	167	340	60	.4	12	741	E8,440	--
COL8	10-14-92	99	4.2	171	390	90	.4	8.9	855	7,230	0.74
	04-14-93	65	3.0	139	200	49	.3	11	510	9,520	.47
	06-24-93	19	1.4	84	67	15	.2	9.8	221	14,100	.25
	08-18-93	81	4.2	158	310	67	.4	12	732	8,430	.92
	11-24-93	87	3.3	161	300	74	.3	11	700	8,640	.64
	12-07-93	85	3.2	156	250	77	.3	11	634	7,600	--
	01-19-94	94	3.4	153	240	93	.3	9.7	639	5,270	.63
	03-02-94	110	4.4	158	270	95	.4	11	699	7,110	--
	03-30-94	87	3.6	148	230	85	.3	9.4	612	5,860	.46
	05-04-94	70	2.3	140	230	61	.3	11	564	6,890	--
	05-24-94	28	1.9	97	100	24	.2	10	277	10,000	.35
	06-22-94	54	2.4	120	190	48	.3	8.1	469	8,710	--
	07-22-94	96	3.9	152	370	82	.4	6.6	810	6,280	1.0
	08-16-94	98	3.6	163	400	85	.3	10	869	7,870	1.1
	09-08-94	95	4.4	166	380	81	.4	12	852	8,070	1.1
	10-04-94	110	4.0	178	380	93	.5	13	865	9,450	--
	11-07-94	120	4.1	174	370	110	.4	10	880	8,750	.73
	12-20-94	110	4.0	169	300	110	.3	9.9	769	6,810	--
	01-12-95	110	3.8	161	280	110	.3	7.4	724	6,370	--
	02-17-95	120	4.1	164	280	120	.4	9.4	756	5,460	.61

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (^oC)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
COL8	03-16-95	1255	4,390	983	--	11.0	2	290	75	25	86
	04-18-95	1200	5,290	738	--	9.5	3	240	64	19	55
	05-11-95	1030	9,240	606	--	11.5	2	210	55	17	40
	05-16-95	1030	13,700	530	8.1	12.5	2	180	50	14	34
	06-06-95	1300	30,200	--	--	--	1	140	40	10	19
	06-20-95	1150	40,000	322	8.1	13.0	1	120	35	8.6	15
	07-20-95	1110	29,100	378	8.1	15.5	1	140	42	9.0	19
	08-04-95	0954	12,000	520	8.3	18.0	2	180	50	13	33
	09-06-95	1125	3,950	1,050	8.2	21.5	4	370	99	29	76
	10-27-95	1145	5,440	1,050	8.4	8.5	5	360	93	30	79
	12-05-95	1405	5,470	896	8.4	6.5	3	290	73	25	72
	01-09-96	1305	5,230	843	8.0	1.0	3	260	67	22	71
	02-08-96	1235	4,380	990	8.3	4.0	4	300	78	26	87
	03-12-96	1225	4,540	975	8.5	8.5	3	290	73	26	88
	04-23-96	1032	7,680	675	8.3	10.0	2	230	61	18	49
	05-14-96	1309	21,100	380	8.2	14.0	1	140	39	9.8	20
	05-21-96	1200	28,300	318	8.2	12.5	1	110	33	7.9	15
	06-06-96	1055	16,100	449	8.2	16.0	1	160	46	12	27
	06-26-96	1435	18,600	385	8.2	16.5	2	140	40	9.5	21
	07-09-96	0803	10,400	575	8.3	18.5	2	190	53	14	38
	07-23-96	1355	5,540	874	8.5	23.0	3	300	83	22	62
	08-27-96	1207	3,640	1,230	8.4	21.5	6	410	110	33	93
	09-10-96	1038	3,960	1,250	8.4	18.5	8	440	120	35	90
	10-31-96	1206	5,140	1,130	8.3	7.0	5	360	96	30	91
	11-21-96	1335	4,930	1,100	8.5	6.5	4	340	88	30	93
	12-24-96	1427	4,730	972	8.4	1.0	3	290	78	24	88
	01-30-97	1300	5,000	887	8.4	4.0	3	270	70	22	72
	03-06-97	1350	4,610	898	8.7	4.5	2	270	69	23	80
	03-27-97	1410	8,280	550	8.2	8.5	1	180	49	15	41
	04-23-97	1320	13,200	468	8.1	9.5	1	160	42	13	31

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
COL8	03-16-95	3.3	147	210	82	0.3	12	582	7,270	--
	04-18-95	3.2	123	170	50	.3	11	448	8,940	--
	05-11-95	2.4	123	130	29	.2	11	358	8,940	--
	05-16-95	2.3	117	110	26	.2	11	312	12,200	0.24
	06-06-95	1.5	98	65	11	.2	10	215	17,600	--
	06-20-95	1.7	83	58	9.7	.2	10	190	21,400	.20
	07-20-95	1.4	81	80	14	.2	10	224	18,700	--
	08-04-95	1.9	95	110	30	.2	9.9	305	10,400	--
	09-06-95	3.3	150	290	70	.3	9.7	667	7,120	--
	10-27-95	3.3	154	280	70	.3	10	653	10,200	.43
	12-05-95	2.7	136	210	63	.3	8.7	528	8,200	.42
	01-09-96	2.8	130	180	72	.3	11	504	7,160	.58
	02-08-96	3.3	145	220	86	.4	11	592	7,270	.64
	03-12-96	3.3	145	210	84	.3	9.7	566	7,400	.41
	04-23-96	2.5	118	150	44	.3	11	404	8,690	.42
	05-14-96	1.6	90	72	16	.2	9.9	215	13,800	.17
	05-21-96	1.4	79	58	12	.2	9.1	182	14,800	.23
	06-06-96	1.6	92	91	23	.2	8.5	265	11,900	.30
	06-26-96	1.7	79	78	17	.3	9.5	218	12,600	.20
	07-09-96	2.1	98	130	34	.3	8.9	340	10,200	.32
	07-23-96	2.9	130	220	60	.4	7.4	522	8,440	.6
	08-27-96	4.1	159	350	84	.4	10	777	8,020	1.1
	09-10-96	4.2	169	370	80	.4	12	815	9,110	1.0
	10-31-96	3.8	162	300	81	.4	11	709	9,910	.65
	11-21-96	3.3	156	270	85	.4	9.8	669	9,370	.50
	12-24-96	3.1	145	210	88	.4	10	589	7,800	.56
	01-30-97	2.9	137	200	73	.4	9.7	531	7,510	.49
	03-06-97	2.8	135	190	82	.3	7.3	526	6,860	.21
	03-27-97	2.3	115	110	36	.4	11	324	7,760	.34
	04-23-97	2.1	106	92	26	.2	10	276	10,600	.33

Table 20. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Discharge, (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
COL8	05-13-97	0940	21,400	379	8.2	12.0	1	140	38	10	21
	05-23-97	1350	33,200	372	7.9	12.0	1	130	36	10	20
	06-04-97	1420	36,900	301	7.8	14.0	<1	110	32	8.0	14
	07-01-97	1020	20,000	384	8.0	15.5	1	130	38	9.4	21
	07-24-97	1015	7,450	784	8.5	21.5	3	260	70	21	56
	08-05-97	1310	7,470	837	8.4	21.0	5	290	78	22	59
	09-03-97	1045	5,920	1,000	8.4	21.0	6	350	96	27	74

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
COL8	05-13-97	1.7	99	68	16	0.2	10	215	13,300	0.22
	05-23-97	1.8	94	74	12	.2	10	217	20,900	.24
	06-04-97	1.6	83	53	11	.1	9.8	178	19,300	.17
	07-01-97	1.8	81	76	19	.2	9.1	222	13,100	.23
	07-24-97	2.5	125	180	55	.3	7.9	456	10,100	.47
	08-05-97	3.2	131	210	53	.4	10	511	11,200	.61
	09-03-97	3.3	146	270	64	.4	11	624	10,900	.68

Table 21. Trace-element data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97

[Sites on pl. 2; totals are concentrations in unfiltered samples; all concentrations in micrograms per liter; <, less than; --, no data]

Site code	Date	Time	Antimony, dissolved	Arsenic, total	Arsenic, dissolved	Barium, dissolved	Beryllium, dissolved	Cadmium, total	Cadmium, dissolved
COL2	09-02-94	1935	<1	--	<1	<100	<10	<1	<1
	09-03-94	0740	<1	--	1	96	<.5	<1	<1
	09-04-94	0715	<1	--	<1	80	<.5	<1	<1
	09-07-94	1505	<1	<1	1	54	<.5	<1	<1
PLT	11-04-93	1015	--	--	--	--	--	--	<1
	03-17-94	1115	--	--	--	--	--	--	<1
	06-09-94	1250	--	--	--	--	--	--	<1
	08-19-94	1315	--	--	--	--	--	--	<1
	10-27-94	1035	--	--	--	--	--	--	<1
	03-14-95	1350	--	--	--	--	--	--	<1
	06-05-95	1015	--	--	--	--	--	--	2
	08-25-95	1300	--	--	--	--	--	--	<1
	11-01-95	1530	--	--	--	--	--	--	<1
	04-04-96	1445	--	--	--	--	--	--	<1
	06-04-96	1145	--	--	--	--	--	--	<1
	08-12-96	1010	--	--	--	--	--	--	<1
COL3	11-04-93	1445	--	--	--	--	--	--	<1
	03-17-94	1440	--	--	--	--	--	--	<1
	06-09-94	1530	--	--	--	--	--	--	<1
	08-15-94	1315	--	--	--	--	--	--	<1
	10-27-94	1325	--	--	--	--	--	--	<1
	03-15-95	1030	--	--	--	--	--	--	<1
	06-06-95	1125	--	--	--	--	--	--	<1
	08-25-95	0955	--	--	--	--	--	--	<1
	10-31-95	1515	--	--	--	--	--	--	<1
	04-04-96	1100	--	--	--	--	--	--	<1

Table 21. Trace-element data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Chro-mium, total	Chro-mium, dis-solved	Copper, total	Copper, dis-solved	Iron, total	Iron, dis-solved	Lead, total	Lead, dis-solved
COL2	09-02-94	1	<1	3	<1	--	10	2	<1
	09-03-94	13	<1	13	<1	--	19	27	<1
	09-04-94	5	<1	7	<1	--	--	5	<1
	09-07-94	<1	<1	2	<1	--	17	1	<1
PLT	11-04-93	--	--	--	<1	810	--	--	<1
	03-17-94	--	--	--	<1	3,200	--	--	<1
	06-09-94	--	--	--	2	380	--	--	<1
	08-19-94	--	--	--	<1	220	--	--	<1
	10-27-94	--	--	--	<1	300	--	--	<1
	03-14-95	--	--	--	<1	1,500	9	--	<1
	06-05-95	--	--	--	2	9,900	99	--	<1
	08-25-95	--	--	--	4	570	--	--	<1
	11-01-95	--	--	--	<1	200	--	--	<1
	04-04-96	--	--	--	<1	3,800	--	--	<1
	06-04-96	--	--	--	1	290	--	--	<1
	08-12-96	--	--	--	<1	60	--	--	<1
COL3	11-04-93	--	--	--	<1	310	--	--	<1
	03-17-94	--	--	--	<1	580	--	--	<1
	06-09-94	--	--	--	1	980	--	--	<1
	08-15-94	--	--	--	1	8,900	--	--	<1
	10-27-94	--	--	--	<1	260	--	--	<1
	03-15-95	--	--	--	<1	2,500	6	--	<1
	06-06-95	--	--	--	<1	13,000	75	--	<1
	08-25-95	--	--	--	2	25,000	12	--	<1
	10-31-95	--	--	--	<1	160	--	--	<1
	04-04-96	--	--	--	<1	3,700	--	--	<1

Table 21. Trace-element data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Manganese, total	Manganese, dissolved	Mercury, dissolved	Nickel, total	Nickel, dissolved	Silver, dissolved	Zinc, total	Zinc, dissolved
COL2	09-02-94	--	<10	--	2	<1	<1	10	<10
	09-03-94	--	2.0	--	15	<1	<1	100	<3
	09-04-94	--	--	--	6	<1	<1	30	<3
	09-07-94	--	3	--	1	<1	<1	<10	<3
PLT	11-04-93	60	12	<0.1	--	--	<.2	--	<3
	03-17-94	240	7	<.1	--	--	<.2	--	13
	06-09-94	30	6	<.1	--	--	<.2	--	7
	08-19-94	20	6	<.1	--	--	<.2	--	<3
	10-27-94	30	6	<.1	--	--	<.2	--	<3
	03-14-95	80	6	<.1	--	--	<.2	--	<10
	06-05-95	400	10	<.1	--	--	<.2	--	<10
	08-25-95	70	20	<.1	--	--	<.2	--	<10
	11-01-95	10	<10	<.1	--	--	<.2	--	<10
	04-04-96	270	11	<.1	--	--	<.2	--	<3
	06-04-96	30	5	<.1	--	--	<.2	--	<3
	08-12-96	<10	3	<.1	--	--	<.2	--	3
COL3	11-04-93	20	7	<.1	--	--	<.2	--	<3
	03-17-94	50	20	<.1	--	--	<.2	--	<3
	06-09-94	60	9	<.1	--	--	<.2	--	<3
	08-15-94	270	2	<.1	--	--	<.2	--	<3
	10-27-94	20	4	.1	--	--	<.2	--	<3
	03-15-95	130	20	<.1	--	--	<.2	--	<10
	06-06-95	580	18	<.1	--	--	<.2	--	<10
	08-25-95	700	1	<.1	--	--	<.2	--	<10
	10-31-95	10	10	<.1	--	--	<.2	--	<10
	04-04-96	190	12	<.1	--	--	<.2	--	<3

Table 21. Trace-element data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Time	Aluminum, dissolved	Antimony, dissolved	Arsenic, total	Arsenic, dissolved	Barium, dissolved	Beryllium, dissolved	Cadmium, total	Cadmium, dissolved	Chromium, total
COL3	06-05-96	1200	--	--	--	--	--	--	--	<1	--
	08-13-96	0925	--	--	--	--	--	--	--	<1	--
COL8	10-14-92	1230	<10	--	--	--	45	--	--	--	--
	04-14-93	1300	40	--	--	--	57	--	--	--	--
	06-24-93	1300	20	--	--	--	45	--	--	--	--
	08-18-93	1025	<10	--	--	--	62	--	--	--	--
	11-24-93	1115	<10	--	--	--	50	--	--	--	--
	03-30-94	1335	<10	--	--	--	43	--	--	--	--
	05-24-94	1300	20	--	--	--	41	--	--	--	--
	08-16-94	1330	10	--	--	--	54	--	--	--	--
	09-08-94	0940	--	<1	2	2	52	<0.5	<1	<1	1
	11-07-94	1140	<10	--	--	--	54	--	--	--	--
	02-17-95	1030	20	--	--	--	80	--	--	--	--
	05-16-95	1030	30	--	--	--	60	--	--	--	--

Site code	Date	Chromium, dissolved	Cobalt, dissolved	Copper, total	Copper, dissolved	Iron, total	Iron, dissolved	Lead, total	Lead, dissolved	Lithium, dissolved	Manganese, total
COL3	06-05-96	--	--	--	<1	30	--	--	<1	--	<10
	08-13-96	--	--	--	1	380	--	--	1	--	50
COL8	10-14-92	--	<3	--	--	--	<3	--	--	48	--
	04-14-93	--	<3	--	--	--	9	--	--	28	--
	06-24-93	--	<3	--	--	--	27	--	--	11	--
	08-18-93	--	<3	--	--	--	<3	--	--	39	--
	11-24-93	--	<3	--	--	--	8	--	--	38	--
	03-30-94	--	<3	--	--	--	6	--	--	34	--
	05-24-94	--	<3	--	--	--	21	--	--	12	--
	08-16-94	--	<3	--	--	--	<3	--	--	48	--
	09-08-94	<1.0	--	4	1	--	3	3	<1	--	--
	11-07-94	--	<3	--	--	--	12	--	--	54	--
	02-17-95	--	<3	--	--	--	6	--	--	40	--
	05-16-95	--	<3	--	--	--	36	--	--	22	--

Table 21. Trace-element data for sites on the Colorado River and Plateau Creek in the Grand Valley area, water years 1993–97—Continued

Site code	Date	Manganese, dissolved	Mercury, dissolved	Molybdenum, dissolved	Nickel, total	Nickel, dissolved	Silver, dissolved	Strontium, dissolved	Vanadium, dissolved	Zinc, total	Zinc, dissolved
COL3	06-05-96	3	<0.1	--	--	--	<0.2	--	--	--	14
	08-13-96	58	<.1	--	--	--	<.2	--	--	--	6
COL8	10-14-92	8	--	<10	--	2	<1	1,400	<6	--	--
	04-14-93	4	--	<10	--	<1	<1	660	<6	--	--
	06-24-93	5	--	<10	--	<1	<1	310	<6	--	--
	08-18-93	3	--	<10	--	2	<1	1,100	<6	--	--
	11-24-93	21	--	<10	--	<1	<1	970	<6	--	--
	03-30-94	19	--	<10	--	<1	<1	790	<6	--	--
	05-24-94	4	--	<10	--	<1	<1	400	<6	--	--
	08-16-94	3	--	10	--	1	<1	1,300	<6	--	--
	09-08-94	2	--	--	3	<1	<1	--	--	10	<3
	11-07-94	13	--	<10	--	2	<1	1,300	<6	--	--
	02-17-95	19	--	<10	--	<1	<1	920	<6	--	--
	05-16-95	4	--	<10	--	<1	<1	470	<6	--	--

Table 22. Dissolved iron and manganese data for sites on the Colorado River and Plateau Creek, Grand Valley area, water years 1995–97

[Sites on pl. 2; concentrations in micrograms per liter; <, less than]

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
COL2	12-21-94	0915	26	19
	11-21-94	1230	15	5
	03-15-95	1400	11	22
	06-05-95	1320	74	15
	06-29-95	1045	61	8
	07-21-95	1130	46	9
	10-20-95	1145	15	5
	11-21-95	1240	17	7
	01-12-96	1220	13	16
	02-05-96	1500	8	21
	03-05-96	1300	5	15
	04-04-96	1315	16	18
	05-13-96	1437	24	16
	05-20-96	1545	31	8
	06-07-96	1048	24	4
	07-08-96	1111	21	4
	07-22-96	1415	12	5
	08-28-96	0911	10	4
	09-09-96	1204	9	5
	10-24-96	1320	6	3
	11-20-96	1448	<3	4
	12-23-96	1408	8	13
	01-23-97	1345	<3	9
	02-27-97	1410	4	14
	03-14-97	1245	<3	15
	03-28-97	1300	14	11
	04-29-97	1245	10	9
	05-08-97	1210	11	9
	05-23-97	1230	13	8
	06-03-97	1640	24	9

Table 22. Dissolved iron and manganese data for sites on the Colorado River and Plateau Creek, Grand Valley area, water years 1995–97—Continued

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
COL2	06-24-97	1240	14	4.9
	07-25-97	1100	9	2.8
	08-07-97	1130	<3	<1
	09-05-97	1215	7	3.3
PLT	11-21-94	1015	16	10
	12-21-94	1340	14	11
	02-23-95	1245	7	10
	06-29-95	1335	100	7
	07-19-95	1240	38	4
COL3	03-15-95	1030	6	20
COL8	12-20-94	1325	11	25
	03-21-95	0910	5	5
	06-20-95	1150	74	11
	07-20-95	1110	28	4
	08-04-95	0954	22	5
	10-27-95	1145	14	11
	12-05-95	1405	8	14
	01-09-96	1305	7	17
	02-08-96	1235	<3	24
	03-12-96	1225	<3	19
	04-23-96	1032	7	10
	05-14-96	1309	18	7
	05-21-96	1200	21	5
	06-06-96	1055	12	2
	06-26-96	1435	13	3

Table 22. Dissolved iron and manganese data for sites on the Colorado River and Plateau Creek, Grand Valley area, water years 1995–97—Continued

Site code	Date	Time	Iron, dissolved	Manganese, dissolved
COL8	07-09-96	0803	8	<1
	07-23-96	1355	5	1
	08-27-96	1207	<3	4
	09-10-96	1038	<3	2
	10-31-96	1206	<3	7
	11-21-96	1335	<3	11
	12-24-96	1427	5	19
	01-30-97	1300	<3	16
	03-06-97	1350	3	18
	03-27-97	1410	5	8
	04-23-97	1320	9	5
	05-13-97	0940	11	4
	05-23-97	1350	10	12
	06-04-97	1420	12	5
	07-01-97	1020	9	3
	07-24-97	1015	<3	<1
	08-05-97	1310	3	3
	09-03-97	1045	<3	2

Table 23. Dry-weight selenium concentrations in fish samples from the Colorado River, water years 1995–96

Site code (pl. 2)	Matrix	Species	Date (month-year)	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
COL2	Whole body	Bluehead sucker	04-95	373	70.3	1.7
	Whole body	Bluehead sucker	04-95	344	65.9	1.5
	Whole body	Bluehead sucker	04-95	367	69.4	1.7
	Whole body	Bluehead sucker	04-95	400	67.5	1.4
	Whole body	Bluehead sucker	04-95	268	72.3	1.2
	Whole body	Bluehead sucker	03-96	417	66.2	1.2
	Whole body	Bluehead sucker	03-96	415	66.8	1.4
	Whole body	Bluehead sucker	03-96	394	67.8	1.3
	Whole body	Bluehead sucker	03-96	439	72.5	1.8
	Whole body	Bluehead sucker	03-96	435	67.6	1.6
	Whole body	Speckled dace	04-95	106	69.7	8.1
	Whole body	Speckled dace	04-95	116	67.7	8.7
	Whole body	Speckled dace	04-95	106	68.5	8.4
	Whole body	Speckled dace	04-95	79	70.8	6.7
	Whole body	Speckled dace	04-95	75	67.7	8.0
	Whole body	Speckled dace	03-96	88	66.9	8.5
	Whole body	Speckled dace	03-96	112	70.3	7.4
	Whole body	Speckled dace	03-96	108	69.2	10.3
	Whole body	Speckled dace	03-96	84	69.9	7.9
	Whole body	Speckled dace	03-96	110	69.6	10.8
COL8	Whole body	Bluehead sucker	04-95	390	64.7	2.6
	Whole body	Bluehead sucker	04-95	359	65.4	2.3
	Whole body	Bluehead sucker	04-95	327	62.9	2.4
	Whole body	Bluehead sucker	04-95	385	64.6	2.4
	Whole body	Bluehead sucker	04-95	404	63.3	2.7
	Whole body	Bluehead sucker	05-96	375	65.7	2.3
	Whole body	Bluehead sucker	05-96	250	66.9	2.7
	Whole body	Bluehead sucker	05-96	275	62.7	2.7
	Whole body	Bluehead sucker	05-96	275	64.2	2.2
	Whole body	Bluehead sucker	05-96	280	69.8	2.7
	Whole body	Flannelmouth sucker	04-96	505	69.1	3.0
	Whole body	Flannelmouth sucker	04-96	500	67.8	4.5
	Whole body	Flannelmouth sucker	04-96	377	63.7	3.4
	Whole body	Speckled dace	04-95	84	69.9	6.8
	Whole body	Speckled dace	04-95	81	64.6	6.2
COL8	Whole body	Speckled dace	04-95	71	68.8	5.6
	Whole body	Speckled dace	04-95	60	69.2	5.6
	Whole body	Speckled dace	04-95	104	63.5	5.7
	Whole body	Speckled dace	05-96	65	67.6	13
	Whole body	Speckled dace	05-96	90	65.0	13
	Whole body	Speckled dace	05-96	85	66.8	14
	Whole body	Speckled dace	05-96	65	68.0	9.4
	Whole body	Speckled dace	05-96	90	64.4	14

Table 24. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured in the Colorado River, Grand Valley, May and June, 1994

Collection site (river mile)	Nearest site or sites on pl. 2	Fish pit tag number	Collection date	Fish length (millimeters)	Selenium (micrograms per gram)
130.0	COL8	7005	June 17	791	6.2
130.2	COL8	0B16	June 17	881	4.4
158.9	PS1	1F2C	June 13	880	4.4
163.5	WWOUT	0666	May 24	652	4.4
163.5	WWOUT	0B31	May 24	840	5.2
163.5	WWOUT	0E45	May 24	530	16.2
163.5	WWOUT	0E65	May 24	682	6.4
163.5	WWOUT	1542	May 24	511	15.6
163.5	WWOUT	184E	May 24	588	20.4
163.5	WWOUT	1A70	May 24	509	11.0
163.5	WWOUT	3405	May 24	615	12.5
163.5	WWOUT	3460	May 24	609	29.6
163.5	WWOUT	3A31	May 24	523	7.4
163.5	WWOUT	3B28	May 24	590	13.7
163.5	WWOUT	3C6F	May 24	518	29.1
163.5	WWOUT	5115	May 24	584	30.7
163.5	WWOUT	5715	May 24	510	21.4
163.5	WWOUT	6531	May 24	607	16.6
163.5	WWOUT	6E7F	May 24	574	25.9
164	WWDIV	312F	May 24	508	7.1
168.9	BW25	0D4F	June 15	568	9.8
168.9	BW25	3938	June 14	673	4.8
168.9	BW25	3B3A	June 16	553	7.7
168.9	BW25	7E68	June 14	564	6.8
169.2	BW25	614F	June 14	677	4.1
169.6	BW25	1911	June 14	498	17.8
174.4	P29 5/8	0B33	May 27	742	5.3
174.4	P29 5/8	3735	May 27	588	4.9
174.4	p29 5/8	6422	May 27	802	3.8
175.3	GF8	6576	May 20	513	5.8
175.5	GF8	3317	May 20	696	6.8
175.5	GF8	5A7C	May 24	661	4.2
175.6	GF8	4F06	May 20	616	5.6
175.8	GF8-HMP	176C	May 23	639	10.0
175.8	GF8-HMP	6774	May 27	553	6.4
179.2	PK1	6D55	May 23	501	5.0
181.9	BRU1-COL3	4F5B	May 23	513	4.5
182.6	BRU1-COL3	707C	May 23	564	3.2
183.3	BRU1-COL3	585B	May 23	604	4.8

Table 25. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured at Walter Walker State Wildlife Area (river mile 163.5–165.5) in the Grand Valley during May–August 1995

Fish pit tag number	Collection date	Fish length (millimeters)	Fish weight (grams)	Selenium (micrograms per gram)
017A	June 12	659	3,050	4.2
0666	May 4	673	3,545	4.1
0B16	June 13	889	6,500	5.1
0C61	August 4	576	2,000	8.1
0E65	August 4	696	3,500	8.3
1455	July 25	578	1,100	6.1
1529	August 4	511	1,350	6.6
184E	May 25	594	2,025	15.0
1911	July 10	504	1,150	15.0
1C6A	July 25	563	1,925	6.7
2B45	May 25	525	1,200	8.8
2C0D	May 25	529	1,300	11.0
2D15	August 4	759	4,100	7.0
2D61	June 13	577	1,775	20.0
2D61	May 25	580	1,775	20.0
2E6D	July 10	584	1,800	19.0
2E6D	June 1	568	1,600	17.0
2F30	August 4	544	1,400	16.0
2F30	May 25	535	1,150	12.0
3002	June 13	768	4,750	5.6
3127	June 12	582	1,950	5.3
312F	July 25	572	1,900	5.8
323D	May 4	736	4,609	8.6
3369	Jun	777	4,850	4.5
3B28	July 10	619	2,450	6.5
3C6F	May 4	534	1,818	19.0
3D44	June 12	6.1	2,450	15.0
3E2E	June 13	540	1,500	6.2
3E2E	May 25	540	1,500	6.3
3E4D	July 25	611	1,950	11.0
4032	May 25	594	2,200	6.0

Table 25. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured at Walter Walker State Wildlife Area (river mile 163.5–165.5) in the Grand Valley during May–August 1995—Continued

Fish pit tag number	Collection date	Fish length (millimeters)	Fish weight (grams)	Selenium (micrograms per gram)
5115	June 5	592	1,725	22.0
513D	June 12	597	2,000	15.0
5272	July 10	548	1,450	8.9
5346	July 10	546	1,375	11.0
540C	June 13	569	1,700	5.2
562D	July 25	529	1,450	8.1
572D	May 4	729	3,691	5.6
5E64	July 10	546	1,500	9.0
6531	May 4	610	2,545	10.0
6562	July 25	512	1,250	8.8
6E7F	July 10	591	2,200	18.0
7411	May 25	523	1,300	9.7
7530	July 10	543	1,400	6.7
7530	June 12	548	1,350	6.6
7530	May 25	543	1,200	6.3
756E	July 11	708	4,000	4.4
7710	June 13	560	3,000	6.4
787D	August 4	615	2,250	7.9
787D	June 13	604	2,200	7.7
7E28	July 10	713	3,850	4.8
7E34	July 25	566	1,850	9.9

Table 26. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured in the Gunnison and Colorado Rivers in and downstream from the Grand Valley during April–August 1996

Collection site (river mile)	Nearest site or feature on plate 2	Fish pit tag number	Collection date	Fish length (millimeters)	Fish weight (grams)	Selenium (micrograms per gram)
		GUNNISON RIVER				
2.8	2.8 miles upstream from mouth	014A	August 15	643	2,800	4.7
2.8	2.8 miles upstream from mouth	3369	August 23	775	4,000	3.6
2.8	2.8 miles upstream from mouth	5F07	August 15	649	2,400	4.4
3.0	3.0 miles upstream from mouth	1A7E	August 15	579	1,200	4.3
3.0	3.0 miles upstream from mouth	612D	August 28	--	--	4.6
		COLORADO RIVER				
20.8	113.2 miles downstream from site COL8	0538	May 24	571	1,450	6.2
23	111.1 miles downstream from site COL8	7C01	May 23	526	1,200	5.3
61	73 miles downstream from site COL8	5B25	May 10	584	1,900	4.4
63.8	70.2 miles downstream from site COL8	0B42	May 10	387	610	5.3
67.8	66.2 miles downstream from site COL8	680F	May 10	490	1,120	6.1
90.6	43.4 miles downstream from site COL8	2242	May 21	510	1,050	7.4
90.6	43.3 miles downstream from site COL8	3916	May 21	505	1,150	6.3
143.4	Ruby	2115	May 7	555	1,644	5.1
147.1	Horsethief Canyon	0A35	May 6	636	2,380	5.4
147.4	Horsethief Canyon	330B	May 6	606	1,850	3.7
149.7	Horsethief Canyon	5A59	May 7	482	936	6.9
149.9	Horsethief Canyon	200F	May 9	577	1,800	4.5
149.9	Horsethief Canyon	6562	May 7	519	1,158	5.9
151.8	Horsethief Canyon	667F	May 6	519	1,104	5.1
151.9	Horsethief Canyon	3941	May 6	585	1,654	5.4
163.5	WWOUT	017D	June 6	777	4,350	6.5
163.5	WWOUT	0D1D	June 13	566	1,500	5.3
163.5	WWOUT	0D4F	May 14	596	2,050	7.2
163.5	WWOUT	0E65	May 14	704	3,400	8.0
163.5	WWOUT	1620	May 3	732	3,925	5.6
163.5	WWOUT	1911	May 13	514	1,225	17.2
163.5	WWOUT	1A46	June 6	590	2,150	7.1
163.5	WWOUT	1D61	May 23	585	1,850	20.4
163.5	WWOUT	2B45	June 6	531	1,200	13.2
163.5	WWOUT	2C0D	May 14	531	1,250	13.4
163.5	WWOUT	2C0D	May 21	535	1,250	14.6
163.5	WWOUT	2C0D	June 6	525	1,350	13.5
163.5	WWOUT	2D15	June 5	760	4,150	4.6
163.5	WWOUT	2D15	June 6	754	4,050	5.8

Table 26. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured in the Gunnison and Colorado Rivers in and downstream from the Grand Valley during April–August 1996

Collection site (river mile)	Nearest site or feature on plate 2	Fish pit tag number	Collection date	Fish length (millimeters)	Fish weight (grams)	Selenium (micrograms per gram)
		COLORADO RIVER--CONTINUED				
163.5	WWOUT	2E6D	May 21	--	1,850	18.1
163.5	WWOUT	3002	June 6	773	4,950	5.6
163.5	WWOUT	3127	June 6	608	2,250	5.8
163.5	WWOUT	3317	May 13	731	3,900	5.1
163.5	WWOUT	3405	May 14	623	2,150	9.5
163.5	WWOUT	3460	May 22	646	2,800	17.7
163.5	WWOUT	3A3D	June 6	720	4,250	11.0
163.5	WWOUT	3C09	May 14	737	3,300	5.0
163.5	WWOUT	4F5A	June 16	560	1,850	5.8
163.5	WWOUT	5115	May 21	590	1,950	21.5
163.5	WWOUT	513D	May 13	606	2,025	11.6
163.5	WWOUT	513D	May 24	607	1,950	13.5
163.5	WWOUT	5463	June 6	655	2,650	13.3
163.5	WWOUT	5542	May 23	514	1,350	7.0
163.5	WWOUT	570A	May 14	582	1,800	7.8
163.5	WWOUT	5813	May 13	516	1,120	6.0
163.5	WWOUT	5A70	May 13	707	3,450	5.7
163.5	WWOUT	5A70	June 6	706	3,450	4.8
163.5	WWOUT	5E34	May 14	763	4,550	5.6
163.5	WWOUT	6C6B	June 6	694	4,050	5.4
163.5	WWOUT	6F54	June 6	555	1,750	7.0
163.5	WWOUT	7368	May 22	585	1,800	6.2
163.5	WWOUT	7710	June 6	638	2,550	6.2
163.5	WWOUT	7B3B	May 13	511	1,200	14.1
163.5	WWOUT	7C71	May 22	555	1,700	13.5
163.5	WWOUT	7D5F	May 24	594	2,000	4.4
174.4	P29 5/8	0066	April 15	863	7,546	3.6
174.4	P29 5/8	0066	June 11	860	1,429	4.0
174.4	P29 5/8	081F	April 9	594	1,429	5.3
174.4	P29 5/8	0B33	May 22	762	4,600	5.5
174.4	P29 5/8	1401	June 4	610	2,800	5.2
174.4	HSP	1B29	April 17	602	2,136	4.5
174.4	P29 5/8	1D37	July 16	650	2,400	4.8
174.4	P29 5/8	1F61	June 6	624	2,350	5.6
174.4	HSP	3855	May 24	656	3,855	3.6
174.4	HSP	3E2E	May 16	550	1,500	5.4
174.4	P29 5/8	4234	June 4	650	3,150	4.9

Table 26. Dry-weight selenium concentrations in muscle-plug samples from Colorado squawfish captured in the Gunnison and Colorado Rivers in and downstream from the Grand Valley during April–August 1996

Collection site (river mile)	Nearest site or feature on plate 2	Fish pit tag number	Collection date	Fish length (millimeters)	Fish weight (grams)	Selenium (micrograms per gram)
		COLORADO RIVER--CONTINUED				
174.4	HSP	4D75	June 12	615	2,800	5.7
174.4	HSP	4F24	May 16	627	2,300	5.1
174.4	HSP	6215	June 4	687	3,100	5.7
174.4	P29 5/8	6823	May 23	607	2,350	4.4
174.4	P29 5/8	7367	July 18	563	1,750	5.3
174.4	HSP	7B3A	May 16	861	6,900	4.2
174.4	HSP	7D28	May 24	675	2,800	4.8

Table 27. List of sampling sites and types of data collected for tributary streams in the Grand Valley area, water year 1993 through March 1998

[X, data type collected; --, data type not collected]

Site code (pl. 2)	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sediment	Biota
CF1B	390410108262701	Drainage ditch at D 1/2 and 32 1/2 Roads, near Clifton	X	--	--
CF1	390438108265601	Drainage ditch at D and 32 1/2 Roads, near Clifton	X	--	--
LW2	390451108283801	Lewis Wash near I-70B, at Fruitvale	X	--	--
LW1	09106200	Lewis Wash at 31 Road, near mouth	X	--	--
IW	390320108315901	Indian Wash at C 1/2 Road, at Grand Junction	X	--	--
LC1	09152650	Leach Creek at Highway 50	X	X	X
DR23 3/4	390532108364501	Drainage ditch at 23 3/4 River Road	X	--	--
PSW2	390859108364101	Persigo Wash at J Road	X	--	--
PSDR	390649108385101	Drainage ditch at 22 Road and Highway 50	X	--	--
PSW1	390645108390101	Persigo Wash at River Road	X	--	--
HW2B	390953108391701	Hunter Wash at K and 21 1/2 Roads	X	--	--
HW1	390717108400501	Hunter Wash at River Road	X	--	--
AC2	391030108394701	Adobe Creek at 21 Road	X	--	--
AC1	09152900	Adobe Creek at River Road	X	--	--
LSW3	391249108393201	Little Salt Wash above Government Highline Canal	X	--	--
BSW3	391509108433001	Big Salt Wash above Government Highline Canal	X	--	--
BSW1	09153270	Big Salt Wash at Highway 50, at Fruita	X	--	--
RW2	09153290	Reed Wash near N Road	X	--	--
RWEB	391134108471101	East Branch Reed Wash at M Road	X	--	--
RW1	09153300	Reed Wash at Highway 50, near Loma	X	X	X
RWLD	391038108475601	Loma Drain at mouth	X	--	--
ESC4	391849108510301	East Salt Creek downstream from Camp Gulch	X	--	--
WSC3	09153400	West Salt Creek below Prairie Canyon	X	--	--
WSC2	391646108572301	West Salt Creek near S Road	X	--	--
SC	09163490	Salt Creek at I-70	X	X	X

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998

[Sites on pl. 2; all chemical concentrations for dissolved constituents unless noted otherwise; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, less than]

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
CF1B	07-12-93	1215	11	2,010	7.8	19.5	26	--	680	110	99
	09-23-93	1200	11	2,660	8.0	16.0	25	--	910	150	130
CF1	07-12-93	1110	17	1,630	7.8	19.0	18	--	540	94	75
	09-23-93	1100	11	2,700	8.0	15.0	34	--	910	150	130
LW2	07-12-93	0835	15	658	8.1	17.5	2	--	230	66	16
	08-17-93	0815	9.3	1,150	8.3	17.5	2	--	390	110	27
	09-23-93	0835	13	1,170	8.4	15.0	2	--	360	100	26
LW1	07-12-93	0940	9.0	563	8.1	18.0	1	--	190	53	14
	08-17-93	0915	5.8	983	8.3	17.5	2	--	290	80	23
	09-23-93	0930	5.2	1,110	8.4	14.5	2	--	310	84	25
	11-19-97	0935	.30	3,930	8.0	3.0	23	--	2,000	430	220
	01-29-98	1015	.14	4,430	8.2	5.0	27	--	2,400	470	300
	03-13-98	1020	.15	4,420	8.0	4.5	22	--	--	--	--
IW	12-15-94	1310	1.8	4,380	8.6	4.5	57	--	2,000	390	250
	01-20-95	1435	1.6	4,240	8.4	5.0	76	--	1,900	370	240
LC1	12-15-94	1510	9.1	3,950	8.3	5.5	67	--	2,100	500	200
	01-20-95	1320	6.7	3,900	8.3	4.0	95	--	2,000	480	190
	02-13-95	0900	6.9	3,840	8.2	4.5	67	85	1,900	470	180
	03-13-95	1020	5.7	4,000	8.4	7.5	86	--	2,000	470	200
	04-24-95	0920	60	1,230	8.5	8.5	8	--	410	110	33
	05-24-95	0920	52	1,070	8.1	11.5	9	--	420	110	36
	06-27-95	1200	36	993	8.2	16.5	5	--	410	110	32
	07-24-95	1330	46	1,050	8.0	17.5	8	8	440	120	34
	08-22-95	1305	55	1,330	8.1	21.0	13	--	480	130	38
	09-27-95	1215	62	1,470	8.4	13.0	6	9	530	140	43

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
CF1B	07-12-93	190	4.3	169	740	83	0.4	10	1,340	40.8	--
	09-23-93	290	6.6	230	960	150	.5	13	1,840	53.6	--
CF1	07-12-93	150	3.8	158	570	75	.4	10	1,070	49.2	--
	09-23-93	280	6.7	238	960	160	.6	13	1,840	56.2	--
LW2	07-12-93	42	2.4	106	150	43	.2	8.4	392	16.1	--
	08-17-93	93	3.2	153	280	110	.3	9.1	724	18.1	--
	09-23-93	110	4.1	146	250	130	.3	8.8	717	25.0	--
LW1	07-12-93	38	2.5	104	110	39	.2	8.1	327	7.92	--
	08-17-93	88	3.5	155	200	110	.3	9.7	607	9.55	--
	09-23-93	97	4.0	165	210	120	.3	10	649	9.03	--
	11-19-97	300	7.9	285	2,100	230	.4	10	3,500	2.84	--
	01-29-98	360	8.8	313	2,400	250	.4	8.4	4,030	1.52	--
	03-13-98	--	--	--	--	--	--	--	--	--	--
IW	12-15-94	390	47	246	2,200	220	.8	15	3,680	17.8	3.9
	01-20-95	400	8.3	257	2,200	230	.9	15	3,640	15.3	4.2
LC1	12-15-94	260	38	190	2,000	180	.4	15	3,330	81.6	5.8
	01-20-95	270	8.0	222	2,000	180	.4	14	3,300	60.0	6.6
	02-13-95	260	8.9	245	1,800	180	.4	13	3,080	57.3	5.0
	03-13-95	280	8.2	209	2,000	180	.4	12	3,310	51.1	7.3
	04-24-95	110	4.0	173	300	120	.3	8.1	791	129	.38
	05-24-95	61	3.1	148	330	50	.2	9.9	692	96.7	.58
	06-27-95	48	2.9	120	330	38	.2	9.1	644	62.6	.49
	07-24-95	54	2.7	117	340	47	.3	8.7	679	84.9	.54
	08-22-95	85	4.3	153	380	91	.3	9.2	832	122	.57
	09-27-95	110	4.2	155	400	120	.3	11	924	155	.53

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
LC1	10-24-95	1245	54	1,590	8.4	6.5	11	--	570	150	48
	11-22-95	1045	13	3,760	8.2	7.5	95	--	1,900	490	170
	12-15-95	0805	11	3,050	8.2	4.0	57	--	1,500	370	130
	01-16-96	1220	8.1	3,750	8.2	4.0	87	--	2,100	510	190
	02-12-96	1400	6.6	3,900	8.3	6.5	99	--	2,100	520	200
	03-11-96	1130	5.5	3,970	8.1	8.0	110	--	2,000	480	200
	04-09-96	1250	18	1,330	8.4	13.0	8	--	480	120	43
	05-13-96	0955	46	942	8.4	13.0	8	--	370	98	30
	06-27-96	1245	90	922	8.1	16.5	8	9	340	93	27
	07-24-96	1315	35	1,450	8.1	21.5	11	--	580	160	45
	08-26-96	1300	63	1,520	8.2	20.0	11	9	510	140	40
	09-19-96	1310	62	1,460	8.3	13.0	11	8	500	130	42
	12-03-96	1240	8.7	3,670	8.4	4.0	81	--	1,900	480	180
	01-06-97	1300	7.2	3,750	8.3	5.0	88	--	1,900	450	180
	02-05-97	0850	6.2	3,740	8.3	4.5	73	--	2,000	500	190
	03-10-97	0745	5.3	3,640	8.2	3.5	85	--	1,800	430	180
	05-13-97	0750	44	951	8.3	12.0	7	--	370	99	30
	06-16-97	1100	29	1,110	8.3	15.5	10	--	490	130	39
	07-09-97	1230	30	1,250	8.3	18.5	12	--	510	140	40
	08-13-97	1305	76	1,000	8.3	18.0	9	9	360	97	28
DR23[3/4]	03-23-98	1115	--	8,380	7.6	11.5	<1	--	3,300	460	520
PSW2	07-08-93	1115	22	831	8.1	17.0	6	--	310	91	21
	08-18-93	1100	19	1,350	8.3	18.0	8	--	460	130	33
	09-22-93	1130	21	1,420	8.3	15.0	6	--	500	140	36
PSDR	03-23-98	0940	.07	5,430	8.2	7.5	19	--	2,200	370	310
PSW1	07-08-93	1400	49	1,040	8.2	19.0	9	--	410	110	32
	08-18-93	1400	61	1,350	8.3	20.0	9	--	480	130	38
	09-22-93	1420	69	1,390	8.5	17.0	7	--	460	120	39
	03-23-98	1030	2.8	4,320	8.1	9.5	47	--	2,200	490	250

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
LC1	10-24-95	120	4.5	186	460	130	0.3	10	1,030	150
	11-22-95	250	7.9	248	1,900	170	.3	13	3,150	110
	12-15-95	210	6.5	223	1,300	160	.3	12	2,320	67.7
	01-16-96	270	8.1	238	1,900	160	.4	13	3,190	70.0
	02-12-96	280	8.4	247	2,000	170	.4	13	3,340	59.1
	03-11-96	280	8.2	250	2,000	180	.4	12	3,310	48.9
	04-09-96	89	4.0	144	440	84	.3	9.5	876	41.9
	05-13-96	52	2.7	123	300	46	.2	9.5	612	75.7
	06-27-96	51	4.2	101	290	44	.3	8.1	578	141
	07-24-96	91	3.6	153	490	92	.3	8.4	982	92.8
	08-26-96	120	4.8	168	420	140	.3	9.9	976	167
	09-19-96	120	4.4	178	430	120	.4	11	965	161
	12-03-96	260	7.9	233	1,900	160	.4	14	3,140	74.0
	01-06-97	270	7.5	238	1,900	160	.4	14	3,120	61.1
	02-05-97	250	6.6	228	1,900	160	.4	12	3,160	52.7
	03-10-97	250	7.5	231	1,900	160	.4	12	3,080	44.2
	05-13-97	50	2.9	133	290	40	.2	10	600	71.0
	06-16-97	57	2.8	125	380	43	.2	8.9	741	58.0
	07-09-97	69	3.4	136	420	64	.3	8.8	827	65.9
	08-13-97	68	3.0	133	270	66	.3	11	618	127
DR23[3/4]	03-23-98	1,100	11	317	4,100	780	.5	9.7	7,140	--
PSW2	07-08-93	48	2.6	112	230	46	.2	8.1	514	30.8
	08-18-93	100	3.6	156	370	120	.3	8.8	859	43.6
	09-22-93	120	4.7	160	400	130	.3	9.4	936	52.3
PSDR	03-23-98	680	14	302	2,600	500	.3	.28	4,730	.89
PSW1	07-08-93	68	3.3	126	330	60	.3	8.9	688	90.1
	08-18-93	110	4.0	166	360	120	.3	9.8	872	143
	09-22-93	130	4.7	172	360	130	.3	11	898	168
	03-23-98	400	8.9	262	2,200	220	.3	7.5	3,790	28.9

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
HW2B	07-08-93	1005	16	1,470	8.0	16.0	10	--	630	170	49
	08-18-93	1000	16	1,950	8.0	16.0	17	--	860	240	63
	09-22-93	1030	11	2,340	7.9	14.0	20	--	1,100	290	97
HW1	07-08-93	1305	49	1,210	8.1	17.5	6	--	480	130	38
	08-18-93	1300	46	1,610	8.2	18.5	11	--	660	180	50
	09-22-93	1320	29	1,830	8.2	16.5	10	--	720	190	59
AC2	07-08-93	0830	17	1,260	8.0	15.5	--	--	540	160	34
	08-18-93	0830	16	1,580	8.1	15.5	12	--	610	180	40
	09-22-93	0910	13	2,100	8.0	13.0	17	--	930	270	61
AC1	07-08-93	0730	55	1,060	8.2	16.0	--	--	420	120	29
	08-18-93	0720	52	1,360	8.2	16.0	10	--	490	140	35
	09-22-93	0800	35	1,730	8.1	14.0	16	--	630	170	51
LSW3	02-20-96	0835	1.5	801	8.5	5.0	3	--	58	14	5.5
	03-24-97	0915	.99	586	8.5	8.0	1	3	49	13	3.9
BSW3	12-04-95	1340	.11	21,300	8.3	9.0	2	--	6,600	340	1,400
	02-16-96	1300	.14	20,100	8.3	11.5	3	--	6,300	390	1,300
	07-17-96	1010	.08	22,800	8.2	28.0	2	--	7,700	460	1,600
	03-24-97	1030	.13	16,500	8.3	10.0	3	3	5,100	380	1,020
BSW1	11-20-95	1010	20	3,220	8.2	6.5	43	--	1,600	410	140
	12-15-95	0910	17	3,040	8.1	5.0	44	--	1,500	370	130
	02-12-96	1250	8.8	3,340	8.0	7.0	26	--	1,600	400	150
	03-11-96	1015	6.0	3,390	8.1	7.5	30	--	1,600	390	160
	04-09-96	1110	76	962	8.4	12.0	4	--	310	82	26

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
HW2B	07-08-93	72	3.5	153	540	71	0.2	9.4	1,010	44.0
	08-18-93	120	4.7	198	670	130	.3	10	1,360	58.2
	09-22-93	150	6.0	220	900	150	.3	11	1,740	52.0
HW1	07-08-93	67	3.6	140	400	64	.3	9.9	797	106
	08-18-93	120	4.8	185	500	130	.3	11	1,110	138
	09-22-93	140	7.0	202	610	140	.3	12	1,280	100
AC2	07-08-93	--	3.5	136	450	61	.3	8.4	--	--
	08-18-93	110	4.5	171	490	120	.2	9.0	1,060	46.5
	09-22-93	140	5.6	202	820	140	.3	10	1,570	55.0
AC1	07-08-93	--	3.0	135	330	60	.3	9.0	--	--
	08-18-93	110	4.2	177	360	120	.2	10	886	124
	09-22-93	150	4.9	200	580	140	.3	11	1,230	116
LSW3	02-20-96	150	1.5	200	190	2.4	.4	4.1	488	1.96
	03-24-97	90	1.5	161	120	1.4	.4	4.7	336	.90
BSW3	12-04-95	5,000	2.5	736	15,000	300	.7	12	22,500	6.68
	02-16-96	4,700	3.4	705	15,000	280	.2	11	22,100	8.36
	07-17-96	6,100	3.5	745	17,000	330	.8	13	26,000	5.75
	03-24-97	4,000	0.47	634	11,000	210	.7	9.0	17,000	5.96
BSW1	11-20-95	220	6.7	287	1,500	160	.2	13	2,620	139
	12-15-95	220	6.2	291	1,200	160	.3	14	2,280	103
	02-12-96	270	6.0	315	1,400	160	.3	13	2,590	61.6
	03-11-96	270	6.1	315	1,500	170	.3	13	2,700	43.5
	04-09-96	73	3.4	138	240	70	.3	9.8	587	121

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Selenium, total ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
BSW1	05-13-96	1140	79	1,320	8.1	15.5	11	--	530	140	43
	06-27-96	1105	97	1,320	8.0	15.5	13	--	590	160	46
	07-24-96	1110	71	1,790	8.0	18.5	21	--	780	210	63
	08-26-96	1130	90	1,880	8.0	18.5	16	20	720	190	60
	09-06-96	1330	131	1,670	7.9	18.0	14	12	610	160	50
	09-06-96	1425	131	1,710	7.9	18.0	13	13	610	160	50
	09-19-96	0740	103	1,690	8.1	11.5	15	--	680	180	55
	10-18-96	1135	79	1,770	8.3	8.5	12	--	660	170	56
	11-11-96	1000	38	2,390	8.2	5.5	19	--	1,100	280	87
	12-03-96	1040	16	3,240	8.0	4.0	32	--	1,700	420	150
	01-06-97	1150	10	3,410	8.2	5.0	31	--	1,600	380	150
	03-10-97	0900	16	2,280	8.1	3.0	11	12	800	180	85
	04-15-97	0900	59	1,300	8.5	7.5	4	7	400	99	37
	05-13-97	0850	91	1,050	8.1	11.5	7	--	420	110	35
	06-16-97	0915	109	1,110	8.1	14.0	9	--	490	130	37
	07-09-97	1110	90	1,520	8.1	17.0	19	--	640	170	50
	08-13-97	1200	123	1,260	8.1	18.5	11	12	490	130	39
RW2	10-24-95	1120	58	1,880	8.0	6.5	23	--	650	170	54
	11-22-95	1020	9.6	4,450	7.9	8.0	74	--	2,300	550	220
	01-11-96	1245	5.1	4,590	8.0	5.5	78	--	2,400	580	240
	02-09-96	1205	4.0	4,640	8.1	6.0	110	--	2,300	540	240
	03-08-96	0823	2.9	4,730	7.9	4.5	150	--	2,400	530	250
	04-05-96	0840	106	869	8.0	10.0	7	--	280	74	22
	04-20-96	1615	86	893	8.0	9.5	8	--	300	80	24
	04-18-96	0945	70	964	8.0	9.5	9	--	330	89	27
	05-23-96	0910	71	1,150	7.7	12.0	18	--	460	120	40
	06-25-96	1236	65	1,380	7.9	16.5	22	--	620	160	53

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
BSW1	05-13-96	77	3.6	165	450	58	0.3	10	881	187	--
	06-27-96	71	4.3	154	450	59	.3	9.3	892	233	--
	07-24-96	110	4.9	208	640	100	.3	10	1,260	242	--
	08-26-96	140	5.9	215	610	140	.3	10	1,290	313	--
	09-06-96	130	6.6	194	500	140	.3	11	1,110	394	--
	09-06-96	130	6.8	194	520	140	.3	10	1,130	401	--
	09-19-96	130	4.8	212	550	130	.3	11	1,190	330	--
	10-18-96	130	4.6	220	550	140	.3	12	1,190	256	--
	11-11-96	180	5.2	241	890	150	.3	12	1,750	181	--
	12-03-96	230	6.7	300	1,500	160	.3	14	2,660	114	--
	01-06-97	260	5.9	309	1,500	150	.3	14	2,650	75.0	--
	03-10-97	250	4.2	269	960	70	.3	8.5	1,720	72.9	--
	04-15-97	122	3.8	180	320	90	.3	9.0	793	126	--
	05-13-97	62	3.5	158	330	47	.2	11	694	170	--
	06-16-97	59	3.3	144	360	45	.2	9.1	734	216	--
	07-09-97	83	4.3	176	530	74	.3	9.3	1,030	249	--
	08-13-97	84	3.7	164	390	73	.3	10	826	274	--
RW2	10-24-95	130	5.0	199	540	130	.3	9.5	1,150	194	1.8
	11-22-95	300	9.5	302	2,200	200	.3	10	3,730	103	8.3
	01-11-96	320	9.3	288	2,300	230	.3	10	3,920	56.0	7.9
	02-09-96	320	9.0	298	2,300	230	.2	8.2	3,870	45.3	7.7
	03-08-96	340	10	322	2,400	240	.3	6.6	4,000	33.7	7.4
	04-05-96	68	3.2	130	200	78	.4	9.4	524	159	.55
	04-20-96	58	3.1	128	230	64	.3	9.0	539	138	.66
	04-18-96	68	3.1	133	250	68	.3	9.7	593	115	.68
	05-23-96	59	3.2	128	390	49	.2	8.9	751	156	1.3
	06-25-96	76	4.1	138	510	57	.3	8.5	948	161	1.7

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)
RW2	07-09-96	1435	61	1,610	8.1	20.0	20	660	170	58	89
	07-24-96	1034	81	1,530	8.0	18.0	16	610	160	50	98
	08-28-96	1355	85	1,810	8.1	21.5	17	660	170	58	130
	09-12-96	0852	81	1,800	8.1	17.0	13	660	170	56	130
	10-22-96	1045	73	1,800	8.1	5.5	18	620	160	54	130
	11-19-96	1200	8.5	4,440	8.0	9.0	96	2,300	550	220	290
	12-18-96	1002	5.4	4,460	8.1	1.5	55	2,100	510	210	320
	01-27-97	1350	5.1	4,640	8.1	9.0	110	2,300	550	220	310
	02-24-97	1335	4.0	4,690	8.1	6.5	49	2,400	550	240	330
	03-26-97	1200	3.5	4,510	8.1	8.5	90	2,300	520	240	340
	04-24-97	0930	80	871	8.0	9.0	7	300	79	25	61
	04-30-97	0930	49	1,220	8.0	9.5	10	480	130	39	81
	04-16-97	1615	70	1,070	8.0	13.5	5	320	82	27	94
	05-09-97	1210	57	1,080	8.0	15.0	10	450	120	38	65
	05-15-97	1020	71	984	7.9	13.0	13	410	110	32	54
	05-21-97	1110	50	1,230	8.0	15.0	17	540	140	46	67
	05-29-97	0950	54	1,330	7.9	14.0	14	540	140	50	73
	06-05-97	1110	67	1,100	8.0	15.5	16	460	120	40	55
	06-11-97	1210	73	1,080	8.0	16.0	15	450	120	38	54
	06-18-97	0940	75	1,040	7.8	16.0	17	450	120	37	56
	06-25-97	1000	54	1,500	8.0	14.5	18	640	170	55	74
	07-02-97	1040	80	1,360	7.8	14.5	22	540	140	46	67
	07-17-97	1015	78	1,360	8.0	18.0	16	510	130	42	81
	07-23-97	1100	83	1,420	8.0	20.5	16	540	140	45	89
	08-04-97	1020	73	1,480	7.9	19.5	20	590	160	47	91
	08-21-97	0930	--	1,610	8.0	18.5	18	660	180	53	101
	09-04-97	1050	83	1,730	8.0	19.0	21	660	170	54	115
	09-23-97	1025	61	1,750	8.0	15.0	<1	730	210	53	126
	10-10-97	0900	61	1,520	8.1	11.5	15	590	150	50	111

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
RW2	07-09-96	4.5	158	600	78	0.3	8.5	1,100	194	2.1
	07-24-96	4.9	163	500	95	.3	8.1	1,020	238	1.7
	08-28-96	5.3	189	590	140	.3	9.3	1,220	294	1.8
	09-12-96	5.3	195	550	150	.3	9.6	1,190	273	1.6
	10-22-96	5.2	200	540	150	.4	9.4	1,170	244	1.8
	11-19-96	9.3	255	2,300	210	.3	11	3,830	92.8	8.2
	12-18-96	8.5	289	2,300	220	.2	11	3,820	59.5	8.3
	01-27-97	8.8	261	2,300	220	.3	8.9	3,860	58.5	6.8
	02-24-97	8.5	292	2,400	230	.2	7.8	4,000	45.0	8.0
	03-26-97	8.9	289	2,400	230	.2	7.5	3,980	40.4	7.5
	04-24-97	3.3	140	220	65	.3	9.9	545	124	.89
	04-30-97	4.1	174	370	78	.3	10	805	112	1.3
	04-16-97	3.7	164	220	110	.3	9.5	638	130	.37
	05-09-97	3.8	151	340	56	.3	11	714	112	1.3
	05-15-97	3.8	143	310	44	.2	11	650	133	1.1
	05-21-97	3.5	145	430	50	.2	10	836	119	1.6
	05-29-97	3.2	156	480	56	.2	10	889	138	1.5
	06-05-97	2.9	131	390	44	.2	9.0	746	147	1.2
	06-11-97	3.1	127	380	42	.2	8.8	713	152	1.4
	06-18-97	3.8	128	350	42	.2	9.2	694	149	1.5
	06-25-97	4.3	151	570	65	.2	8.1	1,050	166	2.6
	07-02-97	4.2	133	490	57	.2	8.2	910	217	2.3
	07-17-97	4.3	152	440	85	.3	7.7	870	203	1.7
	07-23-97	4.2	162	450	92	.3	7.7	915	226	1.6
	08-04-97	4.5	167	480	91	.3	9.1	971	209	1.6
	08-21-97	4.5	173	550	100	.3	9.7	1,100	--	1.8
	09-04-97	4.7	188	560	120	.3	9.3	1,150	290	1.8
	09-23-97	5.6	186	650	100	.4	9.8	1,260	218	2.0
	10-10-97	4.0	187	580	110	.3	9.9	1,120	180	1.5

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH (standard units)	Temperature (°C)	Selenium ($\mu g/L$ as Se)	Selenium, total ($\mu g/L$ as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
RWEB	07-09-93	1120	38	1,830	7.9	16.5	28	--	830	220	67
	09-20-93	1320	42	2,090	8.0	14.0	30	--	870	230	72
RW1	07-09-93	0940	155	1,450	8.0	16.0	24	--	610	160	51
	09-20-93	1130	153	1,780	8.1	13.5	20	--	690	180	59
	12-15-94	1045	15	4,430	8.3	3.5	80	87	2,200	520	230
	01-20-95	1130	9.8	4,330	8.2	2.0	84	96	2,200	520	230
	02-13-95	1240	8.0	4,430	8.3	6.5	110	130	2,200	520	230
	03-13-95	1150	6.7	4,540	8.2	9.0	88	100	2,200	500	240
	04-24-95	1120	120	1,470	8.3	9.0	13	--	520	140	42
	05-24-95	1200	136	1,260	8.2	13.5	17	16	510	130	44
	06-27-95	1000	152	1,260	7.9	15.0	11	--	530	140	43
	07-24-95	1130	175	1,240	7.8	16.5	12	13	530	140	45
	08-22-95	1010	166	1,620	7.9	19.0	19	21	610	160	52
	09-27-95	1000	156	1,790	8.2	11.5	19	20	700	180	60
	10-24-95	1050	146	1,790	8.2	6.0	15	19	690	180	58
	11-20-95	1140	24	3,950	8.3	7.0	65	72	2,000	490	190
	12-15-95	1045	17	3,530	8.3	4.5	67	74	1,700	410	170
	01-16-96	1015	11	4,250	8.1	3.0	77	86	2,300	550	230
	02-12-96	1125	8.4	4,360	8.1	3.5	81	86	2,400	560	240
	03-11-96	0910	7.9	4,460	8.0	5.5	83	100	2,300	510	240
	04-09-96	0920	90	1,060	8.2	10.5	9	12	360	94	31
	05-14-96	1000	142	1,250	8.2	13.0	17	17	500	130	42
	06-27-96	0940	172	1,270	8.1	15.5	18	15	560	150	46
	07-24-96	1000	160	1,570	7.9	18.0	15	18	660	180	52
	08-26-96	1000	174	1,820	8.2	18.5	17	17	680	180	56
	09-19-96	0925	134	1,810	8.2	12.0	17	17	730	190	62
	10-18-96	0940	143	1,820	8.3	7.0	19	21	670	170	59

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
RWEB	07-09-93	97	4.5	172	710	91	0.3	9.2	1,300	134	--
	09-20-93	130	6.4	215	740	130	.3	11	1,450	164	--
RW1	07-09-93	83	4.2	157	510	75	.3	9.1	987	412	--
	09-20-93	130	4.7	203	580	130	.3	11	1,220	501	--
	12-15-94	310	9.2	274	2,200	220	.3	11	3,690	148	6.8
	01-20-95	330	9.0	261	2,300	230	.3	9.2	3,820	101	7.5
	02-13-95	340	10	289	2,200	220	.3	8.9	3,730	80.7	7.3
	03-13-95	360	9.7	273	2,300	240	.3	8.4	3,860	69.4	7.9
	04-24-95	120	4.7	185	390	120	.3	8.1	941	305	1.1
	05-24-95	73	3.4	167	370	64	.2	9.8	799	294	1.1
	06-27-95	63	4.1	144	440	52	.2	8.8	844	346	1.4
	07-24-95	69	3.7	137	420	58	.3	8.8	833	394	1.4
	08-22-95	99	4.9	174	500	96	.3	8.5	1,030	463	1.7
	09-27-95	130	5.9	203	570	140	.3	11	1,230	516	1.4
	10-24-95	130	5.1	205	570	130	.3	9.8	1,210	475	--
	11-20-95	280	8.9	260	2,000	190	.1	10	3,320	217	--
	12-15-95	270	9.7	261	1,600	180	.3	10	2,810	132	--
	01-16-96	330	9.5	285	2,200	230	.3	9.2	3,730	111	--
	02-12-96	340	9.5	298	2,200	210	.2	6.5	3,740	84.4	--
	03-11-96	350	9.6	314	2,300	230	.3	6.3	3,830	81.5	--
	04-09-96	77	3.6	138	290	72	.3	9.5	660	160	--
	05-14-96	67	3.5	147	440	55	.3	9.9	836	320	--
	06-27-96	71	4.9	139	460	55	.3	8.7	879	408	--
	07-24-96	100	5.0	168	530	99	.3	8.1	1,080	464	--
	08-26-96	130	5.7	194	570	140	.3	9.9	1,210	568	--
	09-19-96	130	4.9	204	600	130	.3	10	1,250	452	--
	10-18-96	140	4.7	199	590	140	.3	10	1,230	476	--

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
RW1	11-11-96	0850	27	3,880	8.2	6.0	64	70	2,200	550	190
	12-03-96	0950	18	4,210	8.1	2.5	64	64	2,200	530	210
	01-06-97	0850	12	4,360	8.2	3.5	83	82	2,200	530	220
	02-05-97	1030	8.9	4,400	8.2	4.5	83	76	2,200	520	230
	03-10-97	1030	7.4	4,330	8.2	4.5	79	77	2,200	520	230
	04-15-97	0800	106	1,130	8.3	8.0	7	8	350	89	31
	05-13-97	1045	170	1,010	8.3	12.5	12	17	400	110	32
	06-16-97	0815	164	1,140	8.2	14.5	16	21	510	140	40
	07-09-97	0930	176	1,330	8.0	16.0	21	18	550	150	45
	08-13-97	0950	157	1,520	8.0	16.5	19	20	630	170	52
	09-24-97	1150	125	1,780	8.2	14.5	18	21	750	190	65
RWLD	07-09-93	0800	27	948	8.1	15.5	2	--	340	93	27
	09-20-93	1000	29	1,360	8.1	13.0	2	--	450	120	37
ESC4	12-04-95	1020	2.2	5,030	8.6	1.0	<1	--	1,400	140	260
	02-16-96	1100	5.4	3,480	8.5	1.0	<1	--	930	110	160
WSC3	12-04-95	1155	.99	11,300	8.5	3.0	<1	--	4,200	330	810
	03-13-97	0835	5.3	1,820	8.6	2.5	<1	3	500	75	75
WSC2	02-16-96	0915	.24	12,000	8.5	1.0	10	--	4,100	420	730
	07-17-96	0820	.16	13,600	8.3	20.5	9	--	4,400	400	830
SC	12-15-94	0850	14	4,820	8.5	.0	48	--	2,200	460	250
	01-20-95	0940	7.3	4,700	8.2	.0	54	--	2,200	470	250
	02-13-95	1105	13	4,900	8.4	4.0	51	--	2,000	400	250
	03-13-95	1340	20	3,600	8.4	10.5	25	--	1,300	260	170
	04-24-95	1330	212	1,330	8.4	14.0	5	--	370	94	32

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
RW1	11-11-96	270	8.6	273	2,000	190	0.3	12	3,380	247	--
	12-03-96	310	8.9	294	2,200	190	.3	10	3,640	177	--
	01-06-97	350	8.7	295	2,300	200	.3	10	3,800	119	--
	02-05-97	310	7.7	265	2,300	210	.3	7.6	3,740	90.2	--
	03-10-97	340	9.2	268	2,400	210	.2	7.7	3,880	77.6	--
	04-15-97	98	4.0	164	260	100	.3	9.7	694	199	--
	05-13-97	55	3.7	144	310	44	.2	10	651	299	--
	06-16-97	59	3.2	134	390	46	.2	8.5	769	341	--
	07-09-97	76	4.0	151	450	67	.2	8.8	887	421	--
	08-13-97	98	4.3	172	530	81	.3	10	1,040	441	--
	09-24-97	115	5.1	199	680	97	.3	11	1,290	435	--
RWLD	07-09-93	68	3.6	88	270	54	.3	9.4	578	42.9	--
	09-20-93	130	5.5	180	350	120	.3	11	882	68.8	--
ESC4	12-04-95	850	3.8	509	2,500	93	.4	11	4,160	25.0	--
	02-16-96	540	4.4	388	1,600	56	.2	8.0	2,710	39.3	--
WSC3	12-04-95	2,000	10	415	7,400	150	.2	9.3	11,000	29.3	--
	03-13-97	210	6.9	170	810	15	.1	4.2	1,300	18.5	--
WSC2	02-16-96	2,300	12	362	7,800	240	.2	7.0	11,700	7.60	--
	07-17-96	2,700	15	355	9,100	280	.4	3.6	13,500	5.85	--
SC	12-15-94	470	8.0	261	2,500	210	.3	11	4,080	150	3.3
	01-20-95	460	7.6	269	2,600	220	.3	11	4,190	82.7	3.3
	02-13-95	540	8.1	303	2,500	190	.3	10	4,090	139	2.4
	03-13-95	410	6.5	271	1,700	100	.3	8.7	2,830	150	1.7
	04-24-95	130	4.1	158	280	140	.3	6.4	782	448	.17

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Selenium (µg/L as Se)	Selenium, total (µg/L as Se)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)
SC	05-25-95	0800	253	1,130	8.2	12.5	5	--	380	85	40
	06-27-95	0800	117	1,330	8.2	15.0	8	--	490	120	47
	07-24-95	0850	221	895	8.1	17.0	5	7	340	88	30
	08-22-95	0805	212	1,120	8.0	20.0	10	--	380	100	31
	09-27-95	0815	220	1,400	8.3	12.5	7	9	460	120	38
	10-24-95	0850	156	1,570	8.2	6.5	10	--	540	140	47
	11-20-95	1320	21	4,160	8.5	6.5	57	--	1,800	420	190
	12-15-95	1235	16	4,660	8.3	4.0	58	--	2,100	450	230
	01-16-96	0900	11	4,870	8.4	.0	49	--	2,300	490	260
	02-12-96	1015	11	4,780	8.3	1.0	49	--	2,100	420	250
	03-11-96	0800	12	4,860	8.3	4.0	50	--	1,900	350	240
	04-09-96	0810	178	1,140	8.4	9.5	4	--	340	88	28
	05-14-96	0815	127	1,270	8.2	13.5	7	--	430	100	43
	06-27-96	0730	122	1,040	8.1	16.0	10	--	450	120	37
	07-24-96	0800	141	1,190	8.1	18.0	9	--	470	130	36
	08-26-96	0800	134	1,610	8.1	19.0	15	12	560	150	46
	09-19-96	1130	275	1,280	8.5	16.0	7	--	400	110	31
	10-18-96	0815	210	1,360	8.6	9.5	8	--	410	110	34
	11-13-96	0840	18	4,220	8.4	3.5	58	--	2,100	500	210
	01-06-97	1005	10	4,040	8.3	0.0	43	--	1,900	430	190
	03-10-97	1140	17	3,930	8.4	5.5	21	26	1,400	280	180
	05-13-97	1230	110	1,410	8.4	16.0	9	--	500	110	54
	07-09-97	0805	128	1,200	8.2	17.0	16	--	480	130	39
	08-13-97	0830	194	1,180	8.2	17.0	9	11	410	110	34

Table 28. Onsite measurements, selenium data, and major-ion and dissolved-solids data for sites on tributary streams and washes in the Grand Valley, water year 1993 through March 1998—Continued

Site code	Date	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen (mg/L as N)
SC	05-25-95	98	2.6	177	300	55	0.3	11	700	478	0.50
	06-27-95	99	3.1	150	480	50	.2	8.8	902	285	.78
	07-24-95	59	2.1	112	280	40	.2	7.9	576	344	.47
	08-22-95	76	2.9	134	300	78	.3	7.7	678	388	.43
	09-27-95	120	3.7	153	360	130	.2	8.6	874	519	.44
	10-24-95	140	4.2	175	470	130	.3	8.3	1,040	440	--
	11-20-95	380	7.2	256	2,100	170	.2	10	3,430	197	--
	12-15-95	480	7.8	295	2,500	180	.3	9.7	4,030	172	--
	01-16-96	530	8.0	297	2,700	200	.3	11	4,380	125	--
	02-12-96	530	6.1	299	2,400	170	.3	7.8	3,960	115	--
	03-11-96	560	6.7	320	2,600	170	.3	9.1	4,130	134	--
	04-09-96	100	3.1	135	290	100	.3	6.7	697	335	--
	05-14-96	110	3.2	152	420	62	.3	9.0	839	288	--
	06-27-96	64	3.2	120	350	49	.3	8.0	703	232	--
	07-24-96	81	3.3	140	370	81	.3	7.2	793	302	--
	08-26-96	130	4.7	170	470	140	.3	8.4	1,050	380	--
	09-19-96	110	3.7	153	310	130	.3	8.3	795	590	--
	10-18-96	120	3.6	157	330	140	.3	8.5	841	477	--
	11-13-96	380	7.6	260	2,200	190	.3	12	3,660	176	--
	01-06-97	350	7.1	275	2,100	170	.3	11	3,420	95.2	--
	03-10-97	470	5.6	292	2,100	120	.3	8.1	3,340	150	--
	05-13-97	120	3.5	206	480	54	.3	12	957	284	--
	07-09-97	67	3.4	144	410	56	.2	7.8	798	276	--
	08-13-97	87	3.2	142	340	77	.3	8.8	741	388	--

Table 29. Trace-element data for tributary sites in the Grand Valley, August 1997

[Sites on pl. 2; concentrations in micrograms per liter; totals are concentrations in unfiltered samples; <, less than; --, no data]

Site code	Date	Time	Arsenic, total	Arsenic, dissolved	Beryllium, total	Beryllium, dissolved	Cadmium, total	Cadmium, dissolved	Chromium, total
LC1	08-13-97	1305	2	<1	<10	<0.5	<1	<1	3
BSW1	08-13-97	1200	3	<1	<10	<.5	<1	<1	8
RW1	08-13-97	0950	2	<1	<10	<.5	<1	<1	5
SC	08-13-97	0830	2	<1	<10	<.5	<1	<1	5

Site code	Date	Chromium, dissolved	Copper, total	Copper, dissolved	Iron, total	Iron, dissolved	Lead, total	Lead, dissolved	Manganese, total
LC1	08-13-97	<1	5	<1	3,700	<3	8	<1	140
BSW1	08-13-97	<1	16	1	13,000	<3	20	<1	450
RW1	08-13-97	<1	8	<1	5,700	<3	10	<1	160
SC	08-13-97	<1	10	<1	7,500	<3	12	<1	220

Site code	Date	Manganese, dissolved	Mercury, total	Mercury, dissolved	Nickel, total	Nickel, dissolved	Vanadium, dissolved	Zinc, total	Zinc, dissolved
LC1	08-13-97	16	<0.1	<0.1	6	1	2	30	7
BSW1	08-13-97	21	<.1	<.1	15	2	2	70	10
RW1	08-13-97	22	<.1	<.1	11	3	3	40	8
SC	08-13-97	5	<.1	<.1	12	1	2	50	<3

Table 30. Dissolved iron and manganese data for site RW2 on Reed Wash, Grand Valley, water years 1996–97

[Site on pl. 2; concentrations in micrograms per liter; <, less than]

Date	Time	Iron, dissolved	Manganese, dissolved
10-24-95	1120	<3	19
11-22-95	1020	<9	100
01-11-96	1245	<15	100
02-09-96	1205	<9	110
03-08-96	0823	9	130
04-05-96	0840	6	17
04-18-96	0945	6	16
04-20-96	1615	8	18
05-23-96	0910	8	27
06-25-96	1236	7	30
07-09-96	1435	3	20
07-24-96	1034	5	16
08-28-96	1355	<3	20
09-12-96	0852	4	20
10-22-96	1045	<3	21
11-19-96	1200	<15	110
12-18-96	1002	<9	120
01-27-97	1350	<9	100
02-24-97	1335	<9	100
03-26-97	1200	<9	120
04-16-97	1615	<3	10
04-24-97	0930	6	10
04-30-97	0930	<30	22
05-09-97	1210	6	22
05-15-97	1020	8	19
05-21-97	1110	6	21
05-29-97	0950	6	28
06-05-97	1110	6	20
06-11-97	1210	5	21
06-18-97	0940	15	20
06-25-97	1000	<3	26
07-02-97	1040	3	22
07-17-97	1015	5	16
07-23-97	1100	5	14
08-04-97	1020	<3	19
08-21-97	0930	6	14
09-04-97	1050	<3	16
09-23-97	1025	<3	3

Table 31. Suspended-sediment data for sites on tributary streams in the Grand Valley, water years 1996–97

[Sites on pl. 2; ft^3/s, cubic feet per second; mg/L, milligrams per liter; --, no data]

Site code	Date	Time	Discharge (ft^3/s)	Suspended sediment concentration (mg/L)	Suspended-sediment discharge (tons per day)	Suspended-sediment, percent finer than 0.062 millimeter
LSW3	03-24-97	0915	0.99	5,950	16	87
BSW3	03-24-97	1030	.13	392	.14	--
RW2	10-24-95	1120	58	397	62	--
	11-22-95	1020	9.6	46	1.2	--
	11-22-95	1025	9.6	42	1.1	--
	01-11-96	1245	5.1	97	1.3	--
	02-09-96	1205	4.0	71	.77	--
	03-08-96	0823	2.9	34	.27	--
	04-05-96	0835	106	729	209	--
	04-05-96	0840	106	684	196	--
	04-20-96	1615	86	613	142	--
	04-20-96	1620	86	625	145	--
	04-18-96	0945	70	442	84	--
	05-23-96	0910	71	1,210	231	--
	06-25-96	1236	65	1,090	191	--
	07-09-96	1435	61	1,540	254	--
	07-24-96	1034	81	1,470	321	--
	08-28-96	1355	85	423	97	--
	09-12-96	0852	81	294	64	--
	10-22-96	1045	73	258	51	--
	11-19-96	1200	8.5	60	1.4	--
	12-18-96	1002	5.4	93	1.3	--
	01-27-97	1350	5.1	95	1.3	--
	02-24-97	1335	4.0	18	.19	--
	03-26-97	1200	3.5	23	.22	--
	04-16-97	1615	70	350	66	--
	04-16-97	1600	70	351	66	88

Table 31. Suspended-sediment data for sites on tributary streams in the Grand Valley, water years 1996–97 —Continued

Site code	Date	Time	Discharge (ft^3/s)	Suspended sediment concentration (mg/L)	Suspended-sediment discharge (tons per day)	Suspended-sediment, percent finer than 0.062 millimeter
RW2	04-24-97	0915	80	752	161	94
	04-24-97	0930	80	717	154	--
	04-30-97	0910	49	812	108	96
	04-30-97	0930	49	794	106	--
	05-09-97	1200	57	1,080	165	96
	05-09-97	1210	57	1,150	176	--
	05-15-97	1020	71	898	172	--
	05-21-97	1110	50	1,030	138	--
	05-21-97	1055	50	1,080	145	96
	05-29-97	0935	54	412	60	88
	05-29-97	0950	54	430	62	--
	06-05-97	1055	67	694	125	87
	06-05-97	1110	67	695	126	--
	06-11-97	1205	73	944	186	91
	06-11-97	1210	73	949	187	--
	06-18-97	0930	75	1,050	213	93
	06-18-97	0940	75	1,040	211	--
	06-25-97	1000	54	718	104	--
	07-02-97	1030	67	953	171	92
	07-02-97	1040	80	956	206	--
	07-17-97	1015	78	1,240	261	--
	07-23-97	1100	83	906	203	--
	08-04-97	1020	73	768	151	--
	08-21-97	0930	--	578	--	--
	09-23-97	1025	61	9,370	1,550	100
WSC3	03-13-97	0835	5.3	6,980	99	--

Table 32. Selenium concentrations in bottom-sediment samples from tributary streams in the Grand Valley, July 1995

[Concentrations in micrograms per gram]

Site code (pl. 2)	Sample description	Date of sample	Selenium concentration
LC1	Stream sediments from pool above culvert. Mostly sand.	07-24-95	1.7
RW1	Stream sediments, right bank area. Mostly sand, some clay.	07-24-95	4.5
SC	Near the island, upstream from water-sampling site. All sand.	07-24-95	1.1

Table 33. Dry-weight selenium concentrations in biota samples collected from tributary streams in the Grand Valley, water years 1995–97

[--, no data]

Site code (pl. 2)	Matrix	Species	Date (month-day-year)	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
LC1	Aquatic plant	Filamentous algae	03-14-95	--	56.3	3.6
	Aquatic invertebrate	Invertebrates	03-12-96	--	76.3	7.3
	Aquatic invertebrate	Invertebrates	03-10-97	--	71.9	7.9
	Whole body	Common carp	08-01-95	540	75.2	6.8
	Whole body	Common carp	08-01-95	145	78.5	10.0
	Whole body	Common carp	03-12-96	173	76.8	8.4
	Whole body	Flannelmouth sucker	03-14-95	147	74.4	6.6
	Whole body	Flannelmouth sucker	08-01-95	335	70.4	4.8
	Whole body	Flannelmouth sucker	03-12-96	214	79.8	7.3
	Whole body	Bluehead sucker	03-14-95	130	71.4	6.2
	Whole body	Bluehead sucker	08-01-95	330	72.4	2.4
	Whole body	Bluehead sucker	03-10-97	148	73.6	5.4
	Whole body	Fathead minnow	03-14-95	75	76.7	15.0
	Whole body	Fathead minnow	03-12-96	65	76.1	7.9
	Whole body	Fathead minnow	03-10-97	63	77.3	7.7
	Whole body	Fathead minnow	03-10-97	61	74.2	8.0
	Whole body	Red shiner	03-14-95	60	74.4	8.1
	Whole body	Red shiner	03-12-96	58	73.6	6.1
	Whole body	Speckled dace	03-14-95	70	73.0	7.3
	Whole body	Speckled dace	08-01-95	85	74.9	9.4
	Whole body	Speckled dace	03-12-96	67	72.6	8.3
	Whole body	Speckled dace	03-10-97	77	73.3	15.0
	Whole body	Black bullhead	03-14-95	160	76.7	4.3
	Whole body	Black bullhead	03-12-96	135	76.1	7.8
	Whole body	Black bullhead	03-10-97	120	79.3	7.0
	Fillet	Channel catfish	08-01-95	338	73.4	3.8
	Whole body	Largemouth bass	03-14-95	120	75.2	6.2
	Whole body	Green sunfish	03-12-96	88	77.7	10.0
RW1	Aquatic invertebrate	Invertebrates	03-11-96	--	71.1	17.0
	Invertebrate	Invertebrates	03-10-97	--	92.0	17.0
	Whole body	Common carp	03-13-95	525	69.0	14.6
	Whole body	Common carp	03-11-96	216	77.6	6.9
	Whole body	Flannelmouth sucker	03-13-95	432	75.2	13.7

Table 33. Dry-weight selenium concentrations in biota samples collected from tributary streams in the Grand Valley, water years 1995–97—Continued

Site code (pl. 2)	Matrix	Species	Date (month-day-year)	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
RW1	Whole body	Flannelmouth sucker	03-13-95	167	73.1	12.7
	Whole body	Flannelmouth sucker	03-11-96	402	72.0	9.6
	Whole body	Flannelmouth sucker	03-11-96	171	72.9	6.9
	Whole body	Flannelmouth sucker	03-10-97	288	73.4	18.0
	Whole body	Bluehead sucker	03-13-95	325	72.2	9.1
	Whole body	Black bullhead	03-13-95	250	76.7	5.3
	Whole body	Black bullhead	03-11-96	158	78.2	10.6
	Whole body	Black bullhead	03-10-97	132	78.3	11.0
	Whole body	Channel catfish	03-11-96	363	84.4	8.3
	Whole body	Brown trout	03-13-95	380	75.9	10.8
	Whole body	Speckled dace	03-11-96	90	66.2	15.0
	Whole body	Green sunfish	03-10-97	155	76.3	12.0
	Whole body	Green sunfish	03-10-97	97	76.4	12.0
	Whole body	Fathead minnow	03-10-97	73	74.9	19.0
	Whole body	Fathead minnow	03-10-97	56	71.1	8.0
SC	Aquatic invertebrate	Invertebrates	03-11-96	--	74.6	8.5
	Whole body	Common carp	03-12-97	215	77.3	9.4
	Whole body	Flannelmouth sucker	03-13-95	462	68.5	3.3
	Whole body	Flannelmouth sucker	03-13-95	166	75.4	8.1
	Whole body	Flannelmouth sucker	07-31-95	406	69.1	3.4
	Whole body	Flannelmouth sucker	07-31-95	176	73.4	4.4
	Whole body	Flannelmouth sucker	03-11-96	414	75.2	6.2
	Whole body	Flannelmouth sucker	03-11-96	307	76.2	7.7
	Whole body	Flannelmouth sucker	03-12-97	370	76.3	8.0
	Whole body	Flannelmouth sucker	03-12-97	284	75.9	11.0
	Whole body	Flannelmouth sucker	03-12-97	206	73.6	11.0
	Whole body	Bluehead sucker	03-13-95	206	69.7	3.6
	Whole body	Bluehead sucker	07-31-95	144	74.1	5.2
	Whole body	Bluehead sucker	03-11-96	213	75.7	3.7
	Whole body	Speckled dace	03-13-95	92	73.8	10.0
	Whole body	Speckled dace	03-11-96	89	72.2	11.1
	Whole body	Channel catfish	07-31-95	79	77.5	8.8
	Whole body	Green sunfish	07-31-95	100	76.4	10.0
	Whole body	Fathead minnow	03-11-96	66	76.6	5.6

Table 34. List of sampling sites and types of data collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1993 through March 1998

[All sites on pl. 2 except site DBQ2, which is about 4 miles northeast of site DBQ1; X, data type collected; --, data type not collected]

Site code	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sediment	Biota
DBQ2	392033108113301	Colorado River backwater at I-70 bridge, northeast of De Beque	X	--	X
DBQ1	391735108134901	Colorado River backwater along I-70, south of De Beque	X	--	X
BRU1	390450108250401	Pond at Brunet bottomlands site	X	X	--
PD1	390447108251401	Gravel pit, Pound bottomlands site	X	X	--
PK1	390408108253501	East backwater site at Pike bottomlands area	X	X	X
PK2	390402108255101	West backwater site at Pike bottomlands area	X	X	X
CLIF1	390340108264101	Lower pond near river at Clifton sewer plant bottomlands area	X	--	X
CLIF2	390345108270501	Pond near D Road above gravel pit, Clifton sewer plant bottomlands area	X	--	X
CORN	390326108274901	Corn Lake at 32 Road, near Clifton	X	--	--
GF4	390316108285301	East drainage at Orchard Mesa Wildlife Area	X	--	X
GF7	390304108291501	Collector ditch upstream from drain OM1, Orchard Mesa Wildlife Area	X	--	--
GF6	390303108291601	Drain OM1 at mouth, Orchard Mesa Wildlife Area	X	--	--
GF5	390302108293801	West gully at mouth, Orchard Mesa Wildlife Area	X	--	--
GF2	390304108293701	Collector ditch at road crossing, Orchard Mesa Wildlife Area	X	X	--
GF3	390305108293701	East pool at Orchard Mesa Wildlife Area	X	X	X
GF8	390309108295001	Collector ditch near mouth	X	X	--
GF1B	390253108300401	Side channel at lower slough, Orchard Mesa Wildlife Area	X	--	--
GF1	390302108294601	Lower slough, Orchard Mesa Wildlife Area	X	X	X
LW1	09106200	Lewis Wash at 31 Road, near mouth	X	--	--
LW30	390337108284501	Lewis Wash diversion at Colorado River Wildlife Area	X	--	--
P30E	390335108285301	East pool, Colorado River Wildlife Area	X	X	X
P30W	390331108291401	West Pool, Colorado River Wildlife Area	X	X	X
P30OUT	390326108291601	Outlet from west pool, Colorado River Wildlife Area	X	--	--

Table 34. List of sampling sites and types of data collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1993 through March 1998—Continued

Site code	U.S. Geological Survey station number	Site name	Types of data collected		
			Water	Bottom sediment	Biota
HMP	390326108291701	Backwater of Colorado River at Colorado River Wildlife Area	X	X	X
HMPP	390327108292501	Humphreys Pond near 30 1/4 Road	X	X	X
VGA1	390318108295901	Virginia Acres gravel pit near 30 and C 1/2 Roads	X	X	--
VGA2	390316108295701	Seep on south side of Virgina Acres gravel pit	X	X	--
PP	390312108295801	Pickup pond near 30 Road	X	X	X
P29 5/8	390304108301801	Pond near 29 5/8 Road, near Grand Junction	X	X	X
HSP	390304108303901	Hot spot pond near 29 1/4 Road	X	X	X
GJ2B	390311108303101	Drainage ditch near hot spot pond	X	X	X
D25E	390446108351601	East drainage ditch near 25 and River Roads	X	X	X
D25W	390454108352501	West drainage ditch near 25 and River Roads	X	--	X
BW25	390454108352901	Secondary channel of Colorado River near 25 Road	X	X	--
BHL	390458108361701	Blue Heron Lake at Grand Junction	X	--	--
LCP	390514108363201	Leach Creek pond at Blue Heron Trail	X	X	X
PRM1	390622108394401	Unnamed drainage at Panorama backwater area	X	--	X
PRM2	390622108394101	Upper pool downstream from sewer pond, Panorama backwater area	X	--	X
PRM3	390626108394401	Slough downstream from drainage ditch PRM1, Panorama backwater area	X	X	X
FB1	390718108415701	Backwater channel at Forrester bottomlands, near 19 Road	X	X	X
ADBW1	390738108423301	Secondary channel, south side, Adobe Creek bottomlands site	X	--	--
ADBW2	390738108423302	Secondary channel, north side, Adobe Creek bottomlands site	X	--	--
ADBW3	390742108423501	Tertiary channel near mouth, Adobe Creek bottomlands site	X	--	--
PS1	390806108432201	South pond at Smith backwater site	X	X	X
PS2	390805108431801	Drainage pipe discharge into south pond, Smith backwater site	X	--	--
RDP	391346108503601	Reid pond near 12 and O Roads, near Mack	X	X	X
RDPIN	391348108504201	Inflow into Reid pond, near Mack	X	--	--
TMP	no number	Thompsons pond near 12 and O Roads, near Mack	--	--	X

Table 35. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998

[Sites on pl. 2 except site DBQ2, which is about 4 miles northeast of site DBQ1; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
DBQ2	07-17-97	1400	--	3,210	7.8	--	--	--	<1	--
DBQ1	07-17-97	1000	--	894	8.2	--	--	--	<1	--
BRU1	09-25-97	1200	--	4,710	8.2	20.5	7.6	101	<1	--
PD1	09-25-97	1210	--	4,470	7.9	22.0	--	--	<1	--
PK1	03-17-95	0910	--	3,800	7.9	10.5	8.3	89	15	--
	06-15-95	1120	--	284	7.9	13.0	7.8	87	<1	--
	08-09-95	1215	--	966	8.2	28.0	8.7	133	<1	<1
PK2	03-17-95	0840	--	1,410	8.3	10.0	6.4	67	1	--
CLIF1	10-06-94	1250	--	1,140	8.1	15.0	--	--	5	--
CLIF2	10-06-94	1320	--	1,720	8.3	16.0	--	--	<1	--
CORN	11-19-97	0815	--	1,450	8.1	4.5	8.2	75	6	--
GF4	12-08-95	1220	E0.50	3,000	8.1	9.0	--	--	11	--
GF7	10-15-97	1405	--	3,210	7.5	13.0	--	--	16	--
GF6	10-15-97	1400	--	3,230	8.0	12.0	--	--	23	--
	11-20-97	1205	.76	3,130	8.1	10.0	--	--	22	--
	12-16-97	1115	.57	3,180	8.2	7.0	--	--	22	--
	01-22-98	1210	.45	3,080	7.9	6.5			20	--
	03-17-98	1105	.48	3,160	8.1	10.0	10.3	110	20	--
GF5	10-15-97	1200	--	3,030	8.0	12.0	--	--	19	--
	01-22-98	1135	.20	3,120	7.9	6.5	--	--	21	--
	03-17-98	1000	.19	3,150	8.0	9.0	8.7	91	17	--

Table 35. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
GF2	12-08-95	1155	E1.0	3,350	8.2	8.5	--	--	30	--
	10-15-97	1220	--	3,070	8.1	12.0	--	--	20	--
	11-20-97	1130	1.3	3,070	8.2	8.5	--	--	19	--
	03-17-98	0945	.78	3,080	7.9	7.0	9.9	98	20	--
GF3	12-08-95	1200	--	3,540	7.9	5.5	15.9	150	2	--
GF8	01-22-98	1050	--	3,070	8.0	2.5	--	--	22	--
	03-17-98	0810	.84	3,090	7.8	7.0	--	--	22	--
GF1B	10-15-97	1115	--	2,610	7.6	9.5	--	--	7	--
GF1	12-08-95	1110	--	3,440	7.9	5.5	6.6	62	9	--
	10-15-97	1130	--	2,790	7.7	9.0	--	--	7	--
	03-19-98	1000	--	3,330	7.7	6.5	5.9	57	8	--
LW1	11-19-97	0935	.30	3,930	8.0	3.0	--	--	23	--
	01-29-98	1015	.14	4,430	8.2	5.0	--	--	27	--
	03-13-98	1020	.15	4,420	8.0	4.5	--	--	22	--
LW30	06-03-96	1145	E10	477	8.2	15.5	--	--	<1	1
	04-30-97	1010	--	565	8.5	11.5	--	--	1	--
P30E	08-09-95	0820	--	1,120	8.2	22.0	6.7	92	5	6
	06-03-96	1210	--	1,830	8.3	20.0	9.9	129	14	12
	01-24-97	1035	--	1,780	8.6	3.0	--	--	5	--
P30W	04-12-95	1600	--	3,090	8.4	4.5	8.5	78	11	--
	06-15-95	0910	--	2,530	8.1	19.5	7.4	96	8	--
	08-09-95	0840	--	1,090	8.2	23.5	7.2	101	3	5
	06-03-96	1230	--	1,900	8.5	22.0	9.4	127	10	8
P30OUT	01-24-97	1020	--	1,760	8.6	3.0	--	--	6	--
	02-25-97	0840	<.01	2,060	8.5	3.0	--	--	6	--
	03-12-97	0830	<.01	2,210	8.4	7.5	--	--	7	--
	03-28-97	0830	<.01	2,290	8.5	10.0	--	--	7	--
	04-15-97	1045	E.25	2,410	8.5	11.5	--	--	9	--

Table 35. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
P30OUT	04-30-97	1000	--	2,490	8.3	14.5	--	--	7	--
	05-19-97	0945	--	2,550	8.4	20.5	--	--	9	--
	05-29-97	1000	E3.0	1,400	8.4	18.5	--	--	5	--
	06-17-97	0815	--	988	8.6	20.0	--	--	4	--
	07-07-97	1250	E3.0	1,110	8.6	23.5	--	--	4	--
	07-31-97	0845	--	1,030	8.6	23.0	--	--	4	--
	08-15-97	0900	--	1,210	8.5	22.0	--	--	5	--
	09-03-97	0850	<5.0	1,290	8.3	23.5	--	--	4	--
	09-17-97	0900	--	1,320	8.4	19.0	--	--	4	--
	10-10-97	0910	--	1,330	8.4	15.0	--	--	3	--
	10-23-97	1000	<5.0	1,380	8.4	13.0	--	--	5	--
	11-03-97	1100	--	1,400	8.4	10.0	--	--	6	--
	11-19-97	1000	--	1,430	8.5	6.0	--	--	5	--
	12-03-97	1155	--	1,390	8.6	5.0	--	--	5	--
	12-16-97	0940	--	1,520	8.6	3.0	--	--	5	--
	01-14-98	1000	--	1,510	8.6	1.5	--	--	5	--
	01-29-98	1030	--	1,540	8.6	6.0	--	--	6	--
	02-23-98	1030	--	1,760	8.5	6.5	--	--	7	--
	03-13-98	0945	--	2,020	8.6	7.0	--	--	10	--
HMP	03-14-95	1500	--	2,680	7.8	15.0	9.8	115	4	--
	08-09-95	1000	E5.0	1,010	8.3	22.0	5.9	81	3	4
HMPP	08-01-96	0930	--	933	8.4	25.0	9.1	131	1	1
VGA1	05-29-97	0830	--	6,160	7.9	18.0	9.4	120	19	--
VGA2	05-29-97	0820	--	1,030	8.1	16.0	--	--	5	--
PP	03-14-95	1615	--	3,950	8.3	15.0	9.7	114	4	--
	06-13-95	1500	--	618	8.1	19.0	8.0	102	<1	--
	08-08-95	1330	--	1,260	8.1	24.5	6.4	92	<2	1
P29[5/8]	03-17-95	1050	--	5,310	8.1	13.5	8.8	101	3	--

Table 35. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
HSP	03-14-95	1720	--	2,910	8.3	18.0	15.4	192	5	--
	06-13-95	1305	--	1,820	8.3	20.5	11.2	148	6	--
	08-09-95	1040	--	1,810	8.1	22.0	6.9	94	4	5
	03-12-96	1330	--	2,750	8.3	14.5	11.9	139	5	--
	07-31-96	1220	--	2,400	8.1	27.5	7.5	113	3	3
GJ2B	03-14-95	1710	E0.30	5,740	7.9	15.5	--	--	27	--
	06-13-95	1245	--	1,730	7.7	19.5	7.4	96	6	--
	08-09-95	1110	E3.0	1,990	8.0	20.0	9.4	123	7	8
	03-12-96	1340	.46	5,640	8.2	19.5	12.7	168	37	--
	07-31-96	1150	3.2	2,300	8.1	22.5	9.9	135	8	8
D25E	03-14-95	0920	.62	9,930	7.9	13.0	--	--	93	--
	06-13-95	1110	--	2,820	8.0	16.0	8.4	102	20	--
	08-08-95	1145	E3.0	3,670	8.0	22.5	6.2	86	23	26
	03-12-96	1200	.50	9,650	8.2	15.0	15.1	183	93	--
	07-31-96	1010	2.7	2,810	8.1	22.0	9.8	134	17	16
D25W	03-14-95	0850	.64	4,790	8.0	8.5	--	--	20	--
BW25	03-14-95	0945	--	8,280	7.9	10.0	--	--	61	--
	06-13-95	1040	--	579	8.1	14.0	7.7	88	2	--
	08-08-95	1200	--	873	8.1	19.5	7.3	95	2	3
BHL	01-24-97	1200	--	12,400	8.6	2.5	--	--	3	--
LCP	03-14-95	1105	--	9,200	8.9	11.5	12.5	138	13	--
	06-13-95	0945	--	394	8.1	13.5	7.3	82	<1	--
	08-08-95	1050	--	1,820	8.3	24.0	10.7	152	<2	2
PRM1	03-12-97	1250	E.75	2,720	8.3	9.0	--	--	8	--
PRM2	03-12-97	1235	--	1,560	8.3	11.5	--	--	2	--
PRM3	03-12-97	1205	--	2,460	8.3	12.0	--	--	7	--

Table 35. Onsite data and selenium data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Time	Discharge (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
FB1	03-14-95	1325	E0.50	6,270	8.0	15.5	12.1	145	42	--
	06-12-95	1400	--	957	8.2	16.5	7.5	91	<1	--
	08-08-95	0850	--	1,420	7.7	18.0	6.3	79	6	7
	03-12-96	1040	--	5,950	7.9	9.0	8.0	83	48	--
	07-31-96	0845	--	2,160	8.0	18.0	7.0	87	14	12
ADBW1	10-06-94	0815	--	1,250	8.2	12.5	--	--	4	--
ADBW2	10-06-94	0820	--	1,680	8.1	12.5	--	--	4	--
ADBW3	10-06-94	0840	--	4,700	8.0	12.0	--	--	4	--
PS1	03-13-95	1650	--	2,510	8.4	13.5	--	--	4	--
	06-12-95	1220	--	402	8.2	14.0	7.9	90	1	--
	08-08-95	0755	--	1,320	8.2	21.5	6.4	87	3	3
	03-12-96	0920	--	2,290	8.2	9.5	10.2	106	6	--
	07-31-96	1,970	--	1,970	8.0	22.5	6.2	84	5	--
PS2	03-13-95	1640	--	2,540	8.0	15.0	--	--	5	--
RDP	04-12-95	1405	--	3,730	8.7	14.0	9.8	114	4	--
	06-12-95	1030	--	1,440	8.2	19.5	8.6	111	3	--
	06-03-96	0900	--	1,120	8.2	20.0	11.7	151	2	3
RDPIN	06-03-96	0930	--	564	7.8	15.0	--	--	<1	<1

Table 36. Major-ion and dissolved-solids data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998

[Sites on pl. 2; all concentrations for dissolved constituents; mg/L, milligrams per liter; --, no data]

Site code	Date	Time	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)
BRU1	09-25-97	1200	2,600	400	397	399	8.3	222
PD1	09-25-97	1210	2,400	380	352	374	9.1	263
CORN	11-19-97	0815	470	90	59	146	3.5	177
GF6	03-17-98	1105	1,900	570	110	220	4.1	270
GF5	03-17-98	1000	1,800	550	100	210	5.6	248
GF8	03-17-98	0810	1,700	520	100	200	4.7	217
GF1	03-19-98	1000	1,600	440	130	260	1.0	276
LW1	11-19-97	0935	2,000	430	221	303	7.9	285
	01-29-98	1015	2,400	470	304	357	8.8	313
P30W	04-12-95	1600	1,100	200	150	280	7.2	246
	06-15-95	0910	1,000	170	150	250	6.6	193
P30OUT	02-25-97	0840	730	140	92	190	5.1	204
	04-15-97	1045	930	170	126	234	6.4	222
	05-19-97	0945	990	170	138	253	6.0	189
	05-29-97	1000	500	95	65	118	3.5	149
	06-17-97	0815	350	73	42	76	2.6	125

Table 36. Major-ion and dissolved-solids data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)	Nitrite plus nitrate nitrogen, (mg/L as N)
BRU1	09-25-97	3,000	320	0.4	5.6	4,610	--	--
PD1	09-25-97	2,500	290	.5	15	4,110	--	--
CORN	11-19-97	460	120	.3	8.5	994	--	--
GF6	03-17-98	1,600	180	1.5	22	2,870	3.72	5.1
GF5	03-17-98	1,600	170	1.5	22	2,820	1.45	<.05
GF8	03-17-98	1,600	170	1.4	20	2,750	6.24	--
GF1	03-19-98	1,600	230	1.2	12	2,880	--	--
LW1	11-19-97	2,100	230	.4	10	3,500	2.83	--
	01-29-98	2,400	250	.4	8.4	4,030	1.52	--
P30W	04-12-95	1,200	220	.5	7.6	2,210	--	--
	06-15-95	950	190	.4	6.4	1,840	--	--
P30OUT	02-25-97	710	160	.5	4.4	1,420	--	--
	04-15-97	900	170	.5	2.9	1,740	--	--
	05-19-97	1,000	180	.6	2.3	1,910	--	--
	05-29-97	470	78	.3	7.5	927	--	--
	06-17-97	300	50	.2	6.3	623	--	--

Table 36. Major-ion and dissolved-solids data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Time	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)
P30OUT	07-31-97	0845	310	64	38	80	3.0	123
	08-15-97	0900	400	82	46	99	3.7	142
	11-03-97	1100	470	110	51	125	4.2	178
	01-29-98	1030	530	110	61	137	4.1	178
VGA1	05-29-97	0830	2,400	390	343	780	10	321
D25E	03-14-95	0920	3,200	420	520	1,800	13	300
D25W	03-14-95	0850	2,000	460	210	500	7.9	219
BHL	01-24-97	1200	4,100	460	710	2,100	28	204
RDP	04-12-95	1405	1,700	370	180	270	10	221
	06-12-95	1030	490	110	52	110	5.0	165

Site code	Date	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Dissolved solids load (tons per day)
P30OUT	07-31-97	300	73	0.3	4.3	634	--
	08-15-97	350	75	.3	6.6	749	--
	11-03-97	430	120	.3	5.6	947	--
	01-29-98	480	120	.4	.76	1,030	--
VGA1	05-29-97	2,700	560	.5	2.1	4,960	--
D25E	03-14-95	5,400	600	1.3	18	8,950	15.0
D25W	03-14-95	2,100	250	.6	16	3,680	6.35
BHL	01-24-97	6,500	1,600	.5	12	11,500	--
RDP	04-12-95	1,700	260	.3	2.3	2,930	--
	06-12-95	390	120	.3	6.4	893	--

Table 37. Dissolved trace-element data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998

[Sites on pl. 2 except site DBQ2, which is located about 4 miles northeast of site DBQ1; concentrations in micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Aluminum, dissolved	Antimony, dissolved	Arsenic, dissolved	Barium, dissolved	Beryllium, dissolved	Boron, dissolved
DBQ2	07-17-97	1000	--	--	1	114	--	--
DBQ1	07-17-97	1400	--	--	2	96	--	--
CLIF1	10-06-94	1250	5	<1	1	82	<1	--
CORN	11-19-97	0815	--	--	--	--	--	--
GF6	12-16-97	1115	--	--	--	--	--	--
	01-22-98	1210	--	--	--	--	--	349
	03-17-98	1105	--	--	<1	13	--	361
GF5	01-22-98	1135	--	--	--	--	--	358
	03-17-98	1000	3	<2	1	15	<2	365
GF2	03-17-98	0945	--	--	--	--	--	365
GF8	01-22-98	1050	--	--	--	--	--	364
GF1	03-19-98	1000	--	--	--	--	--	341
LW1	11-19-97	0935	--	--	--	--	--	399
P30OUT	11-19-97	1000	--	--	--	--	--	10(
	12-03-97	1155	--	--	--	--	--	10[

Table 37. Dissolved-trace element data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Cadmium, dissolved	Chromium, dissolved	Cobalt, dissolved	Copper, dissolved	Iron, dissolved	Lead, dissolved	Manganese, dissolved
DBQ2	07-17-97	<1	<1	--	<1	4	<1	137
DBQ1	07-17-97	<1	<1	--	<1	29	<1	884
CLIF1	10-06-94	<1	4	<1	2	--	<1	88
CORN	11-19-97	--	--	--	--	--	--	--
GF6	12-16-97	--	--	--	--	--	--	<12
	01-22-98	--	--	--	--	--	--	--
	03-17-98	<1	<1	--	1	<30	<1	<12
GF5	01-22-98	--	--	--	--	--	--	--
	03-17-98	<2	2	<2	3	<30	<2	6
GF2	03-17-98	--	--	--	--	--	--	<12
GF8	01-22-98	--	--	--	--	--	--	--
GF1	03-19-98	--	--	--	--	--	--	403
LW1	11-19-97	--	--	--	--	--	--	--
P30OUT	11-19-97	--	--	--	--	--	--	--
	12-03-97	--	--	--	--	--	--	--

Table 37. Dissolved-trace element data for sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code	Date	Mercury, dissolved	Molybdenum, dissolved	Nickel, dissolved	Silver, dissolved	Uranium natural, dissolved	Vanadium, dissolved	Zinc, dissolved
DBQ2	07-17-97	<0.1	--	--	<1	--	--	<3
DBQ1	07-17-97	<.1	--	--	<1	--	--	<9
CLIF1	10-06-94	--	25	3	<1	7.0	--	2
CORN	11-19-97	--	--	--	--	--	3	--
GF6	12-16-97	--	20	--	--	--	--	--
	01-22-98	--	--	--	--	--	21	--
	03-17-98	<.1	24	<1	<1	7.5	7	<60
GF5	01-22-98	--	--	--	--	--	6	--
	03-17-98	--	26	6	<2	56	6	4
GF2	03-17-98	--	--	--	--	--	--	--
GF8	01-22-98	--	--	--	--	--	6	--
GF1	03-19-98	--	--	--	--	--	5	--
LW1	11-19-97	--	--	--	--	--	5	--
P30OUT	11-19-97	--	--	--	--	--	--	--
	12-03-97	--	--	--	--	--	3	--

Table 38. Selenium concentrations in bottom-sediment samples collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998

[Selenium concentrations in micrograms per gram; all selenium analyses by the Branch of Geochemistry laboratory, except samples coded with NWQL, which were analyzed by the National Water Quality Laboratory in Arvada, Colorado. Selenium results from the two laboratories are not equivalent because different acid-digestion methods are used by the two laboratories; cm, centimeters; ft, feet; <, less than]

Site code (pl. 2)	Sample description	Date of sample	Selenium concentration
BRU1	Bottom sediment, near the southwest shore area.	09-25-97	1.3
PD1	Bottom sediment.	09-25-97	1.0
PK1	Bottom sediment in secondary river channel.	03-17-95	.7
PK1	From overflow pool. Sample is clay--not depositional material.	08-09-95	.7
PK2	Bottom sediment from backwater slough, lower end.	03-17-95	.7
GF2	Bottom sediment from pooled channel area below road crossing.	10-15-97	.9
GF2	Bottom sediment from first pool area below road. Top 4 cm.	03-17-98	1.8
GF2	Same location as previous sample, interval 4 to 12 cm.	03-17-98	1.3
GF3	Bottom sediment from east pond. Sandy silt and clay. NWQL analysis.	12-08-95	1
GF8	Bottom sediment from pool below last beaver dam. Top 2 cm.	03-17-98	1.3
GF8	Same location as previous sample, interval 2 to 6 cm.	03-17-98	1.2
GF8	Same location as previous sample, interval 6 to 12 cm.	03-17-98	1.3
GF8 (near)	Bottom sediment from third pool above outflow.	03-17-98	1.5
GF1	Bottom sediment from west end of pooled area. Silty sand. NWQL analysis.	12-08-95	<1
GF1	Bottom sediment from the slough area. Sample is mostly sand.	03-19-98	1.1
GF1 (near)	Bottom sediment from channel/pool area above the slough. Silty sand.	03-19-98	12
P30E	Bottom sediment near middle of east pool.	08-09-95	17
P30E	Bottom sediment, east pool, near the center. Dark, silty mud with odor.	06-03-96	14
P30W	Bottom sediment near the middle, west pool.	04-12-95	26
P30W	Material from near cattail area, upper end, near shore. May not represent bottom deposits.	04-12-95	1.3

Table 38. Selenium concentrations in bottom-sediment samples collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code (pl. 2)	Sample description	Date of sample	Selenium concentration
P30W	Bottom sediment from southeast one-quarter of west pool.	06-15-95	31
P30W	Bottom sediment from southwest one-quarter of west pool.	06-15-95	5.1
P30W	Bottom sediment from west-central area of west pool.	08-09-95	28
P30W	Bottom sediment near center of west pool. Sandy silt.	06-03-96	20
HMP	Bottom sediment from pool above pipe outlet from pond.	03-14-95	1.0
HMP	Bottom sediment from secondary channel. Mostly sand.	08-09-95	.4
HMPP	Bottom sediment, near middle of pond. Dark, silty sand and clay.	08-01-96	2.6
HMPP	Bottom sediment, about 30 ft from southwest corner. Silty clay and sand.	08-01-96	1.1
VGA1	Bottom sediment from pool in northwest corner of gravel pit.	05-29-97	2.4
VGA2	Material from the sump pump area—mostly dug up clay and gravel.	05-29-97	.48
PP	Bottom sediment near east edge of pond. Some bank material in sample?	03-14-95	1.0
PP	Material from near bank. Pond flooded.	06-13-95	1.2
PP	Bottom sediment near middle of pond.	08-08-95	1.9
P29 5/8	Bottom sediment from north pool.	03-17-95	2.1
HSP	Bottom sediment from near middle of pond.	03-14-95	1.9
HSP	Sampled near the shore. May be only bank sediment.	06-13-95	2.0
HSP	Bottom sediment from southeast corner, about 100 ft offshore.	08-09-95	1.6
HSP	Bottom sediment from east end of pond, about 50 ft from bank. Dark mud. NWQL analysis.	03-12-96	<1
HSP	Bottom sediment, east end, about 50 ft from bank. Single core.	07-31-96	2.5
HSP	Bottom sediment, near middle of pond. Mix of tan clay sediment and darker deposits.	07-31-96	1.8
GJ2B	Bottom sediment in ditch downstream from culvert.	08-09-95	3.5
GJ2B	Bottom sediment from 20 ft downstream from culvert. Dark mud. NWQL analysis.	03-12-96	3

Table 38. Selenium concentrations in bottom-sediment and other samples collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code (pl. 2)	Sample description	Date of sample	Selenium concentration
GJ2B	Bottom sediment, about 20 to 30 feet downstream from culvert. Dark silt and clay.	07-31-96	10
D25E	Bottom sediment from ditch upstream from the pathway. Backwater from river.	06-13-95	20
D25E	Bottom sediment from drain ditch, upstream from culvert	08-08-95	18
D25E	Bottom sediment from above the culvert. Silt with sand. NWQL analysis.	03-12-96	4
D25E	Bottom sediment from above culvert.	07-31-96	23
BW25	Bottom sediment from secondary channel near D25W culvert.	03-14-95	2.3
BW25	Bottom sediment from channel near D25W-mixed with river water.	06-13-95	1.8
BW25	Bottom sediment from channel near site D25W.	08-08-95	1.0
LCP1	Bottom sediment from near bank of pond, north side.	03-14-95	2.9
LCP1	Sampled in overflow area adjacent to pond. Pond is flooded.	06-13-95	1.3
LCP1	Bottom sediment from north side, about 25 to 30 ft offshore	08-08-95	4.8
PRM3	Bottom sediment, site "A," from pool by board crossing.	03-12-97	3.2
PRM3	Bottom sediment, site "B," pool at board crossing.	03-12-97	3.4
FB1	Bottom sediment downstream from beaver dam.	03-14-95	1.7
FB1	Bottom sediment at confluence of drain ditch and channel.	06-12-95	1.4
FB1	Bottom sediment from channel, at bend. Sample mostly sand.	08-08-95	1.0
FB1	Bottom sediment from pooled area in channel. Much sand. NWQL analysis.	03-12-96	<1
FB1	Bottom sediment from lower end of drainage ditch. Silt and sand.	07-31-96	1.0
PS1	Bottom sediment from near mouth of slough.	03-13-95	1.2
PS1	Bottom sediment from lower end of backwater area.	06-12-95	1.5
PS1	Bottom sediment from the west corner of backwater area, near outlet.	08-08-95	1.8
PS1	Bottom sediment. Split from previous sample.	08-08-95	1.8

Table 38. Selenium concentrations in bottom-sediment and other samples collected at sites associated with ponds and with backwater and bottomland areas in the Grand Valley, water year 1995 through March 1998—Continued

Site code (pl. 2)	Sample description	Date of sample	Selenium concentration
PS1	Bottom sediment, northwest corner of pond. Sandy silt and clay. NWQL analysis.	03-12-96	<1
PS1	Bottom sediment, northwest corner. Sandy silt.	07-31-96	1.7
RDP	Bottom sediment from upper end of pond, about 10 ft offshore.	04-12-95	19
RDP	Bottom sediment from base cattails near shore, north/northwest side of pond.	04-12-95	3.7
RDP	Bottom sediment from north side, about 10 ft from shore.	06-12-95	12
RDP	Bottom sediment, near cattails on northeast corner of pond by the inflow area.	06-12-95	36
RDP	Bottom sediment from near center of pond. Dark silty sand.	06-03-96	63
RDP	Bottom sediment, about 30 ft from cattails at inflow end. Silty clay.	06-03-96	28

Table 39. Selected inorganic-element concentrations in a bottom-sediment sample collected at site GF2 at the Orchard Mesa Wildlife Area in the Grand Valley, October 1997

[Sample collected October 15, 1997; site location on pl. 2; %, percent; µg/g, micrograms per gram; <, less than]

Element	Concentration	Element	Concentration
Aluminum (%)	5.3	Copper (µg/g)	17
Calcium (%)	3.9	Lanthanum (µg/g)	34
Iron (%)	2.1	Lead (µg/g)	20
Magnesium (%)	.90	Lithium (µg/g)	24
Phosphorus (%)	.08	Manganese (µg/g)	300
Potassium (%)	2.0	Mercury (µg/g)	<0.02
Sodium (%)	1.0	Molybdenum (µg/g)	<2
Titanium (%)	.21	Nickel (µg/g)	17
Arsenic (µg/g)	6.2	Selenium (µg/g)	0.90
Barium (µg/g)	630	Silver (µg/g)	<2
Beryllium (µg/g)	1	Strontium (µg/g)	280
Bismuth (µg/g)	<10	Tin (µg/g)	<5
Cadmium (µg/g)	<2	Uranium (µg/g	<100
Cesium (µg/g)	57	Vanadium (µg/g)	72
Chromium (µg/g)	38	Yttrium (µg/g)	16
Cobalt (µg/g)	5	Zinc (µg/g)	72

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997

[Sites on pl. 2 except site DBQ2, which is about 4 miles northeast of site DBQ1; --, no data]

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
DBQ2	Aquatic invertebrate	Zooplankton	07-17-97	--	--	2.3
	Aquatic invertebrate	Zooplankton	07-17-97	--	--	2.5
DBQ1	Aquatic invertebrate	Zooplankton	07-17-97	--	--	2.9
PK1	Aquatic plant	Filamentous algae	03-17-95	--	83.9	.7
	Aquatic plant	Submergent vegetation	03-17-95	--	86.4	.9
	Fish, whole body	Common carp	07-26-95	45	83.0	2.9
	Fish, whole body	Common carp	07-26-95	170	78.4	3.8
	Fish, whole body	White sucker	03-17-95	118	76.3	2.9
	Fish, whole body	White sucker	07-26-95	81	80.1	3.2
	Fish, whole body	Fathead minnow	03-17-95	70	74.9	3.7
	Fish, whole body	Fathead minnow	03-17-95	70	76.1	4.1
	Fish, whole body	Fathead minnow	07-26-95	67	79.4	3.8
	Fish, whole body	Fathead minnow	07-26-95	60	77.4	5.1
	Fish, whole body	Red shiner	03-17-95	60	73.4	5.5
	Fish, whole body	Red shiner	07-26-95	70	75.9	4.1
	Fish, whole body	Red shiner	07-26-95	55	72.8	3.0
	Fish, whole body	Mosquitofish	07-26-95	45	77.1	2.7
	Fish, whole body	Black bullhead	07-26-95	99	80.1	3.5
	Fish, whole body	Green sunfish	07-26-95	80	76.5	3.9
	Fish, whole body	Green sunfish	07-26-95	157	75.4	3.1
	Fish, whole body	Largemouth bass	07-26-95	173	75.1	3.1
	Amphibian, whole body	Bullfrog tadpoles	07-26-95	135	86.4	4.2
PK2	Fish, whole body	White sucker	03-17-95	64	77.3	4.5
	Fish, whole body	Fathead minnow	03-17-95	65	75.8	5.2
	Fish, whole body	Fathead minnow	03-17-95	63	76.5	5.7
	Fish, whole body	Fathead minnow	06-15-95	29	77.6	3.5
	Fish, whole body	Red shiner	03-17-95	59	72.3	8.1
	Fish, whole body	Red shiner	06-15-95	23	80.8	3.7
CLIF1	Aquatic plant	Potamogeton	07-10-97	--	88.4	2.5
	Aquatic invertebrate	Zooplankton	07-10-97	--	98.1	6.8
	Bird eggs	American coot	06-05-97	--	75.8	7.1
	Bird eggs	American coot	06-12-97	--	75.2	5.4
	Bird eggs	American coot	06-12-97	--	76.0	5.9
CLIF2	Aquatic invertebrate	Zooplankton	07-11-97	--	96.4	9.9
	Aquatic invertebrate	Invertebrates	07-11-97	--	94.8	9.9

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
CLIF2	Amphibian, whole body	Bullfrog	03-11-97	--	76.9	5.5
	Fish, whole body	Black bullhead	07-10-97	145	78.5	8.5
	Fish, whole body	Common carp	07-10-97	55	80.7	11.0
	Fish, whole body	Fathead minnow	07-10-97	65	77.2	8.4
	Fish, whole body	Green sunfish	07-10-97	94	76.8	13.0
	Fish, whole body	Mosquitofish	07-10-97	55	75.4	9.1
	Fish, whole body	Red shiner	07-10-97	55	73.5	7.9
GF4	Aquatic invertebrate	Invertebrates	08-16-96	--	79.3	9.3
	Aquatic invertebrate	Snails	08-16-96	--	63.3	2.0
	Fish, whole body	Fathead minnow	08-16-96	--	78.7	2.5
	Fish, whole body	Mosquitofish	08-16-96	--	74.4	12.5
GF3	Aquatic invertebrate	Invertebrates	10-15-97	--	96.3	4.4
	Fish, whole body	Fathead minnow	12-11-95	70	77.9	9.9
	Fish, whole body	Fathead minnow	10-15-97	70	77.5	7.7
	Fish, whole body	Mosquitofish	12-11-95	40	73.0	9.4
	Fish, whole body	Mosquitofish	10-15-97	20	83.2	6.7
	Fish, whole body	Bluehead sucker	10-15-97	145	79.3	7.2
	Fish, whole body	Green sunfish	12-11-95	60	74.2	10.8
	Fish, whole body	Green sunfish	10-15-97	20	86.0	8.6
	Fish, whole body	Red shiner	12-11-95	70	75.8	7.3
	Fish, whole body	Red shiner	10-15-97	60	75.2	9.2
	Fish, whole body	Sand shiner	12-11-95	65	76.3	11.7
	Fish, whole body	White sucker	12-11-95	210	73.5	9.9
	Fish, whole body	White sucker	12-11-95	121	70.6	9.4
	Amphibian, whole body	Bullfrog tadpole	12-11-95	120	86.1	11.4
	Amphibian, whole body	Tadpoles	10-15-97	60	86.8	6.5
GF1	Aquatic invertebrate	Invertebrates	10-15-97	--	85.8	7.7
	Aquatic invertebrate	Crayfish	10-15-97	40	68.6	3.6
	Fish, whole body	Fathead minnow	12-11-95	50	80.9	11.2
	Fish, whole body	Fathead minnow	12-11-95	70	78.6	10.7
	Fish, whole body	Fathead minnow	10-15-97	65	76.4	8.0
	Fish, whole body	Red shiner	10-15-97	55	74.9	10.0
	Fish, whole body	Mosquitofish	10-15-97	25	87.1	12.0
P30E-P30W	Aquatic plant	Ceratophyllum	04-12-95	--	86.1	27.0
	Aquatic plant	Typha stem	04-12-95	--	91.0	8.3
	Aquatic plant	Potamogeton	06-15-95	--	91.0	4.6

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
P30E-P30W	Aquatic invertebrate	Crayfish	07-18-96	--	79.1	8.7
	Fish, whole body	Flannelmouth sucker	08-09-95	252	76.5	27.5
	Fish, whole body	White sucker	08-09-95	340	72.1	23.0
	Fish, whole body	Fathead minnow	06-15-95	90	79.3	30.0
	Fish, whole body	Fathead minnow	06-15-95	69	76.8	37.0
	Fish, whole body	Fathead minnow	06-03-96	89	78.6	24.0
	Fish, whole body	Fathead minnow	06-03-96	69	78.0	20.0
	Fish, whole body	Fathead minnow	06-03-96	76	77.0	18.0
	Fish, whole body	Plains killifish	04-12-95	73	75.8	24.0
	Fish, whole body	Plains killifish (w/eggs)	06-15-95	82	83.6	25.0
	Fish, whole body	Plains killifish	06-03-96	98	74.2	21.0
	Fish, whole body	Plains killifish	06-03-96	67	76.7	18.0
	Fish, whole body	Plains killifish	06-03-96	91	75.3	19.0
	Fish, whole body	Red shiner	06-15-95	55	78.5	20.0
	Fish, whole body	Red shiner	06-03-96	77	70.2	12.0
	Fish, whole body	Red shiner	06-03-96	65	71.3	13.0
	Fish, whole body	Red shiner	06-03-96	69	68.8	11.0
	Fish, whole body	Green sunfish	04-12-95	50	77.3	36.0
	Fish, whole body	Green sunfish	06-15-95	106	77.7	27.0
	Fish, whole body	Green sunfish	08-09-95	212	75.4	26.0
	Fish, whole body	Green sunfish	08-09-95	71	76.0	13.0
	Fish, whole body	Green sunfish	08-09-95	143	76.4	19.0
	Fish, whole body	Green sunfish	06-03-96	89	76.4	19.0
	Fish eggs	Green sunfish	06-03-96	--	65.4	42.0
	Fish fillets	Green sunfish	06-03-96	223	79.6	28.5
	Fish fillets	Green sunfish	06-03-96	222	79.3	29.7
	Fish fillets w/skin	Green sunfish	06-03-96	227	76.6	27.7
	Fish, whole body	Black bullhead	06-15-95	174	77.3	18.0
	Fish, whole body	Black bullhead	08-09-95	260	76.6	13.3
	Fish eggs	Black bullhead	08-09-95	--	83.1	46.0
	Fish fillets	Black bullhead	08-09-95	300	82.8	19.8
	Fish fillets	Black bullhead	08-09-95	320	80.6	14.4
	Bird, whole body	Ducklings	08-09-95	--	82.4	10.0
	Bird eggs	Teal	08-09-95	--	63.6	3.1
	Bird eggs	Teal	08-09-95	--	39.4	7.3
	Bird eggs	Mallard	06-03-96	--	64.5	25.3

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
P30E-P30W	Bird eggs	Mallard	06-03-96	--	63.0	13.9
	Bird eggs	Mallard	06-03-96	--	63.4	13.5
	Bird eggs	Mallard	06-03-96	--	66.7	10.7
	Bird eggs	Mallard	06-03-96	--	61.8	24.2
	Bird eggs	Mallard	06-03-96	--	58.1	25.7
	Bird eggs	Mallard	06-03-96	--	60.9	8.5
	Bird eggs	Mallard	06-03-96	--	68.0	4.5
	Bird eggs	Mallard	06-03-96	--	61.0	4.8
	Bird eggs	Mallard	06-03-96	--	68.1	5.3
	Bird eggs	Mallard	06-03-96	--	68.2	9.7
	Bird eggs	Mallard	06-03-96	--	60.1	7.7
	Bird eggs	Mallard	06-03-96	--	68.5	7.1
	Bird eggs	Mallard	06-03-96	--	63.5	6.2
	Bird eggs	Mallard	06-03-96	--	70.3	3.9
	Bird eggs	Mallard	06-03-96	--	62.6	6.3
	Bird eggs	Mallard	06-03-96	--	67.7	4.0
	Bird eggs	Mallard	05-07-97	--	68.0	8.5
	Bird eggs	Mallard	05-07-97	--	63.7	8.5
	Bird eggs	Mallard	05-07-97	--	68.1	7.8
	Bird eggs	Mallard	05-07-97	--	68.8	16.2
	Bird eggs	Mallard	05-07-97	--	69.1	9.4
	Bird eggs	Mallard	05-07-97	--	68.9	20.4
	Bird eggs	Mallard	05-07-97	--	69.6	18.4
	Bird eggs	Mallard	05-07-97	--	69.4	18.4
	Bird eggs	Mallard	05-07-97	--	69.6	19.9
	Bird eggs	Mallard	05-07-97	--	70.2	13.7
	Bird eggs	Mallard	05-29-97	--	69.8	4.5
	Bird eggs	Mallard	05-29-97	--	69.1	6.0
	Bird eggs	Mallard	05-29-97	--	70.4	7.3
	Bird eggs	Mallard	05-29-97	--	68.1	5.6
	Bird eggs	Mallard	05-29-97	--	68.5	6.8
	Bird eggs	Mallard	05-29-97	--	70.5	5.5
	Bird eggs	Mallard	05-29-97	--	69.4	5.4
	Bird eggs	Mallard	05-29-97	--	64.3	10.0
	Bird eggs	Mallard	05-29-97	--	68.6	8.5
	Bird eggs	Mallard	07-02-97	--	63.5	10.4
	Bird eggs	Mallard	07-02-97	--	50.6	3.6
	Bird eggs	Mallard	07-02-97	--	63.5	5.4
	Bird eggs	Goose	06-03-96	--	62.5	1.7
	Bird eggs	Goose	06-03-96	--	68.4	2.6

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
HMP	Aquatic plant	Filamentous algae	03-14-95	--	66.9	5.0
	Aquatic invertebrate	Crayfish	03-14-95	--	73.3	2.8
	Aquatic invertebrate	Crayfish	08-09-95	80	71.0	3.8
	Fish, whole body	Common carp	08-09-95	74	81.1	4.5
	Fish, whole body	Common carp	08-09-95	546	79.3	37.0
	Fish, whole body	Flannelmouth sucker	03-14-95	85	76.1	5.3
	Fish, whole body	White sucker	08-09-95	178	76.7	5.0
	Fish, whole body	Fathead minnow	03-14-95	75	75.7	10.0
	Fish, whole body	Fathead minnow	08-09-95	66	74.7	5.9
	Fish, whole body	Red shiner	03-14-95	65	74.8	9.0
	Fish, whole body	Red shiner (male)	08-09-95	74	72.8	6.8
	Fish, whole body	Red shiner (female)	08-09-95	67	73.6	8.1
	Fish, whole body	Speckled dace	08-09-95	69	72.8	7.5
	Fish, whole body	Black bullhead	08-09-95	77	77.7	8.8
	Fish, whole body	Black bullhead	08-09-95	130	76.2	4.0
	Fish, whole body	Green sunfish	03-14-95	66	76.1	24.0
	Fish, whole body	Green sunfish	08-09-95	171	75.8	4.0
	Fish, whole body	Largemouth bass	03-14-95	153	75.8	5.4
	Fish, whole body	Largemouth bass	08-09-95	67	77.5	5.1
	Fish, whole body	Largemouth bass	08-09-95	218	73.8	9.3
	Amphibian, whole body	Bullfrog tadpoles	03-14-95	105	81.8	11.0
	Amphibian, whole body	Bullfrog tadpoles	08-09-95	87	84.2	4.2
HMPP	Aquatic invertebrate	Invertebrate	08-01-96	--	85.4	9.3
	Aquatic invertebrate	Crayfish	08-01-96	--	78.0	4.6
	Aquatic invertebrate	Crayfish	08-01-96	--	77.4	5.1
HMPP	Amphibian, whole body	Tadpoles	08-01-96	--	87.0	7.3
	Fish, whole body	Fathead minnow	08-01-96	30	86.8	6.9
	Fish, whole body	Black bullhead	08-01-96	110	78.8	4.0
	Fish, whole body	Black bullhead	08-01-96	252	79.2	4.0
	Fish fillets	Black bullhead	08-01-96	277	80.9	3.2
	Fish fillets	Black bullhead	08-01-96	283	83.0	3.8
	Fish, whole body	Green sunfish	08-01-96	84	79.7	6.5
	Fish fillets	Green sunfish	08-01-96	181	81.2	6.7
	Fish fillets	Green sunfish	08-01-96	179	80.8	8.6
	Fish eggs	Green sunfish	08-01-96	--	66.3	7.1
	Fish eggs	Green sunfish	08-01-96	--	70.4	7.4

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
PP	Aquatic invertebrate	Invertebrates	08-16-96	--	94.2	7.1
	Fish, whole body	Common carp	03-14-95	535	76.2	9.6
	Fish, whole body	Common carp	08-01-95	359	77.6	6.6
	Fish, whole body	Fathead minnow	03-14-95	68	77.3	8.7
	Fish, whole body	Fathead minnow	06-13-95	66	85.0	18.0
	Fish, whole body	Red shiner	06-13-95	50	70.3	13.0
	Fish, whole body	Red shiner (female)	06-13-95	60	74.0	8.6
	Fish, whole body	Red shiner (male)	06-13-95	56	74.9	6.5
	Fish, whole body	Black bullhead	03-14-95	200	80.8	4.1
	Fish, whole body	Black bullhead	08-01-95	191	74.6	3.3
	Fish, whole body	Green sunfish	03-14-95	181	80.1	13.0
	Fish, whole body	Green sunfish	03-14-95	55	76.4	11.0
	Fish, whole body	Green sunfish	06-13-95	125	76.6	13.0
	Fish, whole body	Green sunfish	08-01-95	61	76.4	9.1
	Fish, whole body	Black crappie	08-01-95	188	72.8	6.8
	Fish, whole body	Bluegill	08-01-95	92	74.9	6.5
	Fish, whole body	Largemouth bass	03-14-95	390	76.7	10.0
	Fish, whole body	Largemouth bass	03-14-95	75	77.9	9.5
	Fish, whole body	Largemouth bass	06-13-95	261	75.1	11.0
	Amphibian, whole body	Bullfrog tadpole	08-01-95	107	79.2	6.4
P29 [5/8]	Aquatic invertebrate	Zooplankton	07-08-97	--	97.2	5.2
	Aquatic invertebrate	Invertebrates	08-16-96	--	96.8	5.0
	Aquatic invertebrate	Crayfish	08-16-96	--	78.3	2.1
	Aquatic invertebrate	Snails	08-16-96	--	65.8	1.7
P29 [5/8]	Amphibian, whole body	Tadpoles	08-16-96	--	67.3	2.9
	Fish, whole body	Common carp	05-09-95	400	74.5	9.6
	Fish, whole body	White sucker	05-09-95	348	73.0	7.5
	Fish, whole body	Black bullhead	05-09-95	183	80.9	4.5
	Fish, whole body	Black bullhead	08-16-96	30	86.2	5.9
	Fish, whole body	Green sunfish	05-09-95	55	77.2	10.0
	Fish, whole body	Green sunfish	05-09-95	198	78.0	5.5
	Fish, whole body	Largemouth bass	05-09-95	213	77.5	6.6
HSP	Aquatic invertebrate	Zooplankton	07-08-97	--	95.1	6.2
	Aquatic invertebrate	Invertebrates	07-18-96	--	90.5	9.7
	Amphibian, whole body	Bullfrog tadpoles	03-14-95	105	84.4	8.1

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
HSP	Fish, whole body	Common carp	06-13-95	452	74.1	4.8
	Fish, whole body	Common carp	06-13-95	446	78.7	4.1
	Fish, whole body	Common carp	08-03-95	518	75.3	5.2
	Fish, whole body	Flannelmouth sucker	03-14-95	65	76.1	2.5
	Fish, whole body	White sucker	03-12-96	234	75.5	9.4
	Fish, whole body	Fathead minnow	03-14-95	50	76.5	6.4
	Fish, whole body	Fathead minnow	03-12-96	56	75.8	5.3
	Fish, whole body	Red shiner	06-13-95	69	71.8	5.5
	Fish, whole body	Red shiner	08-03-95	59	70.2	8.6
	Fish, whole body	Red shiner	03-12-96	63	74.2	7.7
	Fish, whole body	Mosquitofish	07-18-96	35	76.8	7.8
	Fish, whole body	Black bullhead	03-14-95	68	79.1	5.5
	Fish, whole body	Black bullhead	08-03-95	172	78.0	4.5
	Fish, whole body	Black bullhead	03-12-96	191	80.4	5.2
	Fish, whole body	Green sunfish	03-14-95	55	75.4	8.4
	Fish, whole body	Green sunfish	06-13-95	111	77.2	8.5
	Fish, whole body	Green sunfish	08-03-95	111	74.3	9.2
	Fish, whole body	Green sunfish	03-12-96	94	75.3	9.1
	Fish, whole body	Largemouth bass	03-14-95	100	76.0	5.0
	Fish, whole body	Largemouth bass	06-13-95	166	75.2	6.7
	Fish, whole body	Largemouth bass	08-03-95	365	74.7	9.9
	Fish, whole body	Largemouth bass	08-03-95	166	75.3	6.2
	Fish, whole body	Largemouth bass	03-12-96	75	77.7	9.1
	Fish, whole body	Black crappie	08-03-95	170	75.2	2.6
GJ2B	Aquatic invertebrate	Crayfish	06-13-95	75	76.2	5.7
	Fish, whole body	Common carp	06-13-95	495	79.6	4.7
	Fish, whole body	White sucker	06-13-95	255	71.7	3.3
	Fish, whole body	White sucker	08-03-95	360	74.0	4.9
	Fish, whole body	White sucker	08-03-95	152	76.7	5.3
	Fish, whole body	Red shiners	06-13-95	50	75.9	5.8
	Fish, whole body	Red shiners	03-12-96	43	72.1	12.3
	Fish, whole body	Mosquitofish	06-13-95	45	75.7	7.3
	Fish, whole body	Mosquitofish	03-12-96	25	74.9	10.4
	Fish, whole body	Green sunfish	06-13-95	75	76.6	13.0
	Fish, whole body	Green sunfish	08-03-95	153	75.7	7.9
	Fish, whole body	Largemouth bass	08-03-95	256	72.2	5.6
	Fish, whole body	Largemouth bass	08-03-95	65	78.2	7.0
	Fish, whole body	Black bullhead	03-12-96	177	82.5	7.5

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
D25E	Aquatic invertebrate	Invertebrate	03-12-96	--	80.9	46.0
	Fish, whole body	Flannelmouth sucker	08-01-95	189	72.8	9.4
	Fish, whole body	Fathead minnow	03-14-95	65	76.8	21.0
	Fish, whole body	Fathead minnow	06-13-95	52	75.4	24.0
	Fish, whole body	Fathead minnow	08-01-95	52	76.1	11.0
	Fish, whole body	Plains killifish	03-14-95	70	75.5	27.0
	Fish, whole body	Red shiner	06-13-95	50	72.2	11.0
	Fish, whole body	Red shiner (male)	08-01-95	52	72.8	7.5
	Fish, whole body	Mosquitofish	08-01-95	51	75.8	14.0
	Fish, whole body	Green sunfish	08-01-95	72	71.7	13.0
	Fish, whole body	Green sunfish	03-12-96	75	73.9	27.0
	Fish, whole body	Largemouth bass	06-13-95	195	72.6	11.0
	Fish, whole body	Sand shiner	03-12-96	49	72.8	12.0
	Fish, whole body	Speckled dace	03-12-96	10	75.7	15.0
	Fish, whole body	Black bullhead	03-12-96	87	77.4	14.0
D25W	Aquatic plant	Filamentous algae	03-14-95	--	59.2	3.4
	Aquatic invertebrate	Invertebrate	03-14-95	--	74.6	6.0
	Fish, whole body	Common carp	06-13-95	132	76.7	16.0
	Fish, whole body	Common carp	08-01-95	456	74.1	5.4
	Fish, whole body	White sucker	06-13-95	215	73.8	16.0
	Fish, whole body	White sucker	06-13-95	136	75.9	16.0
	Fish, whole body	Fathead minnow	03-14-95	50	78.1	26.0
D25W	Fish, whole body	Fathead minnow	06-13-95	65	76.8	36.0
	Fish, whole body	Fathead minnow	08-01-95	52	78.9	10.0
	Fish, whole body	Red shiner	06-13-95	55	74.1	7.2
	Fish, whole body	Red shiner	08-01-95	65	74.1	8.2
	Fish, whole body	Black bullhead	08-01-95	111	77.9	6.3
	Fish, whole body	Green sunfish	06-13-95	100	74.4	16.0
	Fish, whole body	Green sunfish	08-01-95	70	75.2	9.2
	Fish, whole body	Green sunfish	08-01-95	184	74.6	13.0
LCP	Fish, whole body	Common carp	03-14-95	450	83.0	6.2
	Fish, whole body	Common carp	08-01-95	531	76.7	7.5
	Fish, whole body	Common carp	08-01-95	149	80.4	4.9
	Fish, whole body	Suckers (mix)	08-01-95	254	75.2	4.5
	Fish, whole body	Fathead minnow	03-14-95	65	76.0	11.0
	Fish, whole body	Fathead minnow (male)	08-01-95	64	79.5	14.0
	Fish, whole body	Fathead minnow (female)	08-01-95	63	79.2	13.0

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
LCP	Fish, whole body	Red shiner	03-14-95	50	75.4	13.0
	Fish, whole body	Red shiner (male)	08-01-95	62	72.7	6.6
	Fish, whole body	Black bullhead	08-01-95	150	75.5	5.3
	Fish, whole body	Green sunfish	03-14-95	89	76.1	9.3
	Fish, whole body	Green sunfish	08-01-95	159	73.7	8.9
	Fish, whole body	Green sunfish	08-01-95	113	75.7	22.0
	Fish, whole body	Largemouth bass	08-01-95	137	75.7	6.8
PRM1	Aquatic invertebrate	Invertebrates	03-12-97	--	81.1	8.3
	Fish, whole body	Fathead minnow	03-12-97	67	77.1	6.9
	Fish, whole body	Green sunfish	03-12-97	78	76.1	10.0
PRM2	Fish, whole body	Common carp	03-12-97	420	78.7	16.0
	Fish, whole body	Fathead minnow	03-12-97	60	77.4	11.0
	Fish, whole body	Green sunfish	03-12-97	70	78.2	22.0
	Fish, whole body	Green sunfish	03-12-97	114	76.1	14.0
PRM3	Fish, whole body	Fathead minnow	03-12-97	65	76.6	18.0
	Fish, whole body	Fathead minnow	03-12-97	69	77.2	20.0
	Fish, whole body	Green sunfish	03-12-97	117	75.5	26.0
FB1	Aquatic invertebrate	Snails	07-18-96	--	74.5	1.8
	Amphibian, whole body	Bullfrog tadpole	03-14-95	141	82.4	8.1
	Amphibian, whole body	Tadpole	07-31-95	112	84.4	12.7
	Amphibian, whole body	Bullfrog tadpole	07-18-96	--	80.9	6.2
	Fish, whole body	Common carp	03-14-95	560	75.3	5.6
	Fish, whole body	Common carp	03-14-95	110	78.0	9.0
	Fish, whole body	Common carp	06-12-95	440	72.5	7.7
	Fish, whole body	Common carp	07-31-95	630	74.6	7.0
	Fish, whole body	Common carp	07-31-95	127	79.4	7.0
	Fish, whole body	Common carp	03-12-96	290	73.4	7.3
	Fish, whole body	Flannelmouth sucker	03-14-95	137	76.9	7.4
	Fish, whole body	Bluehead sucker	03-14-95	200	77.2	6.2
	Fish, whole body	White sucker	07-31-95	88	76.8	5.7
	Fish, whole body	White sucker	03-12-96	209	76.2	5.4
	Fish, whole body	Fathead minnow	03-14-95	60	76.5	11.0
	Fish, whole body	Fathead minnow	06-12-95	60	76.7	9.6
	Fish, whole body	Fathead minnow (female)	07-31-95	62	76.9	8.2
	Fish, whole body	Fathead minnow (male)	07-31-95	65	78.8	11.0

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
FB1	Fish, whole body	Fathead minnow	03-12-96	69	75.3	6.3
	Fish, whole body	Fathead minnow	07-18-96	15	89.5	4.2
	Fish, whole body	Red shiner	03-14-95	70	76.8	9.2
	Fish, whole body	Red shiner	06-12-95	50	76.8	8.1
	Fish, whole body	Red shiner (female)	07-31-95	57	73.8	6.9
	Fish, whole body	Red shiner (male)	07-31-95	60	72.3	7.1
	Fish, whole body	Black bullhead	06-12-95	215	73.8	8.9
	Fish, whole body	Channel catfish	06-12-95	486	69.4	1.8
	Fish, whole body	Channel catfish	06-12-95	473	79.2	4.2
	Fish, whole body	Channel catfish	07-31-95	439	75.2	4.6
	Fish fillets	Channel catfish	07-31-95	540	84.9	2.4
	Fish eggs	Channel catfish	07-31-95	--	62.7	8.4
	Fish, whole body	Green sunfish	06-12-95	79	79.3	11.0
	Fish, whole body	Green sunfish	07-31-95	114	76.8	8.8
	Fish, whole body	Green sunfish	03-12-96	83	75.0	6.0
PS1	Aquatic plant	Typha	06-12-95	--	94.3	<.02
	Aquatic invertebrate	Invertebrates	07-18-96	--	82.9	8.9
	Aquatic invertebrate	Crayfish	07-18-96	--	79.6	5.8
PS1	Amphibian, whole body	Tadpole	06-12-95	68	76.6	5.6
	Fish, whole body	Common carp	03-13-95	486	73.2	9.7
	Fish, whole body	Common carp	06-12-95	450	76.0	8.7
	Fish, whole body	Common carp	06-12-95	277	76.5	15.9
	Fish, whole body	Common carp	07-31-95	507	70.7	5.0
	Fish, whole body	Common carp	03-12-96	497	76.6	11.0
	Fish, whole body	White sucker	06-12-95	312	73.6	12.7
	Fish, whole body	White sucker	03-12-96	326	75.2	12.3
	Fish, whole body	Fathead minnow	03-13-95	76	74.6	11.0
	Fish, whole body	Fathead minnow	07-31-95	64	76.9	5.5
	Fish, whole body	Fathead minnow	07-31-95	52	78.1	5.9
	Fish, whole body	Fathead minnow	03-12-96	59	77.0	7.8
	Fish, whole body	Red shiner	06-12-95	55	76.2	7.9
	Fish, whole body	Red shiner	07-31-95	70	74.5	6.4
	Fish, whole body	Red shiner	03-12-96	52	75.2	6.6
	Fish, whole body	Mosquitofish	06-12-95	45	75.0	10.0
	Fish, whole body	Mosquitofish	07-18-96	27	74.9	9.5
	Fish, whole body	Black bullhead	06-12-95	166	78.3	5.5
	Fish, whole body	Green sunfish	03-13-95	45	78.1	23.0

Table 40. Dry-weight selenium concentrations in biota samples collected from ponds and from backwater and bottomland areas in the Grand Valley, water year 1995 through October 1997—Continued

Site code	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
PS1	Fish, whole body	Green sunfish	03-13-95	80	76.6	25.0
	Fish, whole body	Green sunfish	06-12-95	62	76.9	15.0
	Fish, whole body	Green sunfish	06-12-95	85	75.9	17.0
	Fish, whole body	Green sunfish	07-31-95	90	77.7	12.0
	Fish, whole body	Green sunfish	07-31-95	167	75.9	7.1
	Fish, whole body	Green sunfish	03-12-96	94	72.1	8.7
	Fish, whole body	Green sunfish	03-12-96	67	77.9	11.0
	Fish, whole body	Green sunfish	07-18-96	54	76.6	10.7
	Fish, whole body	Black crappie	03-13-95	45	76.9	19.0
	Fish, whole body	Black crappie	07-31-95	144	74.9	8.7
	Fish, whole body	Largemouth bass	06-12-95	314	73.2	10.8
	Fish, whole body	Largemouth bass	07-31-95	205	74.0	9.0
	Fish fillets	Largemouth bass	07-31-95	392	77.7	16.8
	Fish eggs	Largemouth bass	07-31-95	--	75.7	19.0
RDP	Aquatic plant	Filamentous algae	06-12-95	--	80.3	6.6
	Aquatic plant	Typha	04-12-95	--	90.7	.4
	Aquatic plant	Typha stems	06-12-95	--	86.2	.6
RDP	Aquatic plant	Potamogeton	04-12-95	--	89.2	15.8
	Aquatic plant	Potamogeton	06-12-95	--	82.5	6.7
	Aquatic invertebrate	Invertebrates	04-12-95	--	76.8	15.7
	Aquatic invertebrate	Invertebrates	03-11-96	--	78.4	14.0
	Aquatic invertebrate	Invertebrates	03-11-96	--	81.0	16.0
	Fish, whole body	Common carp	06-12-95	600	68.4	18.1
	Fish, whole body	Common carp	06-12-95	630	70.9	18.4
	Fish eggs	Common carp	06-12-95	--	68.7	20.7
	Fish, whole body	Green sunfish	04-12-95	75	78.0	19.0
	Fish, whole body	Green sunfish	06-12-95	104	77.7	13.9
	Fish, whole body	Green sunfish	06-12-95	58	76.1	20.6
	Fish, whole body	Green sunfish	03-11-96	93	77.4	19.9
	Fish, whole body	Smallmouth bass	05-16-95	435	76.5	18.0
	Amphibian, whole body	Tadpoles	03-11-96	80	88.0	8.6
TMP	Bird eggs	American coot	06-08-95	--	75.9	9.0
	Bird eggs	American coot	06-08-95	--	75.6	9.0
	Amphibian, whole body	Tadpoles	07-06-95	--	87.6	4.8

Table 41. List of water-sampling sites and types of chemical data collected at Walter Walker State Wildlife Area in the Grand Valley, water year 1995 through March 1998

[X, data type collected; --, data type not collected; SW, surface water; GW, ground water; WWSWA, Walter Walker State Wildlife Area]

Site code (fig. 2)	U.S. Geological Survey station number	Site name	Types of data and chemical analyses				
			On-site data	Selenium	Major ions	Nitrogen species	Other trace elements
		SURFACE-WATER AND GROUND-WATER SITES AT NORTH POND					
NP1	390621108385001	North Pond near seepage test site NP1 (SW)	X	X	X	X	X
NP1	390621108385002	North Pond near seepage test site NP1 (GW)	X	X	X	X	X
NP2	390622108385101	North Pond near seepage test site NP2 (SW)	X	X	X	X	X
NP2	390622108385102	North Pond near seepage test site NP2 (GW)	X	X	X	X	X
NP4	390623108385301	North Pond near seepage test site NP4 (SW)	X	X	X	X	X
NP4	390623108385302	North Pond near seepage test site NP4 (GW)	X	X	X	X	X
NP5	390615108385601	North Pond near seepage test site NP5 (SW)	X	X	--	X	X
NP5	390615108385602	North Pond near seepage test site NP5 (GW)	X	X	--	X	X
NP6	390620108385201	North Pond near seepage test site NP6 (SW)	X	X	X	X	X
NP6	390620108385202	North Pond near seepage test site NP6 (GW)	X	X	X	X	X
		SURFACE-WATER AND GROUND-WATER SITES IN THE CHANNEL AREA					
WWDIV	390607108384201	Colorado River diversion at WWSWA[1]	X	X	X	X	X
WM1	390608108384301	Lower site in marsh area at WWSWA	X	X	--	X	X
WM2	390612108384801	Upper site in marsh area at WWSWA	X	X	X	X	X
WC1	390609108384701	WWSWA channel, seepage test site WC1 (SW)	X	X	--	--	--
WC13B	390618108385201	WWSWA channel, seepage test site WC13B (GW)	X	X	X	X	--
WC2	390620108385401	WWSWA channel, seepage test site WC2 (SW)	X	X	--	--	X
WC2	390620108385402	WWSWA channel, seepage test site WC2 (GW)	X	X	X	X	X
WC4	390620108385601	WWSWA channel, seepage test site WC4 (SW)	X	X	--	--	--
WC4	390620108385602	WWSWA channel, seepage test site WC4 (GW)	X	X	--	--	--
CH18	390612108385601	WWSWA channel near well 18 (SW)	X	X	--	--	X
CH18	390612108385602	WWSWA channel near well 18 (GW)	X	X	X	X	X
WC15	390621108385901	WWSWA channel, seepage test site WC15 (GW)	X	X	X	X	X
WC5	390624108390202	WWSWA channel, seepage test site WC5 (GW)	X	X	X	X	--
WC11	390625108390402	WWSWA channel, seepage test site WC11 (SW)	X	X	X	X	X

Table 41. List of water-sampling sites and types of chemical data collected at Walter Walker State Wildlife Area in the Grand Valley, water year 1995 through March 1998—Continued

Site code (fig. 2)	U.S. Geological Survey station number	Site name	Types of data and chemical analyses				
			On-site data	Selenium	Major ions	Nitrogen species	Other trace elements
WC11	390625108390403	WWSWA channel, seepage test site WC11 (GW)	X	X	X	X	X
WC6	390625108390601	WWSWA channel, seepage test site WC6 (GW)	X	X	X	X	X
WC7	390630108391701	WWSWA channel, seepage test site WC7 (SW)	X	X	--	--	--
WC7	390630108391702	WWSWA channel, seepage test site WC7 (GW)	X	X	X	X	--
WC9	390626108391101	WWSWA channel, seepage test site WC9 (SW)	X	X	X	X	X
WC9	390626108391102	WWSWA channel, seepage test site WC9 (GW)	X	X	--	--	--
WC10	390617108391001	WWSWA channel, seepage test site WC10 (SW)	X	--	--	--	--
WC19	390630108392001	WWSWA channel, seepage test site WC19 (GW)	X	X	X	X	X
WWOUT	390632108392101	WWSWA channel, outflow near gage	X	X	X	X	X
		MISCELLANEOUS SURFACE-WATER SITES					
SP	390603108390501	South Pond at WWSWA	X	X	X	--	--
		WELLS					
OW1	390620108385301	WWSWA, well 1	X	X	--	X	--
OW2	390620108385302	WWSWA, well 2	X	X	X	X	X
OW3	390622108385501	WWSWA, well 3	X	X	X	X	X
OW4	390621108385701	WWSWA, well 4	X	X	X	X	X
OW5	390624108390201	WWSWA, well 5	X	X	X	X	X
OW6	390622108385001	WWSWA, well 6	X	X	X	X	X
OW7	390622108384901	WWSWA, well 7	X	X	X	X	X
OW8	390627108390001	WWSWA, well 8	X	X	X	X	X
OW9	390625108385301	WWSWA, well 9	X	X	--	X	X
OW10	390625108384901	WWSWA, well 10	X	X	--	X	X
OW11	390621108384601	WWSWA, well 11	X	X	X	X	X
OW12	390618108384201	WWSWA, well 12	X	X	X	X	X
OW13	390625108390401	WWSWA, well 13	X	X	X	X	X
OW14	390628108390901	WWSWA, well 14	X	X	X	X	X
OW15	390631108391501	WWSWA, well 15	X	X	X	X	X

Table 41. List of water-sampling sites and types of chemical data collected at Walter Walker State Wildlife Area in the Grand Valley, water year 1995 through March 1998—Continued

[X, dat

Site code (fig. 2)	U.S. Geological Survey station number	Site name	Types of data and chemical anal ses				
			On-site data	Sele-nium	Major ions	Nitro-gen spe-cies	Other trace ele-ments
		WELLS--CONTINUED					
OW16	390632108391801	WWSWA, well 16	X	X	X	X	X
OW17	390618108385601	WWSWA, well 17	X	X	X	X	X
OW18	390619108385601	WWSWA, well 18	X	X	X	X	X
OW19	390622108390201	WWSWA, well 19	X	X	X	X	X
OW20	390624108390801	WWSWA, well 20	X	X	X	X	X
OW21	390626108391401	WWSWA, well 21	X	X	--	X	X

[1] Suspended-sediment samples also collected at this site for concentration analysis, size analysis, and selenium analysis on suspended sediment.

Table 42. List of bottom-sediment and biota sampling sites and types of data collected at Walter Walker State Wildlife Area in the Grand Valley, water years 1995–96

[na, not applicable; X, data type was collected; --, data type was not collected; WWSWA, Walter Walker State Wildlife Area; biota food items include aquatic plants and aquatic invertebrates]

Site code (fig. 2)	U.S. Geological Survey station number	Site name	Types of samples collected			
			Bottom sedi-ment	Biota, food items	Biota, fish tissue	Biota, bird eggs and tissue
NP2	390622108385101	North Pond at WWSWA	X	X	X	X
WWB1	na	Upper pool area in channel	--	X	X	--
SP	390603108390501	South Pond at WWSWA	X	--	X	--
WWB2	na	Miscellaneous pool at WWSWA	--	--	X	--

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998

[Sites in fig. 2; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
NP1SW	10-06-94	0945	18,800	8.8	12.5	--	--	60	--
	02-26-97	1130	3,680	8.2	4.5	--	--	6	--
	06-11-97	1010	5,840	9.3	19.5	--	--	10	--
	08-20-97	0835	10,800	8.2	17.5	--	--	--	--
	12-10-97	1005	11,100	8.2	2.5	--	--	64	--
NP1GW	02-26-97	1120	10,100	7.4	8.5	--	--	75	--
	06-11-97	1000	11,000	7.2	18.5	--	--	170	--
	08-20-97	0830	11,200	7.2	20.5	2.1	28	180	--
	12-10-97	1015	10,900	7.4	4.5	.6	6	190	--
NP2SW	04-12-95	1000	13,600	8.5	12.0	13.0	148	180	--
	06-12-95	1535	7,640	9.8	23.5	18.0	253	32	--
	08-08-95	1000	4,150	8.2	24.0	.3	4	2	4
	08-20-97	0935	10,400	8.6	18.0	.1	1	--	--
	09-23-97	1250	9,960	8.4	24.5	--	--	--	--
	12-10-97	1040	10,800	8.2	3.0	7.7	70	51	--
	01-07-98	1315	1,660	7.4	3.5	--	--	--	--
	02-02-98	1245	8,710	8.0	7.5	--	--	--	--
	02-18-98	1030	9,160	8.2	6.0	8.3	81	52	--
	03-05-98	1110	5,850	8.1	8.0	--	--	--	--
	04-02-98	1100	6,640	8.5	10.5	8.3	88	--	--
NP2GW	08-20-97	0920	11,200	7.1	20.0	1.7	23	170	--
	12-10-97	1105	10,800	7.3	7.0	.9	9	220	--
	02-18-98	1045	10,700	7.3	7.0	.3	3	160	--
NP4SW	12-13-96	1135	1,460	8.3	4.0	--	--	4	--
	02-26-97	1400	3,930	8.3	12.5	--	--	6	--
	06-11-97	1335	5,690	9.5	24.5	--	--	9	--
	08-20-97	1140	9,420	8.2	24.0	4.7	46	11	--
	12-10-97	1210	11,100	8.2	4.0	8.0	74	50	--
	02-18-98	1015	9,020	8.2	6.0	--	--	--	--

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998 —Continued

Site code	Date	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
NP1SW	10-06-94	--	--	--	--	--	--	--	--	--
	02-26-97	--	--	--	--	--	--	--	--	--
	06-11-97	1,500	170	270	890	8.8	160	2,400	510	0.3
	08-20-97	--	--	--	--	--	--	--	--	--
	12-10-97	3,500	330	655	1,970	24	356	5,800	1,200	.4
NP1GW	02-26-97	--	--	--	--	--	--	--	--	--
	06-11-97	3,700	560	560	1,900	15	579	5,300	1,100	.5
	08-20-97	3,500	470	553	1,900	18	552	5,400	1,000	.5
	12-10-97	3,600	440	596	1,900	14	578	5,600	1,000	.6
NP2SW	04-12-95	3,900	370	720	2,400	19	276	6,900	1,400	.4
	06-12-95	2,300	180	440	1,200	5.5	120	3,500	710	.3
	08-08-95	--	--	--	--	--	--	--	--	--
	08-20-97	--	--	--	--	--	--	--	--	--
	09-23-97	--	--	--	--	--	--	--	--	--
	12-10-97	3,300	310	614	1,840	24	352	5,700	1,200	.4
	01-07-98	--	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--	--
	02-18-98	2,900	290	532	1,590	36	377	4,600	930	.4
	03-05-98	--	--	--	--	--	--	--	--	--
	04-02-98	--	--	--	--	--	--	--	--	--
NP2GW	08-20-97	3,800	560	588	1,830	3.6	581	5,400	1,100	.3
	12-10-97	4,000	560	623	1,900	14	576	5,700	1,200	.7
	02-18-98	3,800	520	605	1,900	1.3	600	5,600	1,100	.5
NP4SW	12-13-96	400	86	44	160	6.2	148	350	150	.4
	02-26-97	--	--	--	--	--	--	--	--	--
	06-11-97	1,500	150	270	870	9.1	120	2,600	540	.3
	08-20-97	2,700	270	485	1,570	3.8	152	4,500	950	.2
	12-10-97	--	--	--	--	--	--	--	--	--
	02-18-98	--	--	--	--	--	--	--	--	--

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Organic nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
NP1SW	10-06-94	--	--	--	--	--	--	--	--
	02-26-97	--	--	--	--	--	--	--	--
	06-11-97	4.9	4,350	--	--	--	--	--	--
	08-20-97	--	--	--	--	--	--	--	--
	12-10-97	.95	10,200	0.27	5.2	1.4	1.4	2.7	7.9
NP1GW	02-26-97	--	--	--	--	--	--	--	--
	06-11-97	16	9,800	--	--	--	--	--	--
	08-20-97	26	9,920	--	42	--	--	.57	42
	12-10-97	16	10,200	.33	44	.62	.62	.64	45
NP2SW	04-12-95	.50	12,000	--	--	--	--	--	--
	06-12-95	.20	6,110	--	--	--	--	--	--
	08-08-95	--	--	--	--	--	--	--	--
	08-20-97	--	--	--	--	--	--	--	--
	09-23-97	--	--	--	--	--	--	--	--
	12-10-97	.70	9,920	.26	4.7	1.4	1.4	2.7	7.4
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-18-98	.22	8,260	--	3.8	--	--	1.8	5.6
	03-05-98	--	--	--	--	--	--	--	--
	04-02-98	--	--	--	--	--	--	--	--
NP2GW	08-20-97	20	10,000	--	34	--	--	.73	35
	12-10-97	16	10,600	.55	42	.02	.67	.70	43
	02-18-98	15	10,200	--	33	--	--	.62	34
NP4SW	12-13-96	.60	886	--	--	--	--	--	--
	02-26-97	--	--	--	--	--	--	--	--
	06-11-97	6.5	4,520	--	--	--	--	--	--
	08-20-97	10	7,850	--	.35	--	--	1.5	1.8
	12-10-97	--	--	.25	4.4	1.3	1.2	2.5	6.9
	02-18-98	--	--	--	--	--	--	--	--

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Hardness (mg/L as $CaCO_3$)
NP4GW	12-13-96	1130	8,040	7.3	--	--	--	43	2,700
	02-26-97	1430	12,300	7.2	12.0	--	--	75	--
	06-11-97	1330	11,900	7.1	22.5	--	--	150	3,900
	08-20-97	1130	11,200	7.0	22.5	2.5	35	160	3,700
	12-10-97	1200	11,900	7.3	6.5	.9	9	180	4,200
	02-18-98	1010	10,000	7.4	7.0	.4	4	280	--
NP5SW	02-18-98	0745	9,260	8.2	5.5	--	--	47	--
NP5GW	02-18-98	0800	10,600	7.4	2.5	--	--	2	--
NP6SW	03-14-95	1200	13,100	8.2	13.0	--	--	170	--
	02-27-97	--	3,810	--	--	--	--	--	--
	04-16-97	1100	3,800	8.2	13.0	--	--	15	--
	05-07-97	--	4,820	--	--	--	--	--	--
	05-21-97	--	5,380	--	--	--	--	--	--
	06-12-97	0910	5,720	8.8	20.0	--	--	9	1,500
	06-18-97	--	6,020	9.1	--	--	--	--	--
	07-29-97	0950	8,190	9.0	23.5	11.8	168	5	2,200
	12-10-97	1310	11,000	8.3	3.5	10.1	92	42	3,500
	02-18-98	0830	9,080	8.2	5.0	6.3	60	56	2,700
	03-05-98	1030	5,990	8.2	7.0	--	--	--	--
	04-02-98	1015	6,630	8.5	10.5	9.1	97	--	--
NP6GW	06-12-97	0915	7,590	7.3	23.0	.0	0	1	2,700
	12-10-97	1300	11,500	7.9	4.0	1.4	13	1	3,800
	02-18-98	0845	9,480	7.6	5.5	.0	0	2	2,800

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
NP4GW	12-13-96	390	410	1,300	13	614	3,600	640	0.4
	02-26-97	--	--	--	--	--	--	--	--
	06-11-97	490	650	2,000	18	613	5,800	1,100	.6
	08-20-97	470	601	1,800	3.7	589	5,500	1,000	.7
	12-10-97	510	696	1,950	15	643	6,300	1,200	.6
	02-18-98	--	--	--	--	--	--	--	--
NP5SW	02-18-98	--	--	--	--	--	--	--	--
NP5GW	02-18-98	--	--	--	--	--	--	--	--
NP6SW	03-14-95	--	--	--	--	--	--	--	--
	02-27-97	--	--	--	--	--	--	--	--
	04-16-97	--	--	--	--	--	--	--	--
	05-07-97	--	--	--	--	--	--	--	--
	05-21-97	--	--	--	--	--	--	--	--
	06-12-97	170	270	870	9.9	135	2,500	560	.3
	06-18-97	--	--	--	--	--	--	--	--
	07-29-97	240	397	1,320	15	109	3,900	850	.3
	12-10-97	320	647	1,920	24	357	5,700	1,200	.3
	02-18-98	260	500	1,530	19	376	4,600	910	.4
	03-05-98	--	--	--	--	--	--	--	--
	04-02-98	--	--	--	--	--	--	--	--
NP6GW	06-12-97	490	360	1,100	18	497	3,400	710	.2
	12-10-97	330	725	2,100	17	333	6,100	1,300	.2
	02-18-98	260	526	1,680	15	395	4,800	950	.3

Table 43. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Organic nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
NP4GW	12-13-96	15	6,740	--	--	--	--	--	--
	02-26-97	--	--	--	--	--	--	--	--
	06-11-97	16	10,400	--	--	--	--	--	--
	08-20-97	24	9,870	--	27	--	--	0.40	27
	12-10-97	15	11,300	0.69	35	<0.02	--	.92	36
	02-18-98	--	--	--	33	--	--	.45	34
NP5SW	02-18-98	--	--	--	3.6	--	--	1.7	5.4
NP5GW	02-18-98	--	--	--	.12	--	--	2.6	2.7
NP6SW	03-14-95	--	--	--	--	--	--	--	--
	02-27-97	--	--	--	--	--	--	--	--
	04-16-97	--	--	--	.42	--	--	--	--
	05-07-97	--	--	--	--	--	--	--	--
	05-21-97	--	--	--	--	--	--	--	--
	06-12-97	5.9	4,470	--	--	--	--	--	--
	06-18-97	--	--	--	--	--	--	--	--
	07-29-97	8.8	6,740	--	<.05	--	--	.97	--
	12-10-97	.54	10,000	.25	4.4	1.4	1.2	2.6	7.0
	02-18-98	.12	8,090	--	3.6	--	--	1.8	5.3
	'-05-98	--	--	--	--	--	--	--	--
	04-02-98	--	--	--	--	--	--	--	--
NP6GW	06-12-97	15	6,390	--	--	--	--	--	--
	12-10-97	8.7	10,800	<.01	.10	.86	.86	1.7	1.8
	02-18-98	11	8,480	--	.17	--	--	1.9	2.1

Table 44. Dissolved trace-element data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, August 1997 through March 1998

[Sites in fig. 2; concentrations for dissolved constituents in micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Arsenic	Barium	Beryl-lium	Boron	Cad-mium	Chro-mium	Copper	Iron
NP1SW	12-10-97	1005	--	--	--	--	--	--	--	--
NP1GW	08-20-97	0830	1	30	<3	673	<4	<1	28	<18
	12-10-97	1015	--	--	--	--	--	--	--	--
NP2SW	12-10-97	1040	--	--	--	--	--	--	--	<30
	02-18-98	1030	--	--	--	--	--	--	--	<60
NP2GW	08-20-97	0920	<1	33	<3	584	<4	<1	12	<3
	12-10-97	1105	<1	21	--	522	<4	<2	<4	<30
	02-18-98	1045	--	--	--	--	--	--	--	<60
NP4SW	08-20-97	1140	3	40	<2	379	<2	<1	<2	74
	12-10-97	1210	<1	23	--	691	<4	<2	<4	<30
NP4GW	08-20-97	1130	<1	31	<3	576	<4	<2	10	<3
	12-10-97	1200	<1	18	--	501	<4	<2	<4	<30
	02-18-98	1010	--	--	--	--	--	--	--	<60
NP5SW	02-18-98	0745	--	--	--	511	--	--	--	--
NP5GW	02-18-98	0800	--	--	--	245	--	--	--	--
NP6SW	12-10-97	1310	--	--	--	--	--	--	--	--
	02-18-98	0830	--	--	--	--	--	--	--	--
NP6GW	12-10-97	1300	--	--	--	--	--	--	--	--
	02-18-98	0845	--	--	--	--	--	--	--	2,800

Table 44. Dissolved trace-element data for surface-water and ground-water samples collected at North Pond, Walter Walker State Wildlife Area, August 1997 through March 1998—Continued

Site code	Date	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Uranium	Vanadium	Zinc
NP1SW	12-10-97	--	--	--	--	--	--	--	36	--
NP1GW	08-20-97	6	3,600	<0.1	44	33	<4	53	37	49
	12-10-97	--	--	--	--	--	--	--	35	--
NP2SW	12-10-97	--	51	--	--	--	--	--	--	--
	02-18-98	--	--	--	19	--	--	--	27	--
NP2GW	08-20-97	<4	4,460	<.1	38	18	<4	57	37	<3
	12-10-97	<4	3,020	.1	3	10	<4	77	38	<30
	02-18-98	--	4,310	--	34	--	--	56	39	--
NP4SW	08-20-97	<2	586	--	6	<2.0	<2	20	28	30
	12-10-97	<4	47	--	11	--	<4	--	--	<30
NP4GW	08-20-97	5	2,870	<.1	39	22	<4	52	35	5
	12-10-97	<4	3,800	<.1	2	11	<4	80	100	<30
	02-18-98	--	2,360	--	22	--	--	--	30	--
NP5SW	02-18-98	--	--	--	--	--	--	--	28	--
NP5GW	02-18-98	--	--	--	--	--	--	--	30	--
NP6SW	12-10-97	--	--	--	--	--	--	--	38	--
	02-18-98	--	--	--	10	--	--	--	28	--
NP6GW	12-10-97	--	--	--	--	--	--	--	40	--
	02-18-98	--	--	--	11	--	--	--	28	--

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998

[Sites in fig. 2; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; <, less than; SW, surface water; GW, ground water]

Site code	Date	Time	Gage height (feet)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Selenium, total (µg/L)
WWDIV	12-11-96	1245	--	990	--	4.5	--	--	--	--
	03-05-97	1350	1.19	947	8.7	6.0	--	--	2	--
	03-13-97	1000	1.24	726	8.4	7.0	--	--	2	2
	03-26-97	1430	1.19	563	8.4	9.0	--	--	1	1
	04-04-97	0840	1.17	646	8.4	8.5	--	--	2	--
	04-30-97	0830	1.18	480	8.4	10.0	--	--	1	2
	05-08-97	0830	1.88	402	8.4	12.5	--	--	<1	--
	05-16-97	0845	2.10	352	8.4	12.5	--	--	<1	--
	05-21-97	1030	4.10	323	8.4	12.0	--	--	--	--
	05-29-97	1110	--	411	8.2	12.0	--	--	1	--
	06-05-97	1010	--	282	8.6	13.0	--	--	<1	1
	06-24-97	0845	--	290	8.6	14.5	--	--	<1	<1
	07-17-97	1250	--	606	8.5	20.0	--	--	1	--
	08-06-97	1250	1.14	844	8.2	21.0	--	--	8	10
	09-17-97	0810	1.34	955	8.4	16.0	--	--	5	--
	09-23-97	1400	--	879	8.5	15.0	--	--	--	--
	10-10-97	0800	1.68	812	8.4	11.0	--	--	3	3
	10-23-97	1040	1.66	788	8.5	9.5	--	--	3	--
	11-04-97	1130	1.61	805	8.8	6.5	--	--	3	--
	12-01-97	1255	3.97	774	8.5	5.0	--	--	--	--
	12-16-97	1230	1.98	883	8.7	1.0	--	--	3	--
	01-07-98	1400	--	796	8.4	2.5	--	--	--	--
	02-02-98	1340	1.94	865	8.6	3.0	--	--	--	--
	02-12-98	1105	1.96	862	8.3	2.5	--	--	2	--
	03-05-98	1155	1.96	861	8.4	5.0	--	--	--	--
	03-26-98	0700	1.98	729	8.2	10.0	--	--	2	2
	04-02-98	0850	1.88	760	8.4	7.5	9.3	92	--	--

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)
WWDIV	12-11-96	--	--	--	--	--	--	--	--
	03-05-97	--	--	--	--	--	--	--	--
	03-13-97	--	--	--	--	--	--	--	--
	03-26-97	--	--	--	--	--	--	--	--
	04-04-97	--	--	--	--	--	--	--	--
	04-30-97	--	--	--	--	--	--	--	--
	05-08-97	--	--	--	--	--	--	--	--
	05-16-97	--	--	--	--	--	--	--	--
	05-21-97	--	--	--	--	--	--	--	--
	05-29-97	--	--	--	--	--	--	--	--
	06-05-97	--	--	--	--	--	--	--	--
	06-24-97	--	--	--	--	--	--	--	--
	07-17-97	200	56	14	45	2.0	108	120	44
	08-06-97	270	77	20	63	3.6	120	210	61
	09-17-97	340	91	26	73	3.6	152	280	58
	09-23-97	--	--	--	--	--	--	--	--
	10-10-97	--	--	--	--	--	--	--	--
	10-23-97	--	--	--	--	--	--	--	--
	11-04-97	260	67	22	66	2.7	145	190	67
	12-01-97	--	--	--	--	--	--	--	--
	12-16-97	260	68	22	83	3.1	148	180	97
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-12-98	250	64	21	84	3.1	140	170	97
	03-05-98	--	--	--	--	--	--	--	--
	03-26-98	220	58	19	61	3.2	182	150	55
	04-02-98	--	--	--	--	--	--	--	--

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
WWDIV	12-11-96	--	--	--	--	--	--	--	--
	03-05-97	--	--	--	--	--	--	--	--
	03-13-97	--	--	--	--	--	--	--	--
	03-26-97	--	--	--	--	--	--	--	--
	04-04-97	--	--	--	--	--	--	--	--
	04-30-97	--	--	--	--	--	--	--	--
	05-08-97	--	--	--	--	--	--	--	--
	05-16-97	--	--	--	--	--	--	--	--
	05-21-97	--	--	--	--	--	--	--	--
	05-29-97	--	--	--	--	--	--	--	--
	06-05-97	--	--	--	--	--	--	--	--
	06-24-97	--	--	--	--	--	--	--	--
	07-17-97	0.2	9.6	359	--	0.22	--	<0.20	--
	08-06-97	.3	9.8	521	--	--	--	--	--
	09-17-97	.4	11	631	--	--	--	--	--
	09-23-97	--	--	--	--	--	--	--	--
	10-10-97	--	--	--	--	--	--	--	--
	10-23-97	--	--	--	--	--	--	--	--
	11-04-97	.3	10	509	0.03	.26	<0.02	<.10	--
	12-01-97	--	--	--	--	--	--	--	--
	12-16-97	.3	10	552	--	--	--	--	--
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-12-98	.3	9.8	531	--	.24	--	.12	0.36
	03-05-98	--	--	--	--	--	--	--	--
	03-26-98	.3	11	435	--	--	--	--	--
	04-02-98	--	--	--	--	--	--	--	--

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)
WM1	02-12-98	1115	3,590	8.1	3.5	--	--	47
WM2	02-18-98	0915	3,930	8.0	3.5	9.9	90	41
WC1SW	10-06-94	1020	3,270	8.5	15.0	--	--	3
	03-03-97	1200	1,050	8.6	4.5	--	--	2
WC13BGW	07-17-97	1215	10,200	7.3	25.0	--	--	2
WC2SW	03-03-97	1250	990	8.7	6.0	--	--	3
	02-12-98	1020	871	8.2	2.5	8.9	76	2
WC2GW	03-03-97	1255	4,910	7.6	10.5	--	--	<1
	07-17-97	1155	5,680	7.7	--	--	--	--
	02-12-98	1015	8,220	7.4	4.5	.2	2	1
WC4SW	03-03-97	1300	980	8.7	6.5	--	--	2
WC4GW	03-03-97	1330	2,330	8.2	10.0	--	--	<1
CH18SW	02-11-98	1110	874	8.3	3.0	--	--	2
	03-05-98	0945	880	8.2	5.0	--	--	--
	04-01-98	1200	762	8.6	10.0	9.9	105	--
CH18GW	02-11-98	1105	9,000	7.6	4.0	.9	8	<1

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)
WM1	02-12-98	--	--	--	--	--	--	--
WM2	02-18-98	1,100	160	178	600	6.1	258	1,600
WC1SW	10-06-94	--	--	--	--	--	--	--
	03-03-97	--	--	--	--	--	--	--
WC13BGW	07-17-97	3,000	490	425	1,580	12	524	3,400
WC2SW	03-03-97	--	--	--	--	--	--	--
	02-12-98	--	--	--	--	--	--	--
WC2GW	03-03-97	--	--	--	--	--	--	--
	07-17-97	--	--	--	--	--	--	--
	02-12-98	4,000	610	606	1,110	11	527	4,400
WC4SW	03-03-97	--	--	--	--	--	--	--
WC4GW	03-03-97	--	--	--	--	--	--	--
CH18SW	02-11-98	--	--	--	--	--	--	--
	03-05-98	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--
CH18GW	02-11-98	2,900	280	528	1,670	12	597	4,300

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Chloride (mg/L as Cl)	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
WM1	02-12-98	--	--	--	--	3.7	0.20	3.9
WM2	02-18-98	360	0.5	3.7	3,090	8.0	--	--
WC1SW	10-06-94	--	--	--	--	--	--	--
	03-03-97	--	--	--	--	--	--	--
WC13BGW	07-17-97	1,200	.1	18	7,410	<.05	.57	--
WC2SW	03-03-97	--	--	--	--	--	--	--
	02-12-98	--	--	--	--	--	--	--
WC2GW	03-03-97	--	--	--	--	--	--	--
	07-17-97	--	--	--	--	--	--	--
	02-12-98	940	.4	14	8,020	.08	.58	.67
WC4SW	03-03-97	--	--	--	--	--	--	--
WC4GW	03-03-97	--	--	--	--	--	--	--
CH18SW	02-11-98	--	--	--	--	--	--	--
	03-05-98	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--
CH18GW	02-11-98	1,100	.5	11	8,220	.08	.69	.77

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Hardness (mg/L as $CaCO_3$)
WC15GW	03-06-97	1315	3,310	7.9	12.5	--	--	<1	--
	02-11-98	1020	4,230	7.6	4.5	1.2	11	<1	1,800
WC5GW	07-17-97	1105	3,320	7.3	20.0	--	--	<1	900
WC11SW	03-05-97	0905	1,020	8.7	4.0	--	--	3	--
	11-04-97	1105	892	8.6	6.5	--	--	3	290
	12-01-97	1018	927	8.5	3.5	--	--	--	--
	01-07-98	1123	861	8.3	1.5	--	--	--	--
	02-02-98	1018	905	8.4	2.5	--	--	--	--
	02-10-98	1125	886	8.3	4.5	10.2	93	2	260
	03-05-98	0850	950	8.2	4.0	--	--	--	--
	04-01-98	0800	794	8.3	5.5	9.0	85	--	--
WC11GW	03-05-97	0900	6,840	7.3	4.5	--	--	63	--
	07-17-97	1050	7,040	7.3	14.0	--	--	22	1,700
	02-10-98	1130	9,060	7.3	8.0	2.3	24	190	3,500
WC6GW	07-17-97	1025	9,980	7.2	18.0	--	--	160	2,900
	02-10-98	1040	5,220	7.7	7.0	2.0	20	47	1,900
WC7SW	03-05-97	1015	1,100	8.6	5.0	--	--	3	--
WC7GW	07-17-97	0940	7,760	7.1	22.5	--	--	31	2,700
WC9SW	03-05-97	1205	1,070	8.6	6.5	--	--	3	--
	02-11-98	0900	907	8.1	2.5	--	--	2	260

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
WC15GW	03-06-97	--	--	--	--	--	--	--	--
	02-11-98	320	234	521	7.1	488	1,800	380	0.4
WC5GW	07-17-97	140	136	414	6.8	448	1,100	200	.8
WC11SW	03-05-97	--	--	--	--	--	--	--	--
	11-04-97	72	26	78	3.1	149	220	69	.3
	12-01-97	--	--	--	--	--	--	--	--
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-10-98	67	23	90	3.1	142	180	97	.3
	03-05-98	--	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--	--
WC11GW	03-05-97	--	--	--	--	--	--	--	--
	07-17-97	260	265	1,110	11	634	2,900	550	.2
	02-10-98	470	556	1,550	13	608	4,800	910	.6
WC6GW	07-17-97	390	460	1,620	14	538	3,700	780	.2
	02-10-98	310	268	891	1.6	365	2,700	480	.4
WC7SW	03-05-97	--	--	--	--	--	--	--	--
WC7GW	07-17-97	430	396	1,160	11	477	3,000	500	.2
WC9SW	03-05-97	--	--	--	--	--	--	--	--
	02-11-98	65	23	91	3.1	145	190	98	.3

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
WC15GW	03-06-97	--	--	--	--	--	--	--
	02-11-98	16	3,800	--	0.09	--	0.30	0.38
WC5GW	07-17-97	22	2,300	--	.05	--	.30	.35
WC11SW	03-05-97	--	--	--	--	--	--	--
	11-04-97	10	570	0.03	.29	0.02	<.10	--
	12-01-97	--	--	--	--	--	--	--
	01-07-98	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--
	02-10-98	10	556	--	.37	--	.19	.55
	03-05-98	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--
WC11GW	03-05-97	--	--	--	--	--	--	--
	07-17-97	22	5,470	--	.94	--	.33	1.3
	02-10-98	16	8,750	--	20	--	.44	20
WC6GW	07-17-97	22	7,360	--	13	--	.67	14
	02-10-98	15	4,870	--	2.8	--	.88	3.7
WC7SW	03-05-97	--	--	--	--	--	--	--
WC7GW	07-17-97	22	5,810	--	.92	--	.46	1.4
WC9SW	03-05-97	--	--	--	--	--	--	--
	02-11-98	10	568	--	.27	--	.14	.41

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Time	Gage height (feet)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)
WC9GW	03-05-97	1200	--	9,510	7.3	8.5	--	--	<1
WC10SW	02-02-98	0910	--	940	8.4	2.0	--	--	--
	03-05-98	0807	--	1,070	8.2	3.0	--	--	--
	04-01-98	0825	--	877	8.2	6.0	--	--	--
WC19GW	03-05-97	1050	--	10,900	7.0	6.5	--	--	<1
	02-10-98	0915	--	8,040	7.2	5.0	2.2	21	39
WWOUT	03-05-97	1045	1.00	1,070	8.6	5.0	--	--	4
	07-17-97	0930	--	640	8.3	19.0	--	--	1
	11-04-97	0910	1.26	959	8.6	5.0	--	--	4
	12-01-97	0940	1.26	1,070	8.2	3.5	--	--	--
	01-07-98	1020	1.22	928	8.2	1.5	--	--	--
	02-02-98	0955	1.14	950	8.3	3.0	--	--	--
	02-10-98	0900	1.18	911	8.5	3.0	--	--	3
	03-05-98	0730	1.16	942	8.1	3.5	--	--	--
	04-01-98	1040	1.38	822	8.4	8.0	10.2	103	--
SP	04-12-95	1120	--	1,870	8.6	12.5	8.5	94	1

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)
WC9GW	03-05-97	--	--	--	--	--	--	--	--
WC10SW	02-02-98	--	--	--	--	--	--	--	--
	03-05-98	--	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--	--
WC19GW	03-05-97	--	--	--	--	--	--	--	--
	02-10-98	3,300	520	473	1,330	11	523	4,500	720
WWOUT	03-05-97	--	--	--	--	--	--	--	--
	07-17-97	200	54	15	49	2.0	109	130	49
	11-04-97	300	72	28	85	2.9	154	250	75
	12-01-97	--	--	--	--	--	--	--	--
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-10-98	270	68	24	92	3.2	144	190	96
	03-05-98	--	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--	--
SP	04-12-95	700	170	67	140	6.9	239	550	160

Table 45. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, water year 1995 through March 1998—Continued

Site code	Date	Fluoride (mg/L as F)	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
WC9GW	03-05-97	--	--	--	--	--	--	--	--
WC10SW	02-02-98	--	--	--	--	--	--	--	--
	03-05-98	--	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--	--
WC19GW	03-05-97	--	--	--	--	--	--	--	--
	02-10-98	0.5	16	7,870	--	0.69	--	0.40	1.1
WWOUT	03-05-97	--	--	--	--	--	--	--	--
	07-17-97	.3	10	376	--	.20	--	<.20	--
	11-04-97	.3	9.8	615	0.03	.32	<0.02	.11	.43
	12-01-97	--	--	--	--	--	--	--	--
	01-07-98	--	--	--	--	--	--	--	--
	02-02-98	--	--	--	--	--	--	--	--
	02-10-98	.3	9.9	568	--	.29	--	.16	.45
	03-05-98	--	--	--	--	--	--	--	--
	04-01-98	--	--	--	--	--	--	--	--
SP	04-12-95	.3	3.5	1,240	--	--	--	--	--

Table 46. Dissolved trace-element data for surface-water and ground-water samples collected from the channel area at Walter Walker State Wildlife Area, August 1997 through March 1998

[Sites shown in fig. 2; concentrations for dissolved constituents in micrograms per liter; --, no data; <, less than; SW, surface water; GW, ground water]

Site code	Date	Time	Boron	Iron	Manganese	Molybdenum	Uranium	Vanadium
WWDIV	08-06-97	1250	--	4	9	--	--	4
	11-04-97	1130	--	--	--	--	--	2
	02-12-98	1105	--	--	--	--	--	2
WM1	02-12-98	1115	--	--	--	8	--	8
WM2	02-18-98	0915	--	--	--	--	--	8
WC2SW	02-12-98	1020	--	--	--	--	--	3
WC2GW	02-12-98	1015	178	7,200	7,200	5	68	2[e]
CH18SW	02-11-98	1110	--	<10	--	5	--	--
CH18GW	02-11-98	1105	--	2,500	1,300	10	9.1	33
WC15GW	02-11-98	1020	--	2,000	--	2	--	8
WC11SW	11-04-97	1105	--	--	--	--	--	2
	02-10-98	1125	59	--	--	--	--	3
WC11GW	02-10-98	1130	421	<60	990	10	16	25
WC6GW	02-10-98	1040	--	--	--	10	--	12
WC9SW	02-11-98	0900	--	--	--	--	--	2
WC19GW	02-10-98	0915	401	<50	900	4	47	19
WWOUT	11-04-97	0910	--	--	--	--	--	2
	02-10-98	0900	--	--	--	6	--	3

Table 47. Total trace-element data for samples collected from the Colorado River diversion at Walter Walker State Wildlife Area (site WWDIV), August 1997 and March 1998

[Site WWDIV in fig. 2; constituent concentrations for unfiltered samples, in micrograms per liter; <, less than; --, no data]

Date	Time	Arsenic	Beryllium	Cadmium	Chro-mium	Copper
08-06-97	1250	3	<10	2	11	23
03-26-98	0700	4	<10	<1	11	24

Date	Iron	Lead	Manga-nese	Mercury	Nickel	Zinc
08-06-97	14,000	22	310	<0.1	25	100
03-26-98	14,400	19	640	--	20	86

Table 48. Suspended-sediment concentration and particle-size data and selenium concentrations in suspended sediment for samples collected at the Colorado River diversion structure at Walter Walker State Wildlife Area (site WWDIV), water year 1997

[Site WWDIV in fig. 2; mm, millimeters; mg/L, milligrams per liter; µg/g, micrograms per gram; --, no data]

Date of sample	Suspended-sediment concentration (mg/L)	Percent finer than 0.062 mm	Selenium concentration (µg/g)
12-11-96	205	99	1.8
03-13-97	663	--	.9
03-26-97	192	92	1.4
04-04-97	798	99	.7
04-30-97	531	92	1.1
05-08-97	1,060	87	.9
05-16-97	437	73	1.1
05-29-97	260	57	1.0
06-05-97	320	84	1.2
06-24-97	146	71	1.1
08-06-97	1,210	99	3.8

Table 49. Complete particle-size analysis for selected suspended-sediment samples collected at the Colorado River diversion structure at Walter Walker State Wildlife Area (site WWDIV), water year 1997

[Site WWDIV in fig. 2]

Date of sample	Percentage finer than indicated size (particle sizes in millimeters)									
	1.000	0.500	0.250	0.125	0.062	0.031	0.016	0.008	0.004	0.002
04-04-97	100	100	100	100	99	95	84	71	64	58
04-30-97	100	100	100	99	92	83	68	54	50	44
08-06-97	100	100	100	100	99	95	90	79	64	46

Table 50. Onsite measurements, selenium data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998

[Sites in fig. 2; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Hardness (mg/L as $CaCO_3$)
OW1	04-16-97	1110	3,860	7.3	13.0	4.2	47	<1	--
OW2	04-09-97	0950	4,560	7.2	9.5	1.4	15	<1	--
	07-29-97	1000	6,810	7.3	23.0	1.2	17	1	1,900
	11-06-97	1005	9,970	7.2	14.0	.4	4	1	3,000
	02-12-98	0945	9,770	7.3	6.0	.9	9	1	3,100
OW3	04-09-97	0850	5,220	7.5	8.0	--	--	2	--
	07-29-97	0810	7,310	7.2	21.0	.3	4	2	2,200
	11-03-97	1205	10,500	7.3	13.5	2.0	23	4	3,500
	02-18-98	0730	8,980	7.7	5.0	1.9	18	24	2,900
OW4	04-09-97	0915	3,680	7.7	10.0	3.2	34	4	--
	07-29-97	0845	4,730	7.4	20.0	--	--	<1	--
	11-03-97	1240	5,990	7.4	14.0	2.3	27	2	2,30(
	02-12-98	0900	8,780	7.3	7.5	1.2	12	2	3,80(
OW5	04-04-97	1100	7,860	7.3	12.0	1.9	22	1	--
	11-05-97	0840	8,140	7.4	7.0	.7	7	<1	2,70(
	02-11-98	0930	6,440	7.5	4.0	2.7	25	4	2,40(
OW6	04-10-97	1200	9,260	7.4	8.5	3.6	38	59	--
	07-30-97	0830	11,100	7.2	18.5	2.6	34	79	3,40(
	11-06-97	1045	11,500	7.3	14.0	.9	11	120	3,90(
	02-19-98	0850	10,800	7.5	5.0	1.0	9	89	3,60(
OW7	04-10-97	1050	12,200	7.5	9.0	--	--	100	--
	06-18-97	1100	13,600	7.0	19.0	1.0	13	250	3,90(
	02-19-98	0930	11,800	7.2	7.0	--	--	430	4,10(

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
OW1	04-16-97	--	--	--	--	--	--	--	--
OW2	04-09-97	--	--	--	--	--	--	--	--
	07-29-97	340	261	1,040	15	383	3,000	670	0.8
	11-06-97	570	377	1,700	20	543	4,700	1,200	.5
	02-12-98	550	421	1,690	15	417	5,000	1,000	.6
OW3	04-09-97	--	--	--	--	--	--	--	--
	07-29-97	320	331	1,080	19	286	3,200	790	.4
	11-03-97	460	574	1,740	19	335	5,500	1,200	.5
	02-18-98	330	516	1,540	15	335	4,600	900	.3
OW4	04-09-97	--	--	--	--	--	--	--	--
	07-29-97	--	--	--	--	--	--	--	--
	11-03-97	380	328	763	9.7	327	3,000	680	.3
	02-12-98	690	503	1,220	13	464	4,600	960	.3
OW5	04-04-97	--	--	--	--	--	--	--	--
	11-05-97	480	360	1,280	11	858	3,800	760	1.2
	02-11-98	440	315	1,060	9.2	718	3,100	600	.8
OW6	04-10-97	--	--	--	--	--	--	--	--
	07-30-97	470	537	1,740	16	516	5,400	1,100	.7
	11-06-97	520	622	2,070	19	468	6,000	1,200	.6
	02-19-98	460	602	1,930	1.6	582	5,600	1,000	.7
OW7	04-10-97	--	--	--	--	--	--	--	--
	06-18-97	460	674	2,400	26	606	6,800	1,400	.7
	02-19-98	470	700	2,300	2.0	428	6,200	1,300	.7

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Organic nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
OW1	04-16-97	--	--	--	0.30	--	--	--	--
OW2	04-09-97	--	--	--	.05	--	--	--	--
	07-29-97	24	5,580	--	<.05	--	--	1.3	--
	11-06-97	16	8,950	0.06	.11	1.2	.43	1.7	1.9
	02-12-98	13	8,940	--	.08	--	--	.62	.7(
OW3	04-09-97	--	--	--	.09	--	--	--	--
	07-29-97	17	5,920	--	<.05	--	--	1.8	--
	11-03-97	15	9,730	.03	<.05	1.4	.62	2.0	--
	02-18-98	6.1	8,110	--	.29	--	--	1.3	1.6
OW4	04-09-97	--	--	--	.07	--	--	--	--
	07-29-97	--	--	--	<.05	--	--	.38	--
	11-03-97	14	5,330	.04	<.05	.16	.22	.38	--
	02-12-98	18	8,300	--	.08	--	--	.34	.42
OW5	04-04-97	--	--	--	.06	--	--	--	--
	11-05-97	18	7,250	.03	<.05	.04	.42	.46	--
	02-11-98	16	5,990	--	.24	--	--	.40	.64
OW6	04-10-97	--	--	--	8.6	--	--	--	--
	07-30-97	29	9,760	--	32	--	--	2.3	34
	11-06-97	18	11,000	.54	39	1.1	.59	1.7	41
	02-19-98	15	10,100	--	24	--	--	.84	25
OW7	04-10-97	--	--	--	40	--	--	--	--
	06-18-97	15	12,400	--	47	--	--	1.3	48
	02-19-98	10	11,400	--	32	--	--	1.7	34

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Hardness (mg/L as $CaCO_3$)
OW8	04-03-97	1040	6,690	7.3	11.5	--	--	60	--
	07-28-97	1315	9,690	6.8	20.0	1.9	26	130	3,100
	11-05-97	0940	9,080	6.7	11.5	--	--	38	3,300
OW9	04-09-97	1130	8,960	7.1	10.5	--	--	40	--
	07-29-97	1150	8,660	7.0	20.0	--	--	49	--
	11-05-97	1010	6,410	7.1	11.5	--	--	<1	--
	02-19-98	0820	8,220	6.8	8.0	--	--	1	--
OW10	04-10-97	0915	12,500	7.2	8.0	3.9	41	100	--
	02-19-98	0840	12,100	6.8	6.5	--	--	58	--
OW11	04-16-97	0915	10,200	7.4	10.0	--	--	120	--
	06-18-97	1135	10,200	7.2	15.0	.2	2	200	3,100
	07-30-97	0920	10,300	7.2	19.0	.6	8	160	3,000
	11-07-97	0900	10,900	7.1	12.5	1.4	16	170	3,700
	02-19-98	1000	10,400	7.1	6.5	.3	3	200	3,500
OW12	04-16-97	0950	12,600	7.2	12.0	--	--	7	--
	06-18-97	1215	16,300	6.9	18.0	.1	1	4	4,400
	07-30-97	0950	18,700	6.9	21.0	--	--	4	4,700
	11-07-97	0945	16,400	6.6	11.5	--	--	<5	4,500
	02-19-98	1020	14,600	6.5	7.5	--	--	<5	--
OW13	04-01-97	0950	6,680	7.6	8.0	4.6	47	29	--
	07-28-97	1045	7,760	7.2	21.0	2.3	31	100	1,900
	11-05-97	0910	9,480	7.2	8.5	.8	8	160	3,300
	02-10-98	1125	8,700	7.1	8.0	2.0	21	200	3,400

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
OW8	04-03-97	--	--	--	--	--	--	--	--
	07-28-97	470	462	1,130	18	370	3,400	1,100	0.7
	11-05-97	590	433	1,290	18	--	4,400	1,400	.6
OW9	04-09-97	--	--	--	--	--	--	--	--
	07-29-97	--	--	--	--	--	--	--	--
	11-05-97	--	--	--	--	--	--	--	--
	02-19-98	--	--	--	--	--	--	--	--
OW10	04-10-97	--	--	--	--	--	--	--	--
	02-19-98	--	--	--	--	--	--	--	--
OW11	04-16-97	--	--	--	--	--	--	--	--
	06-18-97	370	524	1,700	15	380	5,000	900	.6
	07-30-97	380	498	1,570	15	429	5,100	960	.8
	11-07-97	470	616	1,800	16	518	5,600	1,100	.8
	02-19-98	450	581	1,850	1.4	512	5,400	1,000	.7
OW12	04-16-97	--	--	--	--	--	--	--	--
	06-18-97	530	753	3,060	93	1,090	6,900	2,700	.4
	07-30-97	500	829	3,250	98	1,080	7,200	3,300	.5
	11-07-97	540	766	2,800	80	--	7,600	3,300	<.1
	02-19-98	--	--	--	--	--	--	--	--
OW13	04-01-97	--	--	--	--	--	--	--	--
	07-28-97	250	312	1,320	25	607	3,300	670	.4
	11-05-97	440	545	1,600	15	604	4,900	860	.7
	02-10-98	460	543	1,510	12	632	4,700	860	.6

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Organic nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
OW8	04-03-97	--	--	--	9.1	--	--	--	--
	07-28-97	18	6,840	0.07	13	--	--	1.8	15
	11-05-97	14	--	.07	4.5	.96	0.35	1.3	5.8
OW9	04-09-97	--	--	--	7.9	--	--	--	--
	07-29-97	--	--	--	8.6	--	--	5.5	14
	11-05-97	--	--	.04	.07	3.0	.0	2.9	3.0
	02-19-98	--	--	--	3.6	--	--	3.0	6.6
OW10	04-10-97	--	--	--	77	--	--	--	--
	02-19-98	--	--	--	15	--	--	8.2	23
OW11	04-16-97	--	--	--	37	--	--	--	--
	06-18-97	15	8,940	--	38	--	--	.42	38
	07-30-97	27	8,970	--	40	--	--	1.2	41
	11-07-97	16	10,100	.22	46	.53	1.5	2.0	48
	02-19-98	15	9,830	--	39	--	--	1.0	40
OW12	04-16-97	--	--	--	1.5	--	--	--	--
	06-18-97	12	14,700	--	.10	--	--	9.0	9.1
	07-30-97	25	15,900	--	.19	--	--	15	15
	11-07-97	13	--	.05	.67	.08	8.2	8.3	9.0
	02-19-98	--	--	--	.14	--	--	8.7	8.8
OW13	04-01-97	--	--	--	1.9	--	--	--	--
	07-28-97	24	6,290	--	6.9	--	--	.58	7.5
	11-05-97	18	8,840	.45	18	.13	.40	.53	19
	02-10-98	19	8,590	--	20	--	--	.46	20

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Selenium, dissolved (µg/L)	Hardness (mg/L as $CaCO_3$)
OW14	04-03-97	0850	10,100	7.3	7.5	2.6	27	220	--
	07-28-97	1010	7,640	7.1	19.0	--	--	120	1,900
	11-04-97	0950	4,400	7.5	7.5	2.2	22	60	840
	02-10-98	1015	7,830	7.3	5.0	1.9	18	160	3,100
OW15	04-03-97	1100	8,320	7.7	10.0	--	--	3	--
	07-28-97	0930	6,480	7.4	20.0	1.0	13	11	2,000
	11-04-97	0930	8,630	7.5	9.0	--	--	3	3,200
	02-10-98	0940	8,140	7.1	5.5	--	--	25	--
OW16	04-03-97	0935	8,860	7.5	10.0	3.4	37	31	--
	07-28-97	0900	8,240	7.5	19.5	3.4	45	8	2,400
	11-04-97	0855	8,560	7.6	9.0	--	--	12	3,100
	02-10-98	0855	8,040	7.2	7.5	--	--	26	--
OW17	04-04-97	0920	2,560	7.7	9.0	5.9	62	37	--
	11-06-97	0915	1,270	7.5	7.5	4.8	47	1	380
OW18	04-04-97	0950	9,110	7.7	10.0	--	--	1	--
	11-06-97	0940	6,790	7.7	9.0	--	--	<1	1,900
	02-11-98	1050	7,530	7.5	2.0	.8	7	<1	1,800
OW19	04-04-97	1010	5,850	7.8	10.0	--	--	12	--
	11-06-97	0850	1,960	7.8	6.5	3.6	34	2	410
OW20	04-03-97	1200	46,500	7.4	12.5	--	--	7	--
	11-04-97	1020	37,100	7.2	8.0	--	--	3	11,000
OW21	07-28-97	1230	10,500	7.0	20.0	--	--	<1	--
	11-04-97	1050	10,500	7.2	10.5	--	--	<1	--
	02-11-98	0850	9,380	7.0	4.0	--	--	2	--

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Fluoride (mg/L as F)
OW14	04-03-97	--	--	--	--	--	--	--	--
	07-28-97	290	291	1,230	13	476	3,500	580	0.6
	11-04-97	130	125	752	8.7	402	1,800	320	.9
	02-10-98	470	476	1,270	11	470	4,300	710	.5
OW15	04-03-97	--	--	--	--	--	--	--	--
	07-28-97	280	317	914	9.7	336	3,100	490	.3
	11-04-97	500	473	1,360	15	468	4,700	800	.6
	02-10-98	--	--	--	--	--	--	--	--
OW16	04-03-97	--	--	--	--	--	--	--	--
	07-28-97	330	388	1,330	14	469	3,400	650	.4
	11-04-97	470	467	1,400	16	407	4,600	800	.6
	02-10-98	--	--	--	--	--	--	--	--
OW17	04-04-97	--	--	--	--	--	--	--	--
	11-06-97	61	56	101	3.0	359	180	65	.5
OW18	04-04-97	--	--	--	--	--	--	--	--
	11-06-97	460	187	1,130	9.5	648	2,900	610	.2
	02-11-98	230	288	1,540	6.5	633	3,500	710	.3
OW19	04-04-97	--	--	--	--	--	--	--	--
	11-06-97	69	56	295	3.3	319	590	110	.5
OW20	04-03-97	--	--	--	--	--	--	--	--
	11-04-97	460	2,310	9,370	33	1,870	21,000	6,700	.9
OW21	07-28-97	--	--	--	--	--	--	--	--
	11-04-97	--	--	--	--	--	--	--	--
	02-11-98	--	--	--	--	--	--	--	--

Table 50. Onsite measurements, selenium, data, major-ion and dissolved-solids data, and nitrogen data for samples collected from wells at the Walter Walker State Wildlife Area, April 1997 through March 1998—Continued

Site code	Date	Silica (mg/L as SiO_2)	Dissolved solids, sum of constituents (mg/L)	Nitrite nitrogen (mg/L as N)	Nitrite plus nitrate nitrogen (mg/L as N)	Ammonia nitrogen (mg/L as N)	Organic nitrogen (mg/L as N)	Ammonia plus organic nitrogen (mg/L as N)	Dissolved nitrogen (mg/L as N)
OW14	04-03-97	--	--	--	17	--	--	--	--
	07-28-97	28	6,200	--	4.6	--	--	0.30	4.9
	11-04-97	16	3,390	0.23	1.7	<0.02	--	.18	1.9
	02-10-98	16	7,620	--	11	--	--	.53	11
OW15	04-03-97	--	--	--	.26	--	--	--	--
	07-28-97	23	5,310	--	.08	--	--	.83	.91
	11-04-97	16	8,140	.03	<.05	<.02	--	.33	--
	02-10-98	--	--	--	.20	--	--	.40	.60
OW16	04-03-97	--	--	--	.99	--	--	--	--
	07-28-97	27	6,460	--	.16	--	--	.41	.57
	11-04-97	15	8,010	.06	.37	.07	0.24	.31	.68
	02-10-98	--	--	--	.46	--	--	.38	.84
OW17	04-04-97	--	--	--	<.05	--	--	--	--
	11-06-97	12	690	.05	.10	.08	.04	.12	.22
OW18	04-04-97	--	--	--	.07	--	--	--	--
	11-06-97	20	5,660	.05	.10	.19	.22	.42	.52
	02-11-98	16	6,710	--	.08	--	--	.39	.47
OW19	04-04-97	--	--	--	<.05	--	--	--	--
	11-06-97	8.0	1,320	.05	.12	.08	.04	.11	.23
OW20	04-03-97	--	--	--	3.6	--	--	--	--
	11-04-97	6.6	40,900	.04	<.05	1.1	3.6	4.7	--
OW21	07-28-97	--	--	--	<.05	--	--	.96	--
	11-04-97	--	--	.04	<.05	1.3	.15	1.4	--
	02-11-98	--	--	--	.14	--	--	3.4	3.5

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998

[Sites in fig. 2; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; --, no data]

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW1	05-07-97	--	4,480	--	--	--	--
	05-21-97	--	6,450	--	--	--	--
	06-18-97	--	7,100	7.1	--	1.9	--
	11-06-97	1030	--	--	13.0	--	--
	12-01-97	1146	10,500	8.4	10.0	--	--
	01-07-98	1250	11,800	11.1	5.0	--	--
	02-02-98	1220	15,600	12.4	5.5	--	--
	03-05-98	1040	12,700	12.1	8.0	--	--
	04-02-98	0950	9,290	11.0	7.0	--	--
OW2	05-07-97	--	5,200	--	16.0	--	--
	05-21-97	--	4,930	--	--	--	--
	06-18-97	--	5,030	7.7	--	--	--
	08-26-97	1205	7,810	6.8	--	--	--
	09-23-97	1125	9,410	6.7	22.5	--	--
	12-01-97	1140	8,540	7.3	10.0	--	--
	01-07-98	1255	9,360	7.8	5.5	--	--
	02-02-98	1227	10,600	7.9	6.0	--	--
	03-05-98	1035	8,050	7.7	9.0	--	--
	04-02-98	1000	7,440	7.5	7.5	.6	6
OW3	05-07-97	--	4,460	--	16.5	--	--
	05-21-97	--	4,510	--	--	--	--
	06-18-97	--	4,600	7.7	--	.9	--
	08-26-97	1200	7,130	7.4	19.5	--	--
	09-23-97	1100	9,020	7.5	19.0	--	--
	12-01-97	1125	10,700	7.6	8.5	--	--
	01-07-98	1240	9,430	7.7	5.0	--	--
	02-02-98	1210	8,330	7.8	4.5	--	--
	03-05-98	1017	6,080	8.0	6.0	--	--
	04-02-98	0930	6,560	7.8	7.5	1.5	16

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW4	05-07-97	--	4,080	--	17.0	--	--
	05-21-97	--	2,660	--	--	--	--
	06-18-97	--	780	8.1	--	--	--
	08-26-97	1208	5,640	7.4	19.0	--	--
	09-23-97	1110	5,750	7.4	19.0	--	--
	12-01-97	1134	7,030	7.5	9.5	--	--
	01-07-98	1230	7,530	7.5	5.0	--	--
	02-02-98	1200	8,290	7.5	7.5	--	--
	03-05-98	1010	8,720	7.6	7.5	--	--
	04-02-98	0915	9,390	7.5	8.5	0.9	9
OW5	05-07-97	--	4,600	--	18.0	--	--
	05-21-97	--	6,510	--	--	--	--
	06-18-97	--	2,420	7.2	--	--	--
	09-23-97	0920	6,740	7.4	17.0	--	--
	12-01-97	1033	5,060	7.3	9.5	--	--
	01-07-98	1133	4,640	7.3	5.0	--	--
	02-02-98	1040	6,370	7.3	6.5	--	--
	03-05-98	0900	7,330	7.4	6.5	--	--
	04-01-98	0725	8,530	7.1	6.5	.4	4
OW6	05-07-97	--	9,750	--	15.5	--	--
	05-21-97	--	10,300	--	--	--	--
	06-18-97	--	10,900	7.2	--	--	--
	08-26-97	1215	10,800	7.3	17.0	--	--
	09-23-97	1235	10,900	7.1	19.5	--	--
	12-01-97	1200	11,000	6.9	11.5	--	--
	01-07-98	1318	10,600	6.8	9.5	--	--
	02-02-98	1235	10,900	7.5	8.5	--	--
	03-05-98	1105	10,600	7.5	10.5	--	--
	04-02-98	1050	11,500	7.4	9.0	1.0	11

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW7	05-07-97	--	13,600	--	15.0	--	--
	05-21-97	--	12,900	--	--	--	--
	11-07-97	0830	15,400	--	11.0	--	--
	12-01-97	1207	13,900	6.5	11.0	--	--
	01-07-98	1307	11,900	6.8	7.5	--	--
	02-02-98	1255	11,900	7.1	8.5	--	--
	03-05-98	1055	12,600	7.3	10.0	--	--
	04-02-98	1030	13,600	6.9	8.0	0.0	0
OW8	05-07-97	--	9,190	--	13.0	--	--
	05-21-97	--	9,720	--	--	--	--
	06-18-97	--	11,100	6.8	--	1.5	--
	08-26-97	1225	10,600	6.6	16.5	--	--
	09-23-97	0910	9,560	6.6	15.5	--	--
	12-01-97	1014	9,080	6.7	8.5	--	--
	01-07-98	1115	9,160	6.9	8.5	--	--
	02-02-98	1050	9,800	6.8	8.0	--	--
	03-05-98	0910	9,800	6.8	7.5	--	--
	04-01-98	0700	11,100	6.6	8.0	.0	0
OW9	05-07-97	--	9,310	--	15.0	--	--
	05-21-97	--	8,520	--	--	--	--
	06-18-97	--	8,240	7.0	--	--	--
	08-26-97	1230	8,320	7.2	16.0	--	--
	09-23-97	1215	7,430	7.2	19.0	--	--
	12-01-97	1216	7,750	6.8	10.5	--	--
	01-07-98	1325	8,280	6.7	8.5	--	--
	02-02-98	1305	8,430	6.8	9.0	--	--
	03-05-98	1115	7,800	6.8	9.5	--	--
	04-02-98	1115	7,650	6.8	7.5	.0	0

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)
OW10	05-07-97	--	15,300	--	15.5
	05-21-97	--	15,300	--	--
	06-18-97	--	14,800	6.6	--
	07-29-97	1220	14,800	6.4	21.0
	08-26-97	1235	13,200	6.5	18.5
	09-23-97	1225	13,000	6.6	19.0
	11-05-97	1050	13,200	6.6	13.0
	12-01-97	1225	12,300	6.4	11.0
	01-07-98	1330	12,500	6.6	8.5
	02-02-98	1311	13,200	6.7	8.5
	03-05-98	1125	13,600	6.9	9.5
	04-02-98	1135	17,700	6.9	8.0
OW11	05-07-97	--	10,400	--	14.0
	05-21-97	--	10,200	--	--
	08-26-97	1240	10,100	7.3	17.0
	09-23-97	1300	10,500	7.4	19.5
	12-01-97	1232	10,400	7.1	11.5
	01-07-98	1340	10,300	7.2	9.5
	02-02-98	1320	10,700	7.2	9.0
	03-05-98	1135	10,600	7.2	10.5
	04-02-98	1200	11,000	7.1	8.5
OW12	05-07-97	--	18,400	--	--
	05-21-97	--	17,200	--	--
	08-26-97	1245	17,400	6.8	18.5
	09-23-97	1310	16,400	6.8	20.0
	12-01-97	1240	14,800	6.5	11.5

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW12	01-07-98	1345	15,000	6.5	10.5	--	--
	02-02-98	1330	14,100	6.7	9.5	--	--
	03-05-98	1145	14,900	6.5	10.5	--	--
	04-02-98	1215	17,400	6.6	8.5	--	--
OW13	05-07-97	--	7,160	--	20.0	--	--
	08-26-97	1050	8,460	7.2	20.5	--	--
	09-23-97	0915	9,200	7.2	19.0	--	--
	12-01-97	1024	8,860	7.1	9.5	--	--
	01-07-98	1130	8,850	7.0	7.5	--	--
	02-02-98	1030	8,950	7.1	6.0	--	--
	03-05-98	0845	9,010	7.1	6.5	--	--
	04-01-98	0745	10,200	7.2	7.5	1.0	11
OW14	08-26-97	1100	6,070	7.3	18.0	--	--
	09-23-97	0950	4,410	7.5	16.0	--	--
	12-01-97	1002	5,180	7.5	6.5	--	--
	01-07-98	1040	6,220	7.6	4.0	--	--
	02-02-98	1015	7,600	7.5	5.0	--	--
	03-05-98	0800	8,180	7.3	4.0	--	--
	04-01-98	0945	9,530	7.3	8.5	.9	10
OW15	05-07-97	--	8,480	--	14.0	--	--
	08-26-97	1115	8,280	7.4	18.0	--	--
	09-23-97	0935	8,360	7.4	16.5	--	--
	12-01-97	0952	8,540	7.3	8.0	--	--
	01-07-98	1030	8,270	7.2	4.5	--	--
	02-02-98	0945	8,320	7.2	5.0	--	--
	03-05-98	0745	8,120	7.2	4.5	--	--
	04-01-98	1000	9,020	7.2	9.5	1.4	15

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW16	05-07-97	--	9,180	--	--	--	--
	08-26-97	1130	7,380	7.8	18.5	--	--
	09-23-97	0930	7,930	8.0	16.0	--	--
	12-01-97	0944	8,230	7.3	7.5	--	--
	01-07-98	1025	8,280	7.0	4.5	--	--
	02-02-98	1000	8,330	7.0	6.0	--	--
	03-05-98	0740	8,180	7.0	4.0	--	--
	04-01-98	1030	9,540	7.0	10.0	--	--
OW17	05-07-97	--	990	--	--	--	--
	09-23-97	1140	7,660	7.4	18.5	--	--
	12-01-97	1054	1,020	7.6	7.5	--	--
	01-07-98	1202	1,040	8.5	2.5	--	--
	02-02-98	1115	1,060	7.8	3.5	--	--
	03-05-98	0935	1,240	7.8	5.5	--	--
	04-01-98	1120	1,090	7.8	11.0	2.3	25
OW18	05-07-97	--	9,220	--	17.0	--	--
	09-23-97	1145	3,400	8.4	18.5	--	--
	12-01-97	1100	6,840	7.6	6.0	--	--
	01-07-98	1158	6,780	7.7	3.0	--	--
	02-02-98	1125	7,470	7.6	2.5	--	--
	03-05-98	0940	6,820	7.6	5.0	--	--
	04-01-98	1145	7,070	8.6	10.0	2.1	23
OW19	05-07-97	--	3,040	--	16.0	--	--
	09-23-97	1150	3,250	7.6	17.5	--	--
	12-01-97	1110	2,240	7.7	6.5	--	--
	01-07-98	1210	1,350	7.9	2.5	--	--
	02-02-98	1136	1,350	7.8	3.0	--	--
	03-05-98	1000	1,900	7.8	4.5	--	--
	04-01-98	1215	2,110	7.8	10.0	1.9	20

Table 51. Miscellaneous onsite measurements for wells at Walter Walker State Wildlife Area, May 1997 through April 1998—Continued

Site code	Date	Time	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)
OW20	09-23-97	1010	38,600	7.1	16.5	--	--
	12-01-97	0915	39,400	7.1	5.0	--	--
	01-07-98	1053	40,400	7.1	3.5	--	--
	02-02-98	0922	44,300	7.1	3.0	--	--
	03-05-98	0810	47,700	6.9	3.0	--	--
	04-01-98	0835	53,400	7.1	7.0	0.0	0
OW21	04-03-97	1320	2,710	8.0	--	--	--
	04-09-97	1300	2,100	--	10.5	--	--
	08-26-97	1140	10,700	7.2	17.5	--	--
	09-23-97	1020	11,100	7.1	17.5	--	--
	12-01-97	0926	9,140	6.9	5.5	--	--
	01-07-98	1100	8,820	7.1	4.0	--	--
	02-02-98	0930	9,140	6.9	4.5	--	--
	03-05-98	0830	9,510	7.1	3.5	--	--
	04-01-98	0915	11,100	7.1	7.0	.2	2

Table 52. Dissolved trace-element data for wells at Walter Walker State Wildlife Area, November 1997 and February 1998

[Sites in fig. 2; concentrations for dissolved constituents in micrograms per liter; --, no data; <, less than]

Site code	Date	Time	Arsenic	Beryl-lium	Boron	Cad-mium	Chro-mium	Copper
OW2	11-06-97	1005	--	--	--	--	--	--
	02-12-98	0945	--	--	--	--	--	--
OW3	11-03-97	1205	3	<5	276	<1	<1	<1
	02-18-98	0730	--	--	382	--	--	--
OW4	02-12-98	0900	--	--	--	--	--	--
OW5	11-05-97	0840	--	--	--	--	--	--
	02-11-98	0930	--	--	--	--	--	--
OW6	11-06-97	1045	--	--	703	--	--	--
	02-19-98	0850	--	--	711	--	--	--
OW7	02-19-98	0930	--	--	--	--	--	--
OW8	11-05-97	0940	--	--	--	--	--	--
OW9	11-05-97	1010	--	--	440	--	--	--
	02-19-98	0820	--	--	--	--	--	--
OW10	02-19-98	0840	--	--	456	--	--	--
OW11	11-07-97	0900	<1	<5	711	<1	<1	2
	02-19-98	1000	--	--	682	--	--	--

Table 52. Dissolved trace-element data for wells at Walter Walker State Wildlife Area, November 1997 and February 1998—Continued

Site code	Date	Lead	Manganese	Mercury	Molybdenum	Nickel	Uranium	Vanadium
OW2	11-06-97	--	--	--	--	--	--	39
	02-12-98	--	--	--	13	--	--	34
OW3	11-03-97	<4	1,640	<0.1	<2	3	--	35
	02-18-98	--	--	--	--	--	--	29
OW4	02-12-98	--	--	--	3	--	--	30
OW5	11-05-97	--	--	--	--	--	--	20
	02-11-98	--	--	--	--	--	--	15
OW6	11-06-97	--	--	--	--	--	--	39
	02-19-98	--	1,580	--	--	--	81	36
OW7	02-19-98	--	--	--	25	--	--	33
OW8	11-05-97	--	--	--	--	--	--	31
OW9	11-05-97	--	5,500	--	7	--	--	--
	02-19-98	--	5,770	--	2	--	--	--
OW10	02-19-98	--	9,930	--	9	--	--	--
OW11	11-07-97	<4	581	<.1	27	9	56	30
	02-19-98	--	474	--	28	--	61	33

Table 52. Dissolved trace-element data for wells at Walter Walker State Wildlife Area, November 1997 and February 1998—Continued

Site code	Date	Time	Arsenic	Beryllium	Boron	Cadmium	Chromium	Copper	Iron
OW12	11-07-97	0945	--	--	--	--	--	--	--
	02-19-98	1020	--	--	489	--	--	--	--
OW13	11-05-97	0910	<1	<5	570	<1	<1	2	<30
	02-10-98	1125	--	--	--	--	--	--	--
OW14	11-04-97	0950	<1	<2	336	<1	<1	2	<9
	02-10-98	1015	--	--	390	--	--	--	--
OW15	02-10-98	0940	--	--	412	--	--	--	--
OW16	11-04-97	0855	--	--	--	--	--	--	--
	02-10-98	0855	--	--	441	--	--	--	--
OW17	11-06-97	0915	--	--	--	--	--	--	--
OW18	11-06-97	0940	--	--	--	--	--	--	--
	02-11-98	1050	--	--	--	--	--	--	--
OW19	11-06-97	0850	<1	<2	71	<1	<1	2	<9
OW20	11-04-97	1020	--	--	--	--	--	--	--
OW21	11-04-97	1050	--	--	171	--	--	--	--
	02-11-98	0850	--	--	--	--	--	--	--

Table 52. Dissolved trace-element data for wells at Walter Walker State Wildlife Area, November 1997 and February 1998—Continued

Site code	Date	Lead	Manganese	Mercury	Molybdenum	Nickel	Uranium	Vanadium
OW12	11-07-97	--	--	--	--	--	--	2,200
	02-19-98	--	13,200	--	8	--	--	--
OW13	11-05-97	<2	654	<0.1	9	6	57	25
	02-10-98	--	--	--	9	--	--	27
OW14	11-04-97	<1	112	<.1	49	<1	23	8
	02-10-98	--	--	--	5	--	--	20
OW15	02-10-98	--	--	--	--	--	--	19
OW16	11-04-97	--	--	--	--	--	--	16
	02-10-98	--	--	--	13	--	--	19
OW17	11-06-97	--	--	--	--	--	--	2
OW18	11-06-97	--	--	--	--	--	--	15
	02-11-98	--	--	--	--	--	--	17
OW19	11-06-97	<1	12	<.1	9	1	--	3
OW20	11-04-97	--	--	--	--	--	--	180
OW21	11-04-97	--	--	--	<2	--	--	--
	02-11-98	--	--	--	<2	--	--	--

Table 53. Locations of staff gages used for water-level measurements at Walter Walker State Wildlife Area in water years 1997–98

Site code used in figures 10 and 11	Location description of staff gage (sites referenced are in fig. 2)
SG1	Colorado River altitude near or at the diversion structure (site WWDIV)
SG2	North Pond altitude at site NP2
SG3	Backwater channel altitude near site WC2
SG4	Backwater channel altitude near well OW5
SG5	Backwater channel altitude near well OW14

Table 54. Selenium concentrations in bottom-sediment samples collected at Walter Walker State Wildlife Area, water year 1995

[Sites in fig. 2; concentrations in micrograms per gram]

Sample description	Date of sample	Selenium concentration
North Pond, sample collected off south shore.	03-14-95	3.4
North Pond, sample from about 20 to 30 feet off north shore.	04-12-95	14
North Pond, single core about 15 to 20 feet from north side.	06-12-95	15
North Pond, single core from near middle.	06-12-95	17
North Pond, collected about 40 feet off north-central bank area.	08-08-95	10
South Pond (site SP), sample from near the middle of pond.	04-12-95	1.2

Table 55. Dry-weight selenium concentrations in biota samples collected at Walter Walker State Wildlife Area, water years 1995–96

[Samples for site NP are from North Pond, unspecified sites; --, no data]

Site code (fig. 2)	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
NP	Aquatic plant	Saltgrass	04-12-95	--	90.8	9.1
	Aquatic plant	Chara	06-12-95	--	92.3	12.0
	Aquatic plant	Potamogeton	04-12-95	--	86.8	24.0
	Aquatic plant	Potamogeton	06-12-95	--	90.4	8.2
	Aquatic invertebrate	Invertebrate	04-12-95	--	88.2	65.8
	Amphibian, whole body	Bullfrog tadpoles	08-07-95	72	91.6	49.0
	Amphibian, whole body	Bullfrog tadpole	02-22-96	109	88.7	43.0
	Amphibian, whole body	Bullfrog tadpole	06-01-96	--	86.7	34.0
	Fish, whole body	Fathead minnow	02-22-96	53	78.0	34.3
	Fish, whole body	Red shiner	02-22-96	68	72.1	22.8
	Fish, whole body	Plains killifish	04-12-95	80	74.8	52.0
	Fish, whole body	Plains killifish	06-12-95	70	73.6	75.0
	Fish, whole body	Plains killifish	06-12-95	85	87.0	78.0
	Fish, whole body	Plains killifish	06-12-95	85	79.0	75.0
	Fish, whole body	Plains killifish	08-07-95	84	79.6	68.0
	Fish, whole body	Plains killifish	02-22-96	69	80.6	66.4
	Fish, whole body	Mosquitofish	04-12-95	26	70.6	86.0
	Fish, whole body	Mosquitofish	06-12-95	51	73.5	61.0
	Fish, whole body	Mosquitofish	08-07-95	42	75.5	42.0
	Fish, whole body	Green sunfish	08-07-95	128	78.6	28.0
	Fish, whole body	Green sunfish	08-07-95	140	78.1	34.0
	Fish, whole body	Green sunfish	08-07-95	140	76.8	28.0
	Fish eggs	Green sunfish	08-07-95	--	72.0	42.0
	Fish, whole body	Green sunfish	02-22-96	189	83.4	24.4
	Fish, whole body	Green sunfish	02-22-96	165	72.1	35.7
	Fish, whole body	Green sunfish	02-22-96	68	74.9	30.0
	Fish eggs	Green sunfish	02-22-96	--	74.9	35.0
	Fish, whole body	Black crappie	08-07-95	190	76.9	24.5
	Fish, whole body-fillet	Channel catfish	05-14-96	525	76.6	2.6
	Fish, whole body-fillet	Channel catfish	05-14-96	464	71.3	2.2
	Fish fillets	Channel catfish	05-14-96	525	77.8	1.7
	Fish fillets	Channel catfish	05-14-96	464	72.6	2.1
	Bird liver	Mallard duckling	06-12-95	--	74.5	77.0
WWB1	Aquatic plant	Typha	04-12-95	--	93.7	.3
	Aquatic plant	Filamentous algae	04-12-95	--	66.1	1.0
WWB1	Aquatic invertebrate	Invertebrate	04-12-95	--	70.1	7.4

Table 55. Dry-weight selenium concentrations in biota samples collected at Walter Walker State Wildlife Area, water years 1995–96—Continued

Site code (fig. 2)	Matrix	Species	Date	Average length (millimeters)	Percent moisture	Selenium (micrograms per gram)
WWB1	Fish, whole body	Common carp	08-05-95	144	78.6	9.0
	Fish, whole body	Common carp	08-05-95	278	77.6	15.0
	Fish, whole body	Red shiner	08-05-95	60	75.2	9.6
	Fish, whole body	Green sunfish	08-05-95	133	74.9	15.0
	Fish, whole body	Green sunfish	08-05-95	145	76.1	13.0
	Fish, whole body	Green sunfish	08-05-95	148	75.3	10.8
	Fish eggs	Green sunfish	08-05-95	--	71.4	22.0
	Fish eggs	Green sunfish	08-05-95	--	63.9	17.0
	Fish, whole body	Black crappie	08-05-95	164	76.5	7.7
	Fish, whole body	Bluegill	08-05-95	131	75.1	9.2
SP	Fish, whole body	Common carp	08-05-95	166	77.7	18.9
	Fish, whole body	Red shiner	08-05-95	45	75.2	7.5
	Fish, whole body	Mosquitofish	08-05-95	42	71.9	12.0
	Fish, whole body	Green sunfish	08-05-95	145	74.0	7.3
	Fish, whole body	Black crappie	08-05-95	182	75.4	9.3
	Fish, whole body	Largemouth bass	08-05-95	196	76.8	9.7
WWB2	Fish, whole body	Fathead minnow	08-05-95	65	78.3	19.0

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