

Summary of Water-Quality Data, October 1987 through September 1997, for Fountain and Monument Creeks, El Paso and Pueblo Counties, Colorado

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CONVERSION FACTORS, VERTICAL DATUM, AND ABBREVIATIONS

| Multiply | By | To obtain |
|--|----------|---|
| Length | | |
| foot (ft) | 0.3048 | meter |
| mile | 1.609 | kilometer |
| Area | | |
| square mile (mi^2) | 259 | hectare |
| square mile (mi^2) | 2.590 | square kilometer (km^2) |
| Volume | | |
| cubic foot (ft^3) | 0.028317 | cubic meter (m^3) |
| Flow | | |
| cubic foot per second (ft^3/s) | 0.02832 | cubic meter per second (m^3/s) |
| cubic foot per second per square mile [$(\text{ft}^3/\text{s})/\text{mi}^2$] | 0.01093 | cubic meter per second per square kilometer [$(\text{m}^3/\text{s})/\text{km}^2$] |

Temperature in degrees Celsius ($^{\circ}\text{C}$) may be converted to degrees Fahrenheit ($^{\circ}\text{F}$) as follows:

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

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.

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius ($\mu\text{S}/\text{cm}$ at 25°C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter ($\mu\text{g}/\text{L}$).

Summary of Water-Quality Data, October 1987 through September 1997, for Fountain and Monument Creeks, El Paso and Pueblo Counties, Colorado

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Abstract

Fountain and Monument Creeks, which drain parts of El Paso and Pueblo Counties in Colorado, have been sampled systematically by the U.S. Geological Survey for many years to obtain records of water-quality properties and constituents; the data are stored in the National Water Inventory System. Statistical summaries of these data indicate that they have spatial and temporal trends. Comparison of water-quality data to in-stream regulatory standards, some of which were calculated in this report, indicate that some exceedances are widespread in the system and that some occur locally. Nonparametric tests to quantitatively detect monotonic trends in water-quality data indicate that many water-quality properties and constituents do not have significant monotonic trends; detected trends were mostly downward.

INTRODUCTION

Fountain Creek and Monument Creek (fig. 1) are two relatively small streams that drain large parts of El Paso and Pueblo Counties along Colorado's Front Range urban corridor. Headwaters for the streams are in the Rampart Range; headwaters for Fountain Creek also include a small part of Teller County. The streams flow south and southeast, joining in Colorado Springs, a large and developing urban center about 60 miles south of Denver. From Colorado

Springs, Fountain Creek flows south about 40 miles and joins the Arkansas River at Pueblo.

Most flow in the Fountain and Monument Creek Basins is derived from snowmelt and runoff from thunderstorms; however, there are some activities in the basins that affect both the amount and the quality of water. In mountainous areas, Fountain Creek receives modest transbasin diversions and has reservoirs that are used for storage, flood control, and power generation. In urban and Front Range corridor areas, the streams are affected by urban development, flow from wastewater-treatment facilities, and agricultural practices such as diversions for irrigation. Return flows from irrigation also affect Fountain Creek, primarily in its lower reaches.

The U.S. Geological Survey (USGS), in cooperation with Colorado Springs Utilities, has been collecting water-quality data in the Fountain and Monument Creek Basins since about 1975. These data are maintained in the USGS National Water Information System (NWIS) and have been used by local agencies in water-resource planning and management. The USGS has published two reports describing these data. Edelmann (1990), on the basis of 1975 to 1983 data, presented a detailed accounting of water-quality conditions in the study area and their relation to stream classifications established by the Colorado Department of Public Health and Environment (CDPHE). The CDPHE is responsible for classifying State surface waters and for assigning in-stream water-quality standards to classified streams (Colorado Department of Public Health and Environment, 1998). Ruddy (1993), on the basis of 1976 to 1988 data, described variations and trends in water-quality data.

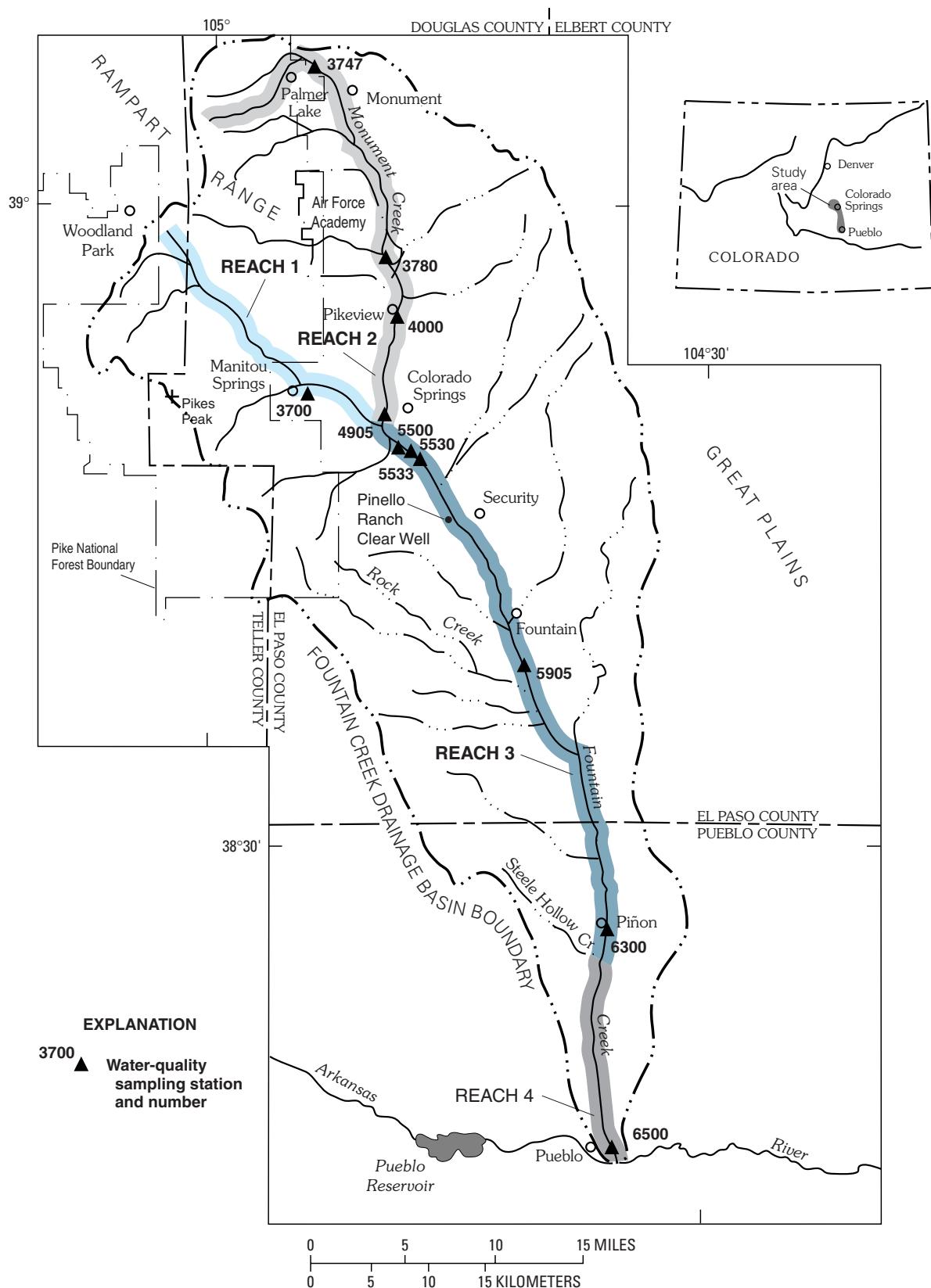


Figure 1. Map showing location of study area and sampling sites in study area.

Purpose and Scope

The purpose of this report is to summarize and describe water-quality data available from 11 stations on Fountain and Monument Creeks for the period October 1987 through September 1997 (table 1). The stations represent four stream reaches (table 1) that have been classified by the CDPHE (Colorado Department of Health and Environment [1998]). The report includes general observations concerning spatial and temporal trends and, for many data, presents summaries for two periods: October 1987 through September 1992 and October 1992 through September 1997. The data were evaluated in these two periods because it was suspected that they may contain temporal trends and because the CDHPE evaluates standards at 5-year intervals.

Description of the Study Area

Fountain Creek originates on the flanks of Pikes Peak near Woodland Park at an elevation of about 8,500 ft. From its headwaters, Fountain Creek generally flows southeast about 10 mi to its confluence with Monument Creek in Colorado Springs (elevation of about 6,050 ft). This upper reach of Fountain Creek corresponds to stream segment 1 in CDPHE stream classifications for the Fountain Creek Basin; it will be referred to as "reach 1" in this report.

Monument Creek originates in the Rampart Range west of Monument at an elevation of about 9,200 ft. From its headwaters, Monument Creek generally flows east about 6 mi to the vicinity of Monument (elevation of about 7,000 ft) and then generally flows south about 12 mi to Fountain Creek

in Colorado Springs. This upper reach of Monument Creek, which includes the area from the Pike National Forest boundary to the confluence of Fountain and Monument Creeks, corresponds to segment 6 in CDPHE stream classifications for the Fountain Creek Basin, will be referred to as "reach 2" in this report.

From the confluence with Monument Creek, Fountain Creek generally flows south from Colorado Springs about 40 mi to Pueblo (elevation of about 4,650 ft), where it joins the Arkansas River. In this report, this lower reach of Fountain Creek is subdivided into two reaches. The first subdivision extends from the confluence of Monument and Fountain Creeks to just upstream from the confluence of Steele Hollow and Fountain Creeks. This reach corresponds to segment 2a in CDPHE stream classifications for the Fountain Creek Basin; it will be referred to as "reach 3" in this report. The second subdivision extends from the confluence of Steele Hollow and Fountain Creeks to the confluence of Fountain Creek with the Arkansas River. This reach corresponds to segment 2b in CDPHE stream classifications for the Fountain Creek Basin; it will be referred to as "reach 4" in this report.

Reaches 1 and 2 originate in mountainous areas where crystalline rocks, such as granite, are predominant. As they leave the mountainous areas, both streams cross a narrow band of Paleozoic sedimentary rocks; both streams then enter an area of highland plains where alluvium predominates but marine sediments of Tertiary age also are present. Reaches 3 and 4 are in the highland plains area. Crystalline rocks sometimes are sources for metallic minerals, whereas sedimentary rocks, especially marine shales, sometimes are sources for sodium, sulfate, and selenium.

Table 1. Characteristics of water-quality sampling stations

[stream segments and classifications are from Colorado Department of Public Health and Environment standards (Colorado Department of Health and Public Environment, 1998); na, not available; AC1, Aquatic life cold - 1; AW2, aquatic life warm - 2; R2, recreation - 2; WS, water supply; A, agriculture; USGS, U.S. Geological Survey]

| Station number | USGS used in station report | Station name | Contributing drainage area, in square miles | Reach number | Stream segment | Stream classification |
|----------------|-----------------------------|---|---|--------------|----------------|-----------------------|
| 3700 | 07103700 | Fountain Creek near Colorado Springs | 103 | 1 | 1 | AC1, R2, WS, A |
| 3747 | 07103747 | Monument Creek at Palmer Lake | 25.9 | 2 | 6 | AW2, R2, WS, A |
| 3780 | 07103780 | Monument Creek above North Gate Blvd at USAF Academy | 81.7 | 2 | 6 | AW2, R2, WS, A |
| 4000 | 07104000 | Monument Creek at Pikeview | 204 | 2 | 6 | AW2, R2, WS, A |
| 4905 | 07104905 | Monument Creek at Bijou Street, at Colorado Springs | 235 | 2 | 6 | AW2, R2, WS, A |
| 5500 | 07105500 | Fountain Creek at Colorado Springs | 392 | 3 | 2a | AW2, R2, WS, A |
| 5530 | 07105530 | Fountain Creek below Janitell Road below Colorado Springs | 413 | 3 | 2a | AW2, R2, WS, A |
| 5533 | 07105533 | Fountain Creek at Circle Drive below Colorado Springs | 414 | 3 | 2a | AW2, R2, WS, A |
| 5905 | 07105905 | Fountain Creek above Fountain Creek, below Fountain | 612 | 3 | 2a | AW2, R2, WS, A |
| 6300 | 07106300 | Fountain Creek near Pinon | 849 | 3 | 2a | AW2, R2, WS, A |
| 6500 | 07106500 | Fountain Creek at Pueblo | 926 | 4 | 2b | AW2, R2, WS, A |

WATER-QUALITY STATION CHARACTERISTICS AND SAMPLING HISTORY

Characteristics of the 11 water-quality stations used in this report are listed in table 1, and their locations are shown in figure 1. Because all stations have the first four characters of their USGS station numbers (0710) in common, the stations will be referred to by the last four characters of their station number. The station numbers increase in downstream order; that is to say, station 3780 is downstream from station 3747. Reach 1 includes one station in the upper Fountain Creek Basin: station 3700. Reach 2 includes four stations in the Monument Creek Basin: stations 3747, 3780, 4000, and 4905. Reach 3 includes five stations in the lower Fountain Creek Basin: stations 5500, 5530, 5533, 5905, and 6300. Reach 4 contains the final station in the lower Fountain Creek Basin, station 6500.

The stations used for analysis in this report have been sampled systematically for many years. In general, all stations were sampled for the list of water-quality properties and constituents listed in table 2 at monthly intervals during the period addressed by this report. A list of standard water-quality properties and constituents addressed by this report is given in table 2. Concentrations for un-ionized ammonia were calculated according to methods described by USEPA (U.S. Environmental Protection Agency, 1987). Table 2 also includes names, abbreviations, reporting units, and in-stream regulatory standards. Additional details regarding in-stream regulatory standards are provided in the "Summary of Water-Quality Characteristics Compared to In-Stream Regulatory Criteria" section.

Sampling frequency through time for each station is shown in figure 2. Some variation in sampling frequency can be observed. These variations typically involve cases where, for instance, a given station may have been sampled twice or more in 1 month, or may not have been sampled in another month, or both. In addition, some samples included analyses for only some of the water-quality properties and constituents listed in table 2 and were collected at an interval that was not monthly or even regular. In order to exclude samples with results for just a few water-quality properties and constituents, only samples that included results for a list of critical constituents were included in this analysis.

The distribution of sample collection time throughout a day is summarized for each station in table 3. Because nearly all samples at all stations were collected between the hours of 0700 and 1600 (or 7 a.m. and 4 p.m.), the data may not describe diurnal patterns in stream conditions (table 3).

The distribution of samples used above for different rates of flow also is characterized with a flow-duration analysis for stations with records of about 5 or more years of record of daily flow. The flow-duration analysis identifies 20 intervals defined by duration levels, where a duration level indicates a percentage of time that the associated flow was exceeded. The 0 to 5 percent interval, for instance, defines the range of flows that were exceeded for 0 to 5 percent of the period of record analyzed; for this analysis, the 0 percentile was assigned the maximum flow associated with a water-quality sample for the study period at a given station. For example, at station 3700, table 4 indicates that 0 percent of samples in period 1 were collected in the 0 to less than 5 duration interval; however, 6.78 percent of samples from period 2 were collected in the same (0 to less than 5) interval. If sample collection were evenly distributed among the 20 duration intervals, then the percentage of all samples collected in each interval would be 5 percent.

The number of samples collected in each of the defined intervals is tabulated for the two periods evaluated in this report. A third period (beginning in October 1982 and continuing through September 1997 [table 4]) also was included in the flow-duration analysis to indicate results for a long-term period. The results indicate that, in the long term (third period), all of the identified intervals are represented; that is, samples were collected in all 20 duration intervals. For shorter periods of time, most, but sometimes not all, duration intervals are represented.

STATISTICAL SUMMARIES

Statistical summaries of water-quality data prepared for this report consist of tables listing univariate statistics, figures describing correlation among water-quality properties and constituents, and figures depicting the spatial and local variations for measurements of water-quality properties and constituents. This information is provided for the

STATISTICAL SUMMARIES

Table 2. Characteristics of standard water-quality properties and constituents

[INST., instantaneous; WH, whole water; CONDF, field specific conductance; CONDL, lab specific conductance; DIS., dissolved; DEG, degree; D., dissolved; NO₂, nitrite; NO₃, nitrate; TOT, total; S, suspended; SED, sediment; CFS, cubic feet per second; US/CM, microsiemens per centimeter; MG/L, milligrams per liter; %, percent; SAT, saturation; COLS, colonies; ML, milliliter; range, 6.5 to 9.0; *, drinking water-supply standard; na, not applicable

Standard listed for NO₂ + NO₃ (nitrite + nitrate) is for nitrate

Unless otherwise noted, listed standards are for the aquatic life classification; in cases with multiple classifications the most stringent standard is listed (stream classifications listed in table 1). The listed in-stream aquatic-life standards for most constituents are fixed values for chronic levels established by Colorado Department of Public Health and Environment (CDPHE, 1999). In-stream aquatic life standards for some metals (dissolved cadmium, chromium, copper, lead, nickel, silver, and zinc) were calculated according to equations developed by the Colorado Department of Public Health and Environment (CDHPE, 1999) using 85th percentile values for hardness as CaCO₃ for the period October 1992 through September 1997, except for station 6500 for which the 85th percentile hardness value was determined using data from October 1987 through September 1997; The point of compliance for the dissolved manganese standard in reach 3 is near Security at the Pinello Ranch Clear Well (location shown on figure 1)

| Property or constituent used in this report | Abbreviation | Reporting units | Parameter code | In-stream regulatory standard for individual stations | | | | | | | | |
|---|-------------------|---------------------------|----------------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | 3700 | 3747 | 3780 | 4000 | 4905 | 5500 | 5530 | 5533 | 5905 |
| DISCHARGE, INST. | CFS | CFS | 00061 | na | na | na | na | na | na | na | na | na |
| SPECIFIC CONDUCTANCE | COND ^F | US/CM @ 25C | 00095 | na | na | na | na | na | na | na | na | na |
| SPECIFIC CONDUCTANCE | COND ^L | US/CM @ 25C | 90095 | na | na | na | na | na | na | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 0400 | range | range | range | range | range | range | range | range | range |
| WATER TEMPERATURE | TEMP | DEGREES | 00010 | 20.0 | na |
| OXYGEN DISSOLVED | DO | MG/L | 00300 | 7.00 | 6.00 | 6.00 | 6.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| OXYGEN DIS. PERCENT | % DO | % OF SAT | 00301 | na | na | na | na | na | na | na | na | na |
| BOD 5-DAY AT 20 DEG | BOD ^S | MG/L | 00310 | na | na | na | na | na | na | na | na | na |
| CALIFORNIA FECAL 0.7 | FCOL | COLS./100 ML | 31625 | 200 | 200 | 200 | 200 | 2000 | 2000 | 2000 | 2000 | 2000 |
| FECAL STPT KF AGAR | FSTRP | COLS./100 ML | 31673 | na | na | na | na | na | na | na | na | na |
| CALCIUM DISSOLVED | CA | MG/L AS CA | 00915 | na | na | na | na | na | na | na | na | na |
| MAGNESIUM DISSOLVED | MG | MG/L AS MG | 00925 | na | na | na | na | na | na | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO ₃ | 90410 | na | na | na | na | na | na | na | na | na |
| SULFATE DISSOLVED | SO ₄ | MG/L AS SO ₄ | 00945 | 250 | 250 | 250 | 250 | 330 | 330 | 330 | 330 | 490 |
| CHLORIDE DISSOLVED | CL | MG/L AS CL | 00940 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| FLUORIDE DISSOLVED | F | MG/L AS F | 00950 | 2.00* | 2.00* | 2.00* | 2.00* | 2.00* | 2.00* | 2.00* | 2.00* | 2.00* |
| HARDNESS TOTAL | HARD | MG/L AS CAO ₃ | 00900 | na | na | na | na | na | na | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 00530 | na | na | na | na | na | na | na | na | na |
| NITROGEN AMMONIA D. | TNH ₃ | MG/L AS N | 00608 | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMMONIA | NH ₃ - | MG/L AS NH ₃ | 99999 | 0.02 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| NO ₂ + NO ₃ DISSOLVED | NO ₂ 3 | MG/L AS N | 00631 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| NITROGEN, NITRITE D. | NIT | MG/L AS N | 00613 | 0.05 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| NITROGEN AMM+ORG TOT | TNIT | MG/L AS N | 00625 | na | na | na | na | na | na | na | na | na |
| PHOSPHORUS ORTHO D. | OP04 | MG/L AS P | 00671 | na | na | na | na | na | na | na | na | na |
| ARSENIC DISSOLVED | AS D | UG/L AS AS | 01000 | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* |
| ARSENIC TOTAL | AS T | UG/L AS AS | 01002 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| BARIUM DISSOLVED | BA D | UG/L AS BA | 01005 | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 01007 | na | na | na | na | na | na | na | na | na |
| BORON DISSOLVED | B D | UG/L AS B | 01020 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 |
| BORON TOTAL | B T | UG/L AS B | 01022 | na | na | na | na | na | na | na | na | na |
| CADMIUM DISSOLVED | CD D | UG/L AS CD | 01025 | 5.00* | 3.09 | 3.75 | 5.00* | 5.00* | 5.00* | 5.00* | 5.00* | 5.00* |
| CADMUM TOTAL | CD T | UG/L AS CD | 01027 | na | na | na | na | na | na | na | na | na |
| CHROMIUM DISSOLVED | CR D | UG/L AS CR | 01030 | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* | 50.0* |
| CHROMIUM HEXAVALENT | CR6 | UG/L AS CR | 01032 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 01034 | na | na | na | na | na | na | na | na | na |
| COPPER DISSOLVED | CU D | UG/L AS CU | 01040 | 15.8 | 9.88 | 11.4 | 20.4 | 29.4 | 27.6 | 23.1 | 31.9 | 36.0 |
| COPPER TOTAL | CU T | UG/L AS CU | 01042 | na | na | na | na | na | na | na | na | na |
| IRON DISSOLVED | FE D | UG/L AS FE | 01046 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| IRON TOTAL | FE T | UG/L AS FE | 01045 | 1000 | 1000 | 1000 | 1000 | 8000 | 8000 | 8000 | 8000 | 5100 |
| LEAD DISSOLVED | PB D | UG/L AS PB | 01049 | 6.27 | 2.89 | 3.672 | 9.66 | 17.6 | 15.9 | 11.9 | 11.9 | 20.2 |
| LEAD TOTAL | PB T | UG/L AS PB | 01051 | na | na | na | na | na | na | na | na | na |
| MANGANESE DISSOLVED | MN D | UG/L AS MN | 01056 | 50.0 | 71.0 | 71.0 | 71.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| MANGANESE TOTAL | MN T | UG/L AS MN | 01055 | na | na | na | na | na | na | na | na | na |
| MERCURY DISSOLVED | HG D | UG/L AS HG | 71890 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| MERCURY, TOT, REC. | HG T | UG/L AS HG | 71900 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| MOLBYDENUM DISSOLVED | MO D | UG/L AS MO | 01060 | na | na | na | na | na | na | na | na | na |
| MOLBYDENUM TOTAL | MO T | UG/L AS MO | 01062 | na | na | na | na | na | na | na | na | na |
| NICKEL DISSOLVED | NI D | UG/L AS NI | 01065 | 100* | 81.4 | 92.7 | 100* | 100* | 100* | 100* | 100* | 100* |
| NICKEL TOTAL | NI T | UG/L AS NI | 01067 | na | na | na | na | na | na | na | na | na |
| SILVER DISSOLVED | AG D | UG/L AS AG | 01075 | 0.13 | 0.05 | 0.07 | 0.23 | 0.47 | 0.41 | 0.29 | 0.29 | 0.56 |
| SILVER TOTAL | AG T | UG/L AS AG | 01077 | na | na | na | na | na | na | na | na | na |
| SELENIUM DISSOLVED | SE D | UG/L AS SE | 01145 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 6.00 | 6.00 | 6.00 | 20.0 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 01147 | na | na | na | na | na | na | na | na | na |
| ZINC DISSOLVED | ZN D | UG/L AS ZN | 01090 | 140.96 | 88.7 | 102 | 183 | 261 | 246 | 207 | 207 | 390 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 01092 | na | na | na | na | na | na | na | na | na |
| SULFIDE TOTAL | SLF | MG/L AS S | 00745 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 00720 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| CONCENTRATION, S.SED. | SSD | MG/L | 80154 | na | na | na | na | na | na | na | na | na |
| SED-SUSP-SIEVE-.062 | SIEV | % | 70331 | na | na | na | na | na | na | na | na | na |

5

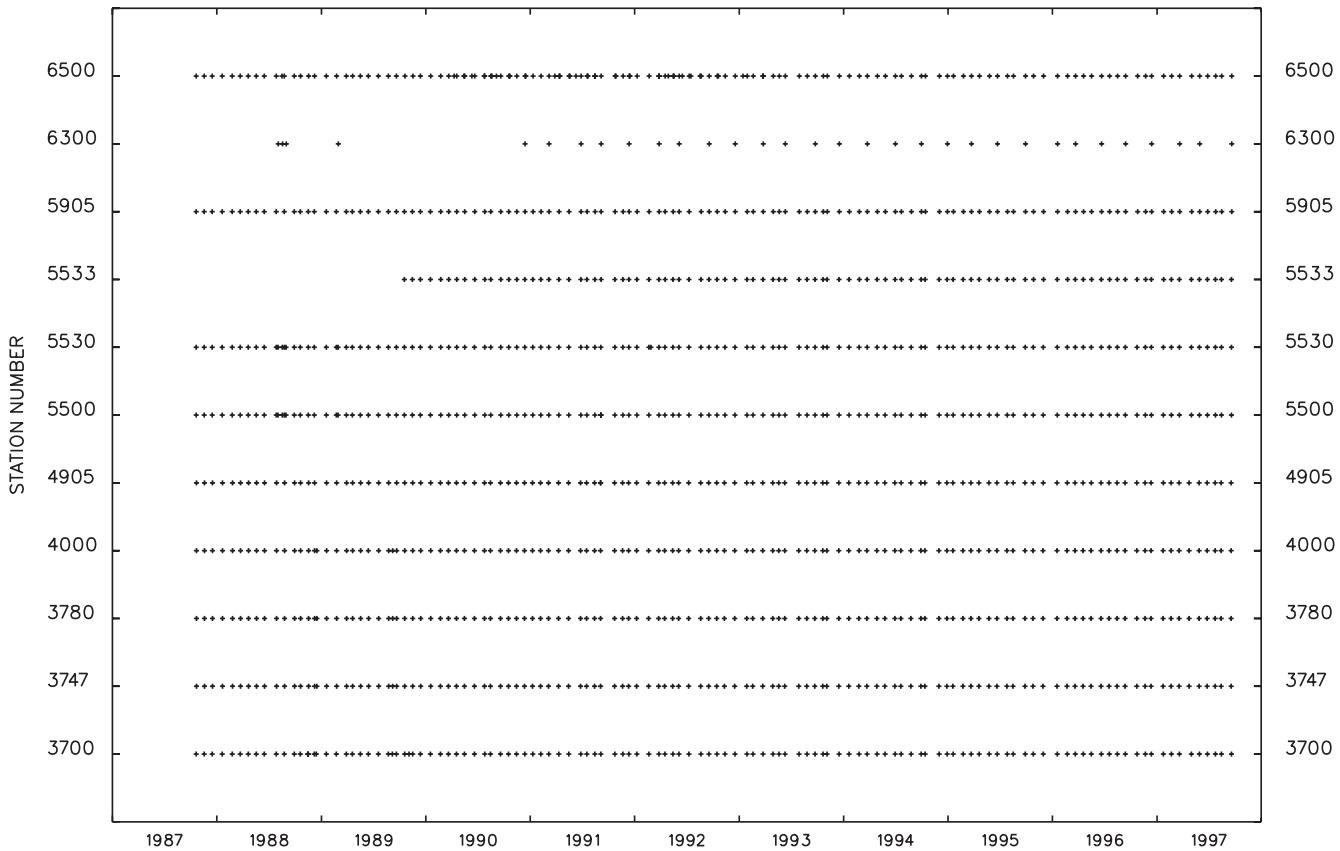


Figure 2. Sampling frequency for individual stations (+ indicates sample).

four identified reaches and for each evaluation period, except for correlation information, which is derived from October 1987 through September 1997 data. Tables of univariate statistics and figures depicting correlation for each station have been included in the Appendix because they provide considerably more detail than the summary figures and tables in the text and will be useful to readers that desire specific information for particular stations.

Methods of Presentation

Tables of univariate statistics for each reach and period (tables 5–12) include information describing the number of samples collected for each water-quality property or constituent, the percentage of samples reported as less than the method reporting limit (referred to as “censored”), univariate statistics for results reported as greater than method reporting limits, and the mean and median method reporting limits for censored values. The difference between the mean and median reporting limits is an indication of

the variability in reporting limits for a given constituent. For example, table 5 lists that, for dissolved copper, the mean reporting limit is 2.50 micrograms per liter while the median reporting limit is 1.00 microgram per liter, indicating that there are some relatively high value reporting limits present. Some reasons that differences in method reporting limits can occur are changes in equipment performance and analytical methodologies, and dilutions affected as part of analytical procedures. The data used in this study were collected in a systematic fashion, were analyzed at the USGS National Water-Quality Laboratory, and typically have only a small amount of variation in reporting limits for individual water-quality properties or constituents.

The following univariate statistics were computed for all values reported as greater than the method reporting limit: mean, median, geometric mean, 15th and 85th percentiles, standard deviation, minimum, and maximum. Similar tables in the Appendix, for each station, include an in-stream standard, which also is given in table 2.

Table 3. Distribution of sample-collection times

[Hours interval, interval of time, in military hours, for which frequency is reported; PCT, percent of samples in hours interval]

| Hours interval | Percentage of samples collected in hours interval for indicated station | | | | | | | | | | |
|----------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 3700 | 3747 | 3780 | 4000 | 4905 | 5550 | 5530 | 5533 | 5905 | 6300 | 6500 |
| 0000 - 0100 | 0.4 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.4 | 0.4 | 0.2 |
| 0100 - 0200 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.4 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 |
| 0200 - 0300 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.2 |
| 0300 - 0400 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 |
| 0400 - 0500 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.7 | 0.0 | 0.2 |
| 0500 - 0600 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.6 | 0.0 | 0.0 | 0.7 | 0.2 | 0.0 |
| 0600 - 0700 | 0.5 | 0.3 | 0.6 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.2 |
| 0700 - 0800 | 4.7 | 4.2 | 2.2 | 0.6 | 0.0 | 0.3 | 0.0 | 1.0 | 3.9 | 0.7 | 1.4 |
| 0800 - 0900 | 7.5 | 16.0 | 3.2 | 1.9 | 2.8 | 2.9 | 0.4 | 5.2 | 7.7 | 1.9 | 3.3 |
| 0900 - 1000 | 10.9 | 24.1 | 8.3 | 6.6 | 3.3 | 10.9 | 4.8 | 6.3 | 15.0 | 7.5 | 6.1 |
| 1000 - 1100 | 12.9 | 20.5 | 17.5 | 12.2 | 8.5 | 16.8 | 19.0 | 1.1 | 8.4 | 12.5 | 8.0 |
| 1100 - 1200 | 13.8 | 11.2 | 26.7 | 9.7 | 9.4 | 17.5 | 18.1 | 0.0 | 12.6 | 15.2 | 11.1 |
| 1200 - 1300 | 13.2 | 8.1 | 19.4 | 14.9 | 10.8 | 15.0 | 24.2 | 7.4 | 12.6 | 16.1 | 9.9 |
| 1300 - 1400 | 11.8 | 5.4 | 8.3 | 21.7 | 9.0 | 12.1 | 16.1 | 24.2 | 11.9 | 14.2 | 16.0 |
| 1400 - 1500 | 8.4 | 5.4 | 6.0 | 16.6 | 25.0 | 10.5 | 8.1 | 34.7 | 8.8 | 14.6 | 16.5 |
| 1500 - 1600 | 6.6 | 2.4 | 5.1 | 9.1 | 21.2 | 5.9 | 5.6 | 18.9 | 8.1 | 9.4 | 12.5 |
| 1600 - 1700 | 6.6 | 1.5 | 0.3 | 4.1 | 8.0 | 3.1 | 3.2 | 1.1 | 4.2 | 3.4 | 9.6 |
| 1700 - 1800 | 1.0 | 0.3 | 0.3 | 1.2 | 1.9 | 1.2 | 0.4 | 0.0 | 1.8 | 1.1 | 2.6 |
| 1800 - 1900 | 0.5 | 0.6 | 0.6 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.4 | 0.9 | 0.9 |
| 1900 - 2000 | 0.4 | 0.0 | 0.3 | 0.2 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| 2000 - 2100 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.7 | 0.2 | 0.5 |
| 2100 - 2200 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.7 | 0.6 | 0.0 |
| 2200 - 2300 | 0.0 | 0.0 | 0.6 | 0.4 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 |
| 2300 - 2400 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Table 4. Distribution of samples in flow-duration intervals for selected stations

[Duration interval, gives the percentile bounds to the duration interval; P, period for analysis (period 1 is October 1987 through September 1992, period 2 is October 1992 through September 1997, and period 3 is October 1982 through September 1997); POR, period of record used to derive duration; CDA, contributing drainage area in square miles; CFS, flow in cubic feet per second for the upper bound of the duration interval; CFSM, flow in cubic feet per second per square mile for the upper bound of the duration interval; N, number of samples; PCT, percent of total samples that were collected in duration interval for given period]

| Duration interval | P | Station 3700 | | | | Station 3747 | | | | Station 3780 | | | | Station 4000 | | | |
|-------------------|---|---------------|------|-----|-------|---------------|------|-----|-------|---------------|------|-----|-------|---------------|------|-----|-------|
| | | POR 1982-1997 | | CDA | 103.0 | POR 1982-1989 | | CDA | 25.90 | POR 1986-1997 | | CDA | 81.7 | POR 1983-1987 | | CDA | 204.0 |
| | | CFS | CFSM | N | PCT |
| 0 - <5 | 1 | 518 | 5.03 | 0 | 0.00 | 168 | 6.49 | 1 | 1.64 | 261 | 3.19 | 3 | 4.84 | 410 | 2.01 | 0 | 0.00 |
| 0 - <5 | 2 | 518 | 5.03 | 4 | 6.78 | 168 | 6.49 | 1 | 1.72 | 261 | 3.19 | 2 | 3.39 | 410 | 2.01 | 1 | 1.69 |
| 0 - <5 | 3 | 518 | 5.03 | 7 | 3.65 | 168 | 6.49 | 4 | 2.44 | 261 | 3.19 | 13 | 7.88 | 410 | 2.01 | 4 | 2.11 |
| 5 - <10 | 1 | 66 | 0.64 | 0 | 0.00 | 38.1 | 1.47 | 1 | 1.64 | 39.9 | 0.49 | 3 | 4.84 | 149 | 0.73 | 2 | 3.23 |
| 5 - <10 | 2 | 66 | 0.64 | 4 | 6.78 | 38.1 | 1.47 | 0 | 0.00 | 39.9 | 0.49 | 7 | 11.86 | 149 | 0.73 | 0 | 0.00 |
| 5 - <10 | 3 | 66 | 0.64 | 9 | 4.69 | 38.1 | 1.47 | 4 | 2.44 | 39.9 | 0.49 | 12 | 7.27 | 149 | 0.73 | 5 | 2.63 |
| 10 - <15 | 1 | 38.1 | 0.37 | 1 | 1.56 | 20.9 | 0.81 | 1 | 1.64 | 25.2 | 0.31 | 3 | 4.84 | 109 | 0.54 | 0 | 0.00 |
| 10 - <15 | 2 | 38.1 | 0.37 | 4 | 6.78 | 20.9 | 0.81 | 3 | 5.17 | 25.2 | 0.31 | 3 | 5.08 | 109 | 0.54 | 3 | 5.08 |
| 10 - <15 | 3 | 38.1 | 0.37 | 11 | 5.73 | 20.9 | 0.81 | 8 | 4.88 | 25.2 | 0.31 | 10 | 6.06 | 109 | 0.54 | 6 | 3.16 |
| 15 - <20 | 1 | 28.6 | 0.28 | 2 | 3.12 | 13.9 | 0.54 | 3 | 4.92 | 18.0 | 0.22 | 5 | 8.06 | 81.5 | 0.40 | 2 | 3.23 |
| 15 - <20 | 2 | 28.6 | 0.28 | 2 | 3.39 | 13.9 | 0.54 | 2 | 3.45 | 18.0 | 0.22 | 6 | 10.17 | 81.5 | 0.40 | 1 | 1.69 |
| 15 - <20 | 3 | 28.6 | 0.28 | 10 | 5.21 | 13.9 | 0.54 | 8 | 4.88 | 18.0 | 0.22 | 18 | 10.91 | 81.5 | 0.40 | 7 | 3.68 |
| 20 - <25 | 1 | 22.6 | 0.22 | 0 | 0.00 | 9.96 | 0.38 | 0 | 0.00 | 14.4 | 0.18 | 1 | 1.61 | 67.4 | 0.33 | 0 | 0.00 |
| 20 - <25 | 2 | 22.6 | 0.22 | 1 | 1.69 | 9.96 | 0.38 | 5 | 8.62 | 14.4 | 0.18 | 1 | 1.69 | 67.4 | 0.33 | 3 | 5.08 |
| 20 - <25 | 3 | 22.6 | 0.22 | 5 | 2.60 | 9.96 | 0.38 | 8 | 4.88 | 14.4 | 0.18 | 5 | 3.03 | 67.4 | 0.33 | 7 | 3.68 |
| 25 - <30 | 1 | 19.4 | 0.19 | 2 | 3.12 | 7.49 | 0.29 | 2 | 3.28 | 11.3 | 0.14 | 3 | 4.84 | 57.6 | 0.28 | 0 | 0.00 |
| 25 - <30 | 2 | 19.4 | 0.19 | 4 | 6.78 | 7.49 | 0.29 | 2 | 3.45 | 11.3 | 0.14 | 3 | 5.08 | 57.6 | 0.28 | 1 | 1.69 |
| 25 - <30 | 3 | 19.4 | 0.19 | 10 | 5.21 | 7.49 | 0.29 | 9 | 5.49 | 11.3 | 0.14 | 9 | 5.45 | 57.6 | 0.28 | 2 | 1.05 |
| 30 - <35 | 1 | 17.3 | 0.17 | 3 | 4.69 | 5.64 | 0.22 | 2 | 3.28 | 9.11 | 0.11 | 1 | 1.61 | 49.3 | 0.24 | 1 | 1.61 |
| 30 - <35 | 2 | 17.3 | 0.17 | 2 | 3.39 | 5.64 | 0.22 | 1 | 1.72 | 9.11 | 0.11 | 4 | 6.78 | 49.3 | 0.24 | 0 | 0.00 |
| 30 - <35 | 3 | 17.3 | 0.17 | 9 | 4.69 | 5.64 | 0.22 | 5 | 3.05 | 9.11 | 0.11 | 8 | 4.85 | 49.3 | 0.24 | 4 | 2.11 |
| 35 - <40 | 1 | 15.8 | 0.15 | 3 | 4.69 | 4.60 | 0.18 | 1 | 1.64 | 7.65 | 0.09 | 3 | 4.84 | 42.0 | 0.21 | 3 | 4.84 |
| 35 - <40 | 2 | 15.8 | 0.15 | 3 | 5.08 | 4.60 | 0.18 | 2 | 3.45 | 7.65 | 0.09 | 2 | 3.39 | 42.0 | 0.21 | 5 | 8.47 |
| 35 - <40 | 3 | 15.8 | 0.15 | 8 | 4.17 | 4.60 | 0.18 | 4 | 2.44 | 7.65 | 0.09 | 7 | 4.24 | 42.0 | 0.21 | 11 | 5.79 |
| 40 - <45 | 1 | 14.3 | 0.14 | 2 | 3.12 | 3.89 | 0.15 | 2 | 3.28 | 6.59 | 0.08 | 2 | 3.23 | 36.3 | 0.18 | 2 | 3.23 |
| 40 - <45 | 2 | 14.3 | 0.14 | 2 | 3.39 | 3.89 | 0.15 | 1 | 1.72 | 6.59 | 0.08 | 1 | 1.69 | 36.3 | 0.18 | 2 | 3.39 |
| 40 - <45 | 3 | 14.3 | 0.14 | 11 | 5.73 | 3.89 | 0.15 | 5 | 3.05 | 6.59 | 0.08 | 3 | 1.82 | 36.3 | 0.18 | 8 | 4.21 |
| 45 - <50 | 1 | 13.1 | 0.13 | 2 | 3.12 | 3.20 | 0.12 | 3 | 4.92 | 5.91 | 0.07 | 3 | 4.84 | 33.2 | 0.16 | 5 | 8.06 |
| 45 - <50 | 2 | 13.1 | 0.13 | 2 | 3.39 | 3.20 | 0.12 | 0 | 0.00 | 5.91 | 0.07 | 4 | 6.78 | 33.2 | 0.16 | 3 | 5.08 |
| 45 - <50 | 3 | 13.1 | 0.13 | 8 | 4.17 | 3.20 | 0.12 | 5 | 3.05 | 5.91 | 0.07 | 7 | 4.24 | 33.2 | 0.16 | 12 | 6.32 |
| 50 - <55 | 1 | 12.0 | 0.12 | 5 | 7.81 | 2.80 | 0.11 | 0 | 0.00 | 5.33 | 0.07 | 3 | 4.84 | 30.1 | 0.15 | 7 | 11.29 |
| 50 - <55 | 2 | 12.0 | 0.12 | 4 | 6.78 | 2.80 | 0.11 | 3 | 5.17 | 5.33 | 0.07 | 1 | 1.69 | 30.1 | 0.15 | 5 | 8.47 |
| 50 - <55 | 3 | 12.0 | 0.12 | 13 | 6.77 | 2.80 | 0.11 | 7 | 4.27 | 5.33 | 0.07 | 6 | 3.64 | 30.1 | 0.15 | 13 | 6.84 |
| 55 - <60 | 1 | 11.1 | 0.11 | 1 | 1.56 | 2.41 | 0.09 | 6 | 9.84 | 4.85 | 0.06 | 6 | 9.68 | 27.4 | 0.13 | 4 | 6.45 |
| 55 - <60 | 2 | 11.1 | 0.11 | 2 | 3.39 | 2.41 | 0.09 | 3 | 5.17 | 4.85 | 0.06 | 10 | 16.95 | 27.4 | 0.13 | 5 | 8.47 |
| 55 - <60 | 3 | 11.1 | 0.11 | 10 | 5.21 | 2.41 | 0.09 | 10 | 6.10 | 4.85 | 0.06 | 19 | 11.52 | 27.4 | 0.13 | 11 | 5.79 |
| 60 - <65 | 1 | 10.1 | 0.10 | 7 | 10.94 | 2.07 | 0.08 | 2 | 3.28 | 3.42 | 0.04 | 0 | 0.00 | 24.8 | 0.12 | 2 | 3.23 |
| 60 - <65 | 2 | 10.1 | 0.10 | 6 | 10.17 | 2.07 | 0.08 | 1 | 1.72 | 3.42 | 0.04 | 0 | 0.00 | 24.8 | 0.12 | 1 | 1.69 |
| 60 - <65 | 3 | 10.1 | 0.10 | 21 | 10.94 | 2.07 | 0.08 | 6 | 3.66 | 3.42 | 0.04 | 0 | 0.00 | 24.8 | 0.12 | 5 | 2.63 |
| 65 - <70 | 1 | 9.52 | 0.09 | 5 | 7.81 | 1.78 | 0.07 | 3 | 4.92 | 4.02 | 0.05 | 2 | 3.23 | 22.9 | 0.11 | 0 | 0.00 |
| 65 - <70 | 2 | 9.52 | 0.09 | 4 | 6.78 | 1.78 | 0.07 | 0 | 0.00 | 4.02 | 0.05 | 2 | 3.39 | 22.9 | 0.11 | 1 | 1.69 |
| 65 - <70 | 3 | 9.52 | 0.09 | 9 | 4.69 | 1.78 | 0.07 | 4 | 2.44 | 4.02 | 0.05 | 4 | 2.42 | 22.9 | 0.11 | 6 | 3.16 |
| 70 - <75 | 1 | 9.01 | 0.09 | 1 | 1.56 | 1.53 | 0.06 | 4 | 6.56 | 3.58 | 0.04 | 3 | 4.84 | 21.0 | 0.10 | 2 | 3.23 |
| 70 - <75 | 2 | 9.01 | 0.09 | 2 | 3.39 | 1.53 | 0.06 | 2 | 3.45 | 3.58 | 0.04 | 8 | 13.56 | 21.0 | 0.10 | 2 | 3.39 |
| 70 - <75 | 3 | 9.01 | 0.09 | 4 | 2.08 | 1.53 | 0.06 | 7 | 4.27 | 3.58 | 0.04 | 11 | 6.67 | 21.0 | 0.10 | 6 | 3.16 |
| 75 - <80 | 1 | 8.51 | 0.08 | 4 | 6.25 | 1.34 | 0.05 | 0 | 0.00 | 3.12 | 0.04 | 5 | 8.06 | 19.3 | 0.09 | 9 | 14.52 |
| 75 - <80 | 2 | 8.51 | 0.08 | 1 | 1.69 | 1.34 | 0.05 | 2 | 3.45 | 3.12 | 0.04 | 4 | 6.78 | 19.3 | 0.09 | 5 | 8.47 |
| 75 - <80 | 3 | 8.51 | 0.08 | 6 | 3.12 | 1.34 | 0.05 | 4 | 2.44 | 3.12 | 0.04 | 11 | 6.67 | 19.3 | 0.09 | 18 | 9.47 |
| 80 - <85 | 1 | 7.87 | 0.08 | 7 | 10.94 | 1.16 | 0.04 | 2 | 3.28 | 2.64 | 0.03 | 3 | 4.84 | 17.8 | 0.09 | 0 | 0.00 |
| 80 - <85 | 2 | 7.87 | 0.08 | 1 | 1.69 | 1.16 | 0.04 | 5 | 8.62 | 2.64 | 0.03 | 1 | 1.69 | 17.8 | 0.09 | 2 | 3.39 |
| 80 - <85 | 3 | 7.87 | 0.08 | 11 | 5.73 | 1.16 | 0.04 | 9 | 5.49 | 2.64 | 0.03 | 6 | 3.64 | 17.8 | 0.09 | 7 | 3.68 |
| 85 - <90 | 1 | 7.21 | 0.07 | 4 | 6.25 | 0.99 | 0.04 | 5 | 8.20 | 2.26 | 0.03 | 2 | 3.23 | 16.4 | 0.08 | 2 | 3.23 |
| 85 - <90 | 2 | 7.21 | 0.07 | 7 | 11.86 | 0.99 | 0.04 | 4 | 6.90 | 2.26 | 0.03 | 1 | 1.69 | 16.4 | 0.08 | 3 | 5.08 |
| 85 - <90 | 3 | 7.21 | 0.07 | 11 | 5.73 | 0.99 | 0.04 | 10 | 6.10 | 2.26 | 0.03 | 3 | 1.82 | 16.4 | 0.08 | 8 | 4.21 |
| 90 - <95 | 1 | 6.35 | 0.06 | 8 | 12.50 | 0.83 | 0.03 | 8 | 13.11 | 1.90 | 0.02 | 6 | 9.68 | 15.0 | 0.07 | 8 | 12.90 |
| 90 - <95 | 2 | 6.35 | 0.06 | 1 | 1.69 | 0.83 | 0.03 | 10 | 17.24 | 1.90 | 0.02 | 3 | 5.08 | 15.0 | 0.07 | 7 | 11.86 |
| 90 - <95 | 3 | 6.35 | 0.06 | 9 | 4.69 | 0.83 | 0.03 | 21 | 12.80 | 1.90 | 0.02 | 11 | 6.67 | 15.0 | 0.07 | 19 | 10.00 |
| 95 - 100 | 1 | 5.38 | 0.05 | 7 | 10.94 | 0.52 | 0.02 | 15 | 24.59 | 1.40 | 0.02 | 8 | 12.90 | 13.1 | 0.06 | 13 | 20.97 |
| 95 - 100 | 2 | 5.38 | 0.05 | 3 | 5.08 | 0.52 | 0.02 | 11 | 18.97 | 1.40 | 0.02 | 1 | 1.69 | 13.1 | 0.06 | 9 | 15.25 |
| 95 - 100 | 3 | 5.38 | 0.05 | 10 | 5.21 | 0.52 | 0.02 | 26 | 15.85 | 1.40 | 0.02 | 10 | 6.06 | 13.1 | 0.06 | 31 | 16.32 |

Table 4. Distribution of samples in flow-duration intervals for selected stations--continued

[Duration interval, gives the percentile bounds to the duration interval; P, period for analysis (period 1 is October 1987 through September 1992, period 2 is October 1992 through September 1997, and period 3 is October 1982 through September 1997); POR, period of record used to derive duration; CDA, contributing drainage area in square miles; CFS, flow in cubic feet per second for the upper bound of the duration interval; CFSM, flow in cubic feet per second per square mile for the upper bound of the duration interval; N, number of samples; PCT, percent of total samples that were collected in duration interval for given period]

| Duration interval | P | Station 5500 | | | | | Station 6300 | | | | | Station 6500 | | | | |
|-------------------|---|---------------|------|------|-------|-------|---------------|-----|-------|------|-------|---------------|------|------|-----|-------|
| | | POR 1983-1987 | | | CDA | 392.0 | POR 1982-1997 | | | CDA | 849.0 | POR 1982-1997 | | | CDA | 926.0 |
| | | | CFS | CFSM | N | PCT | | CFS | CFSM | N | PCT | | CFS | CFSM | N | PCT |
| 0 - <5 | 1 | 2170 | 5.54 | 0 | 0.00 | 5750 | 6.77 | 0 | 0.00 | 1040 | 1.12 | 0 | 0.00 | | | |
| 0 - <5 | 2 | 2170 | 5.54 | 2 | 3.39 | 5750 | 6.77 | 1 | 5.00 | 1040 | 1.12 | 4 | 6.56 | | | |
| 0 - <5 | 3 | 2170 | 5.54 | 2 | 1.05 | 5750 | 6.77 | 2 | 3.70 | 1040 | 1.12 | 9 | 4.25 | | | |
| 5 - <10 | 1 | 327 | 0.83 | 0 | 0.00 | 396 | 0.47 | 0 | 0.00 | 434 | 0.47 | 2 | 2.44 | | | |
| 5 - <10 | 2 | 327 | 0.83 | 3 | 5.08 | 396 | 0.47 | 1 | 5.00 | 434 | 0.47 | 3 | 4.92 | | | |
| 5 - <10 | 3 | 327 | 0.83 | 6 | 3.16 | 396 | 0.47 | 3 | 5.56 | 434 | 0.47 | 11 | 5.19 | | | |
| 10 - <15 | 1 | 233 | 0.59 | 1 | 1.67 | 257 | 0.30 | 0 | 0.00 | 272 | 0.29 | 2 | 2.44 | | | |
| 10 - <15 | 2 | 233 | 0.59 | 0 | 0.00 | 257 | 0.30 | 0 | 0.00 | 272 | 0.29 | 3 | 4.92 | | | |
| 10 - <15 | 3 | 233 | 0.59 | 6 | 3.16 | 257 | 0.30 | 0 | 0.00 | 272 | 0.29 | 8 | 3.77 | | | |
| 15 - <20 | 1 | 178 | 0.45 | 0 | 0.00 | 205 | 0.24 | 0 | 0.00 | 214 | 0.23 | 2 | 2.44 | | | |
| 15 - <20 | 2 | 178 | 0.45 | 4 | 6.78 | 205 | 0.24 | 1 | 5.00 | 214 | 0.23 | 2 | 3.28 | | | |
| 15 - <20 | 3 | 178 | 0.45 | 6 | 3.16 | 205 | 0.24 | 3 | 5.56 | 214 | 0.23 | 11 | 5.19 | | | |
| 20 - <25 | 1 | 134 | 0.34 | 0 | 0.00 | 170 | 0.20 | 1 | 12.50 | 181 | 0.20 | 1 | 1.22 | | | |
| 20 - <25 | 2 | 134 | 0.34 | 0 | 0.00 | 170 | 0.20 | 1 | 5.00 | 181 | 0.20 | 4 | 6.56 | | | |
| 20 - <25 | 3 | 134 | 0.34 | 6 | 3.16 | 170 | 0.20 | 3 | 5.56 | 181 | 0.20 | 8 | 3.77 | | | |
| 25 - <30 | 1 | 104 | 0.27 | 4 | 6.67 | 157 | 0.18 | 1 | 12.50 | 168 | 0.18 | 2 | 2.44 | | | |
| 25 - <30 | 2 | 104 | 0.27 | 3 | 5.08 | 157 | 0.18 | 2 | 10.00 | 168 | 0.18 | 1 | 1.64 | | | |
| 25 - <30 | 3 | 104 | 0.27 | 10 | 5.26 | 157 | 0.18 | 4 | 7.41 | 168 | 0.18 | 6 | 2.83 | | | |
| 30 - <35 | 1 | 86.6 | 0.22 | 2 | 3.33 | 143 | 0.17 | 0 | 0.00 | 155 | 0.17 | 3 | 3.66 | | | |
| 30 - <35 | 2 | 86.6 | 0.22 | 0 | 0.00 | 143 | 0.17 | 1 | 5.00 | 155 | 0.17 | 6 | 9.84 | | | |
| 30 - <35 | 3 | 86.6 | 0.22 | 8 | 4.21 | 143 | 0.17 | 2 | 3.70 | 155 | 0.17 | 12 | 5.66 | | | |
| 35 - <40 | 1 | 74.0 | 0.19 | 4 | 6.67 | 130 | 0.15 | 1 | 12.50 | 142 | 0.15 | 5 | 6.10 | | | |
| 35 - <40 | 2 | 74.0 | 0.19 | 1 | 1.69 | 130 | 0.15 | 2 | 10.00 | 142 | 0.15 | 6 | 9.84 | | | |
| 35 - <40 | 3 | 74.0 | 0.19 | 10 | 5.26 | 130 | 0.15 | 5 | 9.26 | 142 | 0.15 | 14 | 6.60 | | | |
| 40 - <45 | 1 | 63.4 | 0.16 | 1 | 1.67 | 118 | 0.14 | 0 | 0.00 | 129 | 0.14 | 3 | 3.66 | | | |
| 40 - <45 | 2 | 63.4 | 0.16 | 5 | 8.47 | 118 | 0.14 | 2 | 10.00 | 129 | 0.14 | 3 | 4.92 | | | |
| 40 - <45 | 3 | 63.4 | 0.16 | 11 | 5.79 | 118 | 0.14 | 5 | 9.26 | 129 | 0.14 | 11 | 5.19 | | | |
| 45 - <50 | 1 | 55.7 | 0.14 | 5 | 8.33 | 110 | 0.13 | 1 | 12.50 | 119 | 0.13 | 6 | 7.32 | | | |
| 45 - <50 | 2 | 55.7 | 0.14 | 4 | 6.78 | 110 | 0.13 | 0 | 0.00 | 119 | 0.13 | 5 | 8.20 | | | |
| 45 - <50 | 3 | 55.7 | 0.14 | 11 | 5.79 | 110 | 0.13 | 5 | 9.26 | 119 | 0.13 | 11 | 5.19 | | | |
| 50 - <55 | 1 | 50.4 | 0.13 | 3 | 5.00 | 102 | 0.12 | 2 | 25.00 | 111 | 0.12 | 1 | 1.22 | | | |
| 50 - <55 | 2 | 50.4 | 0.13 | 3 | 5.08 | 102 | 0.12 | 2 | 10.00 | 111 | 0.12 | 2 | 3.28 | | | |
| 50 - <55 | 3 | 50.4 | 0.13 | 8 | 4.21 | 102 | 0.12 | 5 | 9.26 | 111 | 0.12 | 7 | 3.30 | | | |
| 55 - <60 | 1 | 45.9 | 0.12 | 0 | 0.00 | 93.8 | 0.11 | 0 | 0.00 | 102 | 0.11 | 6 | 7.32 | | | |
| 55 - <60 | 2 | 45.9 | 0.12 | 2 | 3.39 | 93.8 | 0.11 | 0 | 0.00 | 102 | 0.11 | 4 | 6.56 | | | |
| 55 - <60 | 3 | 45.9 | 0.12 | 5 | 2.63 | 93.8 | 0.11 | 2 | 3.70 | 102 | 0.11 | 12 | 5.66 | | | |
| 60 - <65 | 1 | 41.9 | 0.11 | 0 | 0.00 | 85.8 | 0.10 | 0 | 0.00 | 92.6 | 0.10 | 6 | 7.32 | | | |
| 60 - <65 | 2 | 41.9 | 0.11 | 3 | 5.08 | 85.8 | 0.10 | 2 | 10.00 | 92.6 | 0.10 | 1 | 1.64 | | | |
| 60 - <65 | 3 | 41.9 | 0.11 | 8 | 4.21 | 85.8 | 0.10 | 4 | 7.41 | 92.6 | 0.10 | 13 | 6.13 | | | |
| 65 - <70 | 1 | 38.3 | 0.10 | 4 | 6.67 | 77.3 | 0.09 | 0 | 0.00 | 83.6 | 0.09 | 7 | 8.54 | | | |
| 65 - <70 | 2 | 38.3 | 0.10 | 1 | 1.69 | 77.3 | 0.09 | 0 | 0.00 | 83.6 | 0.09 | 2 | 3.28 | | | |
| 65 - <70 | 3 | 38.3 | 0.10 | 7 | 3.68 | 77.3 | 0.09 | 0 | 0.00 | 83.6 | 0.09 | 12 | 5.66 | | | |
| 70 - <75 | 1 | 35.6 | 0.09 | 5 | 8.33 | 67.3 | 0.08 | 0 | 0.00 | 74.2 | 0.08 | 8 | 9.76 | | | |
| 70 - <75 | 2 | 35.6 | 0.09 | 2 | 3.39 | 67.3 | 0.08 | 2 | 10.00 | 74.2 | 0.08 | 2 | 3.28 | | | |
| 70 - <75 | 3 | 35.6 | 0.09 | 10 | 5.26 | 67.3 | 0.08 | 2 | 3.70 | 74.2 | 0.08 | 11 | 5.19 | | | |
| 75 - <80 | 1 | 33.3 | 0.08 | 2 | 3.33 | 57.3 | 0.07 | 0 | 0.00 | 64.9 | 0.07 | 4 | 4.88 | | | |
| 75 - <80 | 2 | 33.3 | 0.08 | 3 | 5.08 | 57.3 | 0.07 | 2 | 10.00 | 64.9 | 0.07 | 2 | 3.28 | | | |
| 75 - <80 | 3 | 33.3 | 0.08 | 8 | 4.21 | 57.3 | 0.07 | 2 | 3.70 | 64.9 | 0.07 | 9 | 4.25 | | | |
| 80 - <85 | 1 | 31.2 | 0.08 | 3 | 5.00 | 46.2 | 0.05 | 2 | 25.00 | 54.3 | 0.06 | 6 | 7.32 | | | |
| 80 - <85 | 2 | 31.2 | 0.08 | 3 | 5.08 | 46.2 | 0.05 | 1 | 5.00 | 54.3 | 0.06 | 2 | 3.28 | | | |
| 80 - <85 | 3 | 31.2 | 0.08 | 8 | 4.21 | 46.2 | 0.05 | 4 | 7.41 | 54.3 | 0.06 | 13 | 6.13 | | | |
| 85 - <90 | 1 | 29.1 | 0.07 | 3 | 5.00 | 35.0 | 0.04 | 0 | 0.00 | 40.3 | 0.04 | 6 | 7.32 | | | |
| 85 - <90 | 2 | 29.1 | 0.07 | 2 | 3.39 | 35.0 | 0.04 | 0 | 0.00 | 40.3 | 0.04 | 3 | 4.92 | | | |
| 85 - <90 | 3 | 29.1 | 0.07 | 10 | 5.26 | 35.0 | 0.04 | 1 | 1.85 | 40.3 | 0.04 | 11 | 5.19 | | | |
| 90 - <95 | 1 | 26.2 | 0.07 | 4 | 6.67 | 25.5 | 0.03 | 0 | 0.00 | 28.8 | 0.03 | 7 | 8.54 | | | |
| 90 - <95 | 2 | 26.2 | 0.07 | 8 | 13.56 | 25.5 | 0.03 | 0 | 0.00 | 28.8 | 0.03 | 5 | 8.20 | | | |
| 90 - <95 | 3 | 26.2 | 0.07 | 15 | 7.89 | 25.5 | 0.03 | 1 | 1.85 | 28.8 | 0.03 | 13 | 6.13 | | | |
| 95 - 100 | 1 | 22.5 | 0.06 | 19 | 31.67 | 14.7 | 0.02 | 0 | 0.00 | 16.4 | 0.02 | 5 | 6.10 | | | |
| 95 - 100 | 2 | 22.5 | 0.06 | 10 | 16.95 | 14.7 | 0.02 | 0 | 0.00 | 16.4 | 0.02 | 1 | 1.64 | | | |
| 95 - 100 | 3 | 22.5 | 0.06 | 35 | 18.42 | 14.7 | 0.02 | 1 | 1.85 | 16.4 | 0.02 | 10 | 4.72 | | | |

Table 5. Univariate statistics for water-quality data collected for reach 1, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | |
|---------------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| DISCHARGE | CFS | CFS | 144 | na | 13.5 | 9.45 | 10.7 | 13.6 | 6.08 | 19.0 | 2.60 | 87.0 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 121 | na | 335 | 329 | 322 | 94.7 | 232 | 443 | 176 | 649 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 66 | na | 347 | 335 | 335 | 91.8 | 242 | 435 | 172 | 604 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 67 | na | 8.27 | 8.30 | 8.27 | 0.17 | 8.10 | 8.40 | 7.90 | 9.00 | na | na |
| WATER TEMP. | TEMP | DEGREES | 123 | na | 8.43 | 8.50 | na | 5.48 | 1.80 | 15.0 | 0 | 22.0 | na | na |
| OXYGEN DISS. | DO | MG/L | 67 | na | 9.54 | 9.40 | 9.44 | 1.39 | 7.90 | 11.3 | 7.10 | 11.9 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 65 | na | 98.5 | 98.0 | 98.4 | 2.91 | 96.0 | 101 | 91.0 | 106 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 3.45 | 1.11 | 0.90 | 0.85 | 0.97 | 0.40 | 1.69 | 0.10 | 5.70 | 0.50 | 0.50 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 61 | 4.92 | 1100 | 365 | 222 | 1990 | 16.0 | 2250 | 2.00 | 9300 | 45.7 | 30.0 |
| FECAL STRPT | FSTRP | COLS./100 ML | 60 | na | 1310 | 390 | 398 | 2640 | 52.6 | 1860 | 7.00 | 15000 | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 46 | na | 35.6 | 34.5 | 34.0 | 10.6 | 25.0 | 47.0 | 17.0 | 65.0 | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 46 | na | 7.04 | 6.70 | 6.65 | 2.38 | 4.50 | 9.90 | 3.20 | 14.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 60 | na | 121 | 120 | 116 | 35.0 | 84.0 | 160 | 58.0 | 227 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 62 | na | 16.5 | 16.0 | 15.8 | 4.62 | 11.0 | 21.0 | 7.30 | 27.0 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 64 | na | 18.1 | 16.5 | 16.7 | 8.59 | 11.0 | 23.3 | 7.10 | 66.0 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 25 | na | 2.57 | 2.60 | 2.55 | 0.31 | 2.40 | 2.71 | 1.50 | 3.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 46 | na | 118 | 115 | 112 | 36.7 | 81.0 | 160 | 58.0 | 220 | na | na |
| RESIDUE TOTAL | RES | MG/L | 60 | 6.67 | 28.7 | 13.0 | 15.6 | 35.6 | 5.00 | 54.9 | 2.00 | 179 | 1.00 | 1.00 |
| NITROGEN AMM. | TNNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM NH3- | NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NITROGEN AMM+ TNIT | TNIT | MG/L AS N | 62 | 32.3 | 0.41 | 0.30 | 0.36 | 0.25 | 0.20 | 0.60 | 0.20 | 1.40 | 0.20 | 0.20 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 2 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 1 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| BARIUM DISS. | BA D | UG/L AS BA | 2 | na | 72.0 | 72.0 | 70.4 | 21.2 | na | na | 57.0 | 87.0 | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 2 | 50.0 | 100 | 100 | 100 | na | na | 100 | 100 | 100 | 100 | 100 |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 38 | 94.7 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 61 | 90.2 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 62 | 88.7 | 2.00 | 1.00 | 1.46 | 2.24 | 1.00 | 6.00 | 1.00 | 7.00 | 1.31 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 36 | 86.1 | 2.60 | 2.00 | 2.09 | 1.82 | na | na | 1.00 | 5.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 37 | 54.1 | 1.76 | 1.00 | 1.51 | 1.25 | 1.00 | 2.30 | 1.00 | 6.00 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 38 | 31.6 | 1.35 | 1.00 | 1.26 | 0.56 | 1.00 | 2.00 | 1.00 | 3.00 | 2.50 | 1.00 |
| COPPER TOTAL | CU T | UG/L AS CU | 62 | 6.45 | 3.45 | 3.00 | 2.97 | 1.94 | 2.00 | 6.00 | 1.00 | 11.0 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 62 | na | 1260 | 640 | 724 | 1890 | 290 | 2360 | 120 | 12000 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 62 | 3.23 | 58.9 | 37.5 | 39.0 | 102 | 19.2 | 81.7 | 5.00 | 790 | 10 | 10 |
| LEAD DISS. | PB D | UG/L AS PB | 38 | 86.8 | 1.60 | 1.00 | 1.32 | 1.34 | na | 1.00 | 4.00 | 1.00 | 1.55 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 61 | 36.1 | 4.49 | 3.00 | 3.01 | 5.86 | 1.00 | 7.00 | 1.00 | 35.0 | 4.45 | 5.00 |
| MANGANESE DISS. | MN D | UG/L AS MN | 62 | na | 40.4 | 40.0 | 36.3 | 20.9 | 20.0 | 50.0 | 10 | 160 | na | na |
| MANGANESE TOT | MD T | UG/L AS MN | 62 | na | 100 | 80.0 | 86.2 | 74.6 | 50.0 | 157 | 40.0 | 500 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 2 | 100 | na | na | na | na | na | na | na | 10 | 10 | 10 |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 2 | na | 4.50 | 4.50 | 4.24 | 2.12 | na | 3.00 | 6.00 | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 38 | 57.9 | 1.13 | 1.00 | 1.09 | 0.34 | 1.00 | 1.45 | 1.00 | 2.00 | 1.82 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 38 | 31.6 | 2.31 | 2.00 | 2.08 | 1.16 | 1.00 | 3.00 | 1.00 | 6.00 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 2 | 50.0 | 2.00 | 2.00 | 2.00 | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 |
| SILVER TOTAL | AG T | UG/L AS AG | 2 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 38 | 23.7 | 7.45 | 6.00 | 6.71 | 3.65 | 4.00 | 12.5 | 3.00 | 16.0 | 3.00 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 62 | 29.0 | 30.5 | 20.0 | 22.7 | 36.8 | 10 | 40.0 | 10 | 240 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 2 | 100 | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.01 |
| SUSP SED | SSED | MG/L | 80 | na | 665 | 42.7 | 63.0 | 2250 | 11.0 | 398 | 2.90 | 11600 | na | na |
| SUSP-SIEVE | SIEV | % | 32 | na | 74.0 | 78.0 | 72.3 | 15.2 | 53.0 | 89.1 | 41.0 | 98.3 | na | na |

Table 6. Univariate statistics for water-quality data collected for reach 2, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | % < MRL | DETECTIONS | | | | | | | | CENSOREDS | |
|-----------------|-------|-----------------|---------|---------|------------|--------|--------|--------|-------|-------|------|-------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| DISCHARGE | CFS | CFS | 383 | 0.26 | 18.5 | 13.0 | 8.52 | 22.9 | 1.50 | 33.8 | 0.20 | 222 | 1.40 | 1.40 |
| SPECIFIC COND. | COND | US/CM @ 25C | 363 | na | 338 | 318 | 296 | 168 | 159 | 513 | 75.0 | 949 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 255 | na | 354 | 336 | 305 | 184 | 161 | 576 | 76.0 | 925 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 250 | na | 8.17 | 8.20 | 8.17 | 0.28 | 7.90 | 8.40 | 7.20 | 8.90 | na | na |
| WATER TEMP. | TEMP | DEGREES | 378 | na | 12.2 | 12.0 | na | 8.69 | 1.00 | 22.0 | 0 | 31.0 | na | na |
| OXYGEN DISS. | DO | MG/L | 253 | na | 8.84 | 8.60 | 8.68 | 1.72 | 6.81 | 11.0 | 5.70 | 13.4 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 238 | na | 100 | 99.0 | 99.9 | 5.99 | 95.0 | 105 | 82.0 | 128 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 230 | 0.87 | 2.05 | 1.10 | 1.25 | 2.41 | 0.40 | 3.50 | 0.10 | 15.0 | 3.60 | 3.60 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 244 | 11.1 | 950 | 44.0 | 49.2 | 5430 | 4.00 | 510 | 1.00 | 70000 | 30.2 | 2.00 |
| FECAL STRPT | FSTRP | COLS./100 ML | 247 | 0.41 | 1030 | 150 | 167 | 4210 | 39.1 | 879 | 2.00 | 50000 | 80.0 | 80.0 |
| CALCIUM DISS. | CA | MG/L AS CA | 176 | na | 40.5 | 32.5 | 34.8 | 22.0 | 18.0 | 66.0 | 8.80 | 98.0 | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 176 | na | 6.45 | 5.20 | 5.55 | 3.71 | 3.11 | 11.0 | 1.20 | 19.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 241 | na | 93.1 | 87.0 | 85.9 | 36.0 | 56.0 | 135 | 26.0 | 183 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 240 | na | 54.3 | 38.0 | 35.4 | 47.1 | 11.0 | 110 | 4.00 | 210 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 244 | na | 14.5 | 14.5 | 10.4 | 11.4 | 3.30 | 23.0 | 0.20 | 110 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 101 | na | 1.44 | 1.50 | 1.39 | 0.34 | 1.00 | 1.80 | 0.50 | 2.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 176 | na | 128 | 100 | 110 | 69.8 | 57.6 | 210 | 27.0 | 310 | na | na |
| RESIDUE TOTAL | RBS | MG/L | 240 | 7.50 | 156 | 63.5 | 48.1 | 343 | 8.00 | 264 | 1.00 | 3750 | 2.78 | 1.00 |
| NITROGEN AMM | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NITROGEN AMM+ | TNIT | MG/L AS N | 246 | 15.0 | 0.96 | 0.60 | 0.64 | 1.23 | 0.30 | 1.40 | 0.20 | 9.30 | 0.20 | 0.20 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 144 | 91.7 | 1.33 | 1.00 | 1.26 | 0.49 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 237 | 92.0 | 1.11 | 1.00 | 1.08 | 0.31 | 1.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 239 | 85.4 | 1.37 | 1.00 | 1.21 | 0.97 | 1.00 | 2.00 | 1.00 | 6.00 | 1.19 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 145 | 84.8 | 2.50 | 2.00 | 1.98 | 1.71 | 1.00 | 5.00 | 1.00 | 6.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 141 | 45.4 | 4.21 | 2.00 | 2.67 | 5.38 | 1.00 | 7.00 | 1.00 | 31.0 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 145 | 26.2 | 1.53 | 1.00 | 1.36 | 1.01 | 1.00 | 2.00 | 1.00 | 9.00 | 1.00 | 1.00 |
| COPPER TOTAL | CU T | UG/L AS CU | 241 | 6.64 | 6.03 | 4.00 | 4.38 | 6.08 | 2.00 | 10 | 1.00 | 52.0 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 241 | 0.41 | 3350 | 1300 | 1550 | 5630 | 450 | 5760 | 160 | 50000 | 10 | 10 |
| IRON DISS. | FE D | UG/L AS FE | 240 | 7.92 | 75.0 | 36.0 | 33.7 | 233 | 8.00 | 127 | 4.00 | 3400 | 9.42 | 10 |
| LEAD DISS. | PB D | UG/L AS PB | 145 | 79.3 | 1.37 | 1.00 | 1.13 | 1.65 | 1.00 | 1.00 | 1.00 | 10 | 1.00 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 239 | 28.5 | 7.79 | 4.00 | 4.20 | 13.0 | 1.00 | 13.0 | 1.00 | 120 | 4.12 | 5.00 |
| MANGANESE DISS | MN D | UG/L AS MN | 240 | 9.17 | 42.0 | 30.0 | 22.5 | 42.3 | 5.00 | 79.2 | 1.00 | 250 | 8.36 | 10 |
| MANGANESE TOT | MD T | UG/L AS MN | 241 | na | 140 | 100 | 101 | 156 | 50.0 | 217 | 10 | 1400 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 145 | 35.2 | 1.94 | 2.00 | 1.62 | 1.48 | 1.00 | 2.75 | 1.00 | 10 | 1.00 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 145 | 15.9 | 4.81 | 3.00 | 3.44 | 5.19 | 1.45 | 8.00 | 1.00 | 36.0 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 144 | 24.3 | 7.33 | 6.00 | 6.59 | 3.87 | 4.00 | 10 | 3.00 | 25.0 | 3.00 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 241 | 32.8 | 46.0 | 23.0 | 28.9 | 65.7 | 10 | 70.0 | 10 | 580 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SUSP SED | SSED | MG/L | 62 | na | 435 | 117 | 117 | 869 | 16.4 | 793 | 4.00 | 5820 | na | na |
| SUSP-SIEVE | SIEV | % | 31 | na | 58.7 | 62.3 | 55.6 | 18.2 | 35.1 | 78.7 | 25.4 | 88.8 | na | na |

Table 7. Univariate statistics for water-quality data collected for reach 3, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | |
|---------------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| DISCHARGE | CFS | CFS | 480 | na | 97.6 | 65.7 | 59.8 | 166 | 24.6 | 133 | 0.72 | 2170 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 424 | na | 839 | 845 | 789 | 273 | 540 | 1150 | 218 | 1570 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 193 | na | 799 | 804 | 760 | 234 | 533 | 1070 | 244 | 1360 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 199 | na | 7.97 | 7.90 | 7.96 | 0.25 | 7.70 | 8.30 | 7.09 | 8.40 | na | na |
| WATER TEMP. | TEMP | DEGREES | 435 | na | 14.4 | 14.5 | na | 7.78 | 5.50 | 23.0 | 0 | 32.5 | na | na |
| OXYGEN DISS. | DO | MG/L | 200 | na | 7.87 | 7.90 | 7.72 | 1.57 | 6.20 | 9.60 | 3.90 | 11.7 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 183 | na | 93.1 | 94.0 | 92.6 | 9.62 | 82.0 | 102 | 67.0 | 130 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 179 | 0.56 | 10.3 | 8.55 | 5.92 | 8.64 | 1.40 | 20.0 | 0.20 | 35.0 | 0.50 | 0.50 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 182 | 3.30 | 2050 | 335 | 368 | 6650 | 58.7 | 2200 | 3.00 | 64000 | 33.5 | 33.0 |
| FECAL STRPT | FSTRP | COLS./100 ML | 184 | na | 1920 | 400 | 540 | 5910 | 125 | 3000 | 27.0 | 66000 | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 151 | na | 64.5 | 62.0 | 61.9 | 18.3 | 45.0 | 84.2 | 26.0 | 110 | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 151 | na | 18.2 | 17.0 | 17.0 | 6.63 | 11.0 | 25.0 | 4.60 | 36.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 153 | na | 131 | 135 | 127 | 33.8 | 93.0 | 164 | 64.0 | 214 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 153 | na | 182 | 170 | 164 | 78.1 | 110 | 269 | 14.0 | 390 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 144 | na | 36.9 | 31.0 | 31.0 | 29.6 | 17.8 | 51.0 | 8.70 | 260 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 96 | na | 1.85 | 1.70 | 1.82 | 0.38 | 1.50 | 2.30 | 1.30 | 3.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 151 | na | 237 | 230 | 226 | 71.2 | 160 | 310 | 84.0 | 420 | na | na |
| RESIDUE TOTAL | RES | MG/L | 187 | na | 133 | 72.0 | 81.6 | 159 | 36.6 | 251 | 1.00 | 1130 | na | na |
| NITROGEN AMM. | TNNH3 | MG/L AS N | 13 | 7.69 | 3.97 | 1.97 | 0.53 | 4.49 | 0.02 | 9.91 | 0.01 | 10 | 0.01 | 0.01 |
| UN-IONIZED AMM NH3- | NH3- | MG/L AS NH3 | 11 | na | 2.65 | 0.04 | na | 4.73 | 0 | 11.2 | 0 | 12.0 | na | na |
| NO2 + NO3 DISS. | NO23 | MG/L AS N | 13 | na | 2.20 | 2.20 | 2.03 | 0.92 | 1.13 | 3.43 | 0.93 | 4.10 | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 1 | na | 0.02 | 0.02 | 0.02 | na | na | na | 0.02 | 0.02 | na | na |
| NITROGEN AMM+ | TNTN | MG/L AS N | 186 | 2.69 | 4.97 | 2.20 | 2.37 | 5.45 | 0.50 | 11.0 | 0.20 | 37.0 | 0.20 | 0.20 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 1 | na | 2.90 | 2.90 | 2.90 | na | na | na | 2.90 | 2.90 | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 30 | 26.7 | 1.95 | 2.00 | 1.69 | 1.13 | 1.00 | 4.00 | 1.00 | 4.00 | 1.00 | 1.00 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 18 | 27.8 | 1.62 | 1.00 | 1.45 | 0.87 | 1.00 | 2.00 | 1.00 | 4.00 | 1.00 | 1.00 |
| BARIUM DISS. | BA D | UG/L AS BA | 12 | na | 45.0 | 43.0 | 43.8 | 11.2 | 33.0 | 53.9 | 32.0 | 71.0 | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 26 | na | 134 | 140 | 121 | 55.9 | 60.0 | 200 | 50.0 | 230 | na | na |
| BORON TOTAL | B T | UG/L AS B | 16 | na | 139 | 145 | 124 | 60.4 | 55.5 | 210 | 40.0 | 220 | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 171 | 83.6 | 1.43 | 1.00 | 1.33 | 0.57 | 1.00 | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 180 | 88.3 | 1.05 | 1.00 | 1.03 | 0.22 | 1.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 194 | 64.9 | 2.31 | 2.00 | 1.71 | 3.08 | 1.00 | 3.00 | 1.00 | 24.0 | 1.48 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 159 | 85.5 | 1.65 | 1.00 | 1.42 | 1.07 | 1.00 | 3.00 | 1.00 | 5.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 156 | 20.5 | 4.73 | 3.50 | 3.51 | 4.41 | 2.00 | 8.00 | 1.00 | 29.0 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 171 | 12.3 | 3.88 | 3.00 | 3.30 | 2.21 | 2.00 | 6.00 | 1.00 | 11.0 | 6.29 | 10 |
| COPPER TOTAL | CU T | UG/L AS CU | 183 | 3.28 | 9.56 | 8.00 | 7.85 | 11.5 | 4.00 | 13.3 | 2.00 | 150 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 183 | na | 4160 | 2400 | 2580 | 5430 | 1060 | 7420 | 360 | 38000 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 154 | 6.49 | 47.4 | 21.5 | 20.9 | 152 | 7.00 | 48.3 | 3.00 | 1400 | 6.50 | 6.50 |
| LEAD DISS. | PB D | UG/L AS PB | 171 | 75.4 | 1.40 | 1.00 | 1.26 | 0.80 | 1.00 | 2.00 | 1.00 | 4.00 | 2.83 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 180 | 12.2 | 10.8 | 7.00 | 7.21 | 12.5 | 3.00 | 21.0 | 1.00 | 94.0 | 4.82 | 5.00 |
| MANGANESE DISS. | MN D | UG/L AS MN | 153 | 0.65 | 50.7 | 44.5 | 35.6 | 38.5 | 11.0 | 93.1 | 4.00 | 160 | 10 | 10 |
| MANGANESE TOT | MD T | UG/L AS MN | 141 | na | 172 | 140 | 145 | 118 | 90.0 | 264 | 30.0 | 850 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 12 | 66.7 | 0.30 | 0.25 | 0.28 | 0.14 | na | na | 0.20 | 0.50 | 0.10 | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 12 | 75.0 | 13.3 | 10 | 12.6 | 5.77 | na | na | 10 | 20.0 | 10 | 10 |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 169 | 18.3 | 3.65 | 3.00 | 3.13 | 2.31 | 2.00 | 5.00 | 1.00 | 20.0 | 4.61 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 159 | 0.63 | 6.60 | 6.00 | 5.52 | 4.12 | 3.00 | 11.0 | 1.00 | 27.0 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 12 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 54 | na | 5.28 | 5.00 | 5.14 | 1.25 | 4.00 | 6.75 | 3.00 | 9.00 | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 36 | na | 5.31 | 5.50 | 5.15 | 1.24 | 4.00 | 6.45 | 3.00 | 8.00 | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 171 | 4.68 | 28.9 | 21.0 | 20.4 | 28.4 | 8.00 | 43.4 | 3.00 | 160 | 3.00 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 183 | 1.64 | 63.4 | 50.0 | 49.5 | 63.5 | 30.0 | 90.0 | 10 | 650 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 15 | 93.3 | 1.00 | 1.00 | 1.00 | na | na | 1.00 | 1.00 | 0.50 | 0.50 | 0.50 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 17 | 94.1 | 0.01 | 0.01 | 0.01 | na | na | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| SUSP SED | SSED | MG/L | 82 | na | 1220 | 259 | 371 | 2480 | 101 | 2050 | 36.0 | 11500 | na | na |
| SUSP-SIEVE | SIEV | % | 48 | na | 69.3 | 71.5 | 67.0 | 16.6 | 50.3 | 83.7 | 33.0 | 98.0 | na | na |

Table 8. Univariate statistics for water-quality data collected for reach 4, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | % < MRL | DETECTIONS | | | | | | | | CENSOREDS | |
|-----------------|-------|-----------------|---------|---------|------------|--------|--------|--------|-------|-------|------|-------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| | | | | | | | | | | | | | | |
| DISCHARGE | CFS | CFS | 82 | na | 90.3 | 79.5 | 70.4 | 60.9 | 28.2 | 140 | 8.50 | 325 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 82 | na | 1320 | 1320 | 1300 | 200 | 1120 | 1510 | 756 | 1780 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 83 | na | 1300 | 1300 | 1290 | 195 | 1110 | 1520 | 751 | 1710 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 80 | na | 8.32 | 8.30 | 8.32 | 0.16 | 8.20 | 8.50 | 7.80 | 8.70 | na | na |
| WATER TEMP. | TEMP | DEGREES | 81 | na | 15.8 | 16.0 | na | 9.45 | 4.00 | 26.7 | 0 | 32.0 | na | na |
| OXYGEN DISS. | DO | MG/L | 81 | na | 8.46 | 8.10 | 8.25 | 1.97 | 6.40 | 10.8 | 5.50 | 13.7 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 80 | na | 98.6 | 97.0 | 98.4 | 7.42 | 93.0 | 105 | 79.0 | 132 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 1.72 | 6.45 | 3.90 | 3.98 | 6.88 | 1.30 | 13.6 | 0.50 | 34.0 | 0.50 | 0.50 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 78 | 3.85 | 637 | 160 | 152 | 1720 | 31.2 | 932 | 3.00 | 13000 | 9.67 | 5.00 |
| FECAL STRPT | FSTRP | COLS./100 ML | 77 | 1.30 | 1430 | 395 | 466 | 2880 | 140 | 2060 | 17.0 | 15000 | 44.0 | 44.0 |
| CALCIUM DISS. | CA | MG/L AS CA | 23 | na | 96.7 | 96.0 | 95.9 | 12.8 | 83.2 | 110 | 73.0 | 120 | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 23 | na | 35.6 | 33.0 | 34.7 | 8.22 | 28.6 | 46.4 | 22.0 | 54.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 23 | na | 185 | 192 | 184 | 24.0 | 156 | 212 | 146 | 223 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 23 | na | 383 | 380 | 376 | 77.2 | 310 | 478 | 270 | 550 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 23 | na | 50.4 | 52.0 | 49.8 | 7.88 | 40.6 | 59.0 | 34.0 | 62.0 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 9 | na | 1.89 | 1.90 | 1.88 | 0.14 | 1.70 | 2.05 | 1.60 | 2.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 23 | na | 389 | 380 | 384 | 61.9 | 326 | 454 | 270 | 510 | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | na | 519 | 168 | 155 | 1370 | 29.0 | 690 | 7.00 | 8950 | na | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 1 | na | 4.70 | 4.70 | 4.70 | na | na | na | 4.70 | 4.70 | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NITROGEN AMM+ | TNIT | MG/L AS N | 60 | 1.67 | 1.36 | 1.10 | 1.06 | 0.96 | 0.50 | 2.40 | 0.20 | 3.90 | 2.10 | 2.10 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 1 | na | 4.00 | 4.00 | 4.00 | na | na | na | 4.00 | 4.00 | na | na |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 1 | na | 220 | 220 | 220 | na | na | na | 220 | 220 | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 23 | 60.9 | 0.24 | 0.20 | 0.20 | 0.16 | 0.10 | 0.50 | 0.10 | 0.50 | 0.16 | 0.10 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 21 | 81.0 | 1.50 | 1.00 | 1.32 | 1.00 | na | na | 1.00 | 3.00 | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 23 | 87.0 | 1.33 | 1.00 | 1.26 | 0.58 | na | na | 1.00 | 2.00 | 1.00 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 21 | 14.3 | 8.39 | 6.50 | 6.83 | 5.14 | 3.85 | 16.3 | 1.00 | 18.0 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 23 | na | 2.35 | 2.00 | 2.19 | 0.94 | 2.00 | 3.40 | 1.00 | 5.00 | na | na |
| COPPER TOTAL | CU T | UG/L AS CU | 20 | na | 15.6 | 10.5 | 10.5 | 20.9 | 4.15 | 23.3 | 3.00 | 100 | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 20 | na | 8980 | 8950 | 5550 | 6540 | 964 | 18000 | 230 | 20000 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 22 | 13.6 | 11.7 | 8.00 | 8.99 | 10.3 | 4.00 | 19.0 | 4.00 | 39.0 | 3.00 | 3.00 |
| LEAD DISS. | PB D | UG/L AS PB | 23 | 78.3 | 0.66 | 0.70 | 0.65 | 0.11 | na | na | 0.50 | 0.80 | 0.75 | 0.50 |
| LEAD TOTAL | PB T | UG/L AS PB | 20 | na | 20.0 | 14.0 | 10.8 | 31.2 | 2.30 | 19.0 | 2.00 | 140 | na | na |
| MANGANESE DISS | MN D | UG/L AS MN | 22 | 4.55 | 6.24 | 3.00 | 4.15 | 9.84 | 2.00 | 8.10 | 2.00 | 48.0 | 1.00 | 1.00 |
| MANGANESE TOT | MN T | UG/L AS MN | 21 | na | 359 | 310 | 246 | 402 | 62.0 | 460 | 40.0 | 2000 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 1 | na | 0.50 | 0.50 | 0.50 | na | na | na | 0.50 | 0.50 | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 1 | na | 8.00 | 8.00 | 8.00 | na | na | na | 8.00 | 8.00 | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 22 | na | 3.23 | 3.00 | 3.13 | 0.81 | 2.00 | 4.00 | 2.00 | 5.00 | na | na |
| NICKEL TOTAL | NI T | UG/L AS NI | 18 | na | 14.3 | 11.5 | 10.3 | 16.7 | 4.00 | 19.3 | 3.00 | 78.0 | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 21 | 95.2 | 1.00 | 1.00 | 1.00 | na | na | na | 1.00 | 1.00 | 1.00 | 1.00 |
| SILVER TOTAL | AG T | UG/L AS AG | 22 | 90.9 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 |
| SELENIUM DISS. | SE D | UG/L AS SE | 19 | na | 21.3 | 19.0 | 17.9 | 12.8 | 10 | 33.0 | 5.00 | 53.0 | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 13 | na | 25.5 | 22.0 | 23.2 | 12.2 | 16.0 | 41.0 | 11.0 | 56.0 | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 23 | na | 8.00 | 8.00 | 6.82 | 4.68 | 3.00 | 12.8 | 3.00 | 22.0 | na | na |
| ZINC TOTAL | ZN T | UG/L AS ZN | 21 | 4.76 | 85.5 | 75.0 | 66.5 | 84.4 | 31.5 | 109 | 20.0 | 420 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SUSP SED | SSED | MG/L | 22 | na | 632 | 545 | 393 | 793 | 108 | 925 | 45.0 | 3930 | na | na |
| SUSP-SIEVE | SIEV | % | 22 | na | 64.5 | 62.5 | 62.4 | 15.8 | 49.1 | 84.1 | 27.5 | 90.0 | na | na |

Table 9. Univariate statistics for water-quality data collected for reach 1, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | |
|---------------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| DISCHARGE | CFS | CFS | 142 | na | 39.6 | 15.0 | 18.5 | 74.6 | 7.21 | 64.8 | 2.00 | 518 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25°C | 118 | na | 298 | 293 | 280 | 99.4 | 179 | 407 | 129 | 565 | na | na |
| SPECIFIC COND. | COND | MICROSIMENS/C | 59 | na | 306 | 301 | 291 | 92.4 | 187 | 417 | 138 | 458 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 58 | na | 8.14 | 8.20 | 8.13 | 0.24 | 7.80 | 8.40 | 7.60 | 8.50 | na | na |
| WATER TEMP. | TEMP | DEGREES | 122 | na | 7.20 | 7.25 | na | 4.80 | 1.50 | 13.0 | 0 | 17.5 | na | na |
| OXYGEN DISS. | DO | MG/L | 58 | na | 9.74 | 9.85 | 9.65 | 1.27 | 8.10 | 11.2 | 7.70 | 12.2 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 57 | na | 97.8 | 97.0 | 97.7 | 3.38 | 95.0 | 101 | 91.0 | 109 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 3.45 | 0.61 | 0.55 | 0.53 | 0.38 | 0.30 | 0.90 | 0.20 | 2.30 | 0.30 | 0.30 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 54 | na | 350 | 135 | 161 | 556 | 50.0 | 668 | 8.00 | 3500 | na | na |
| FECAL STRPT | FSTRP | COLS./100 ML | 56 | na | 415 | 180 | 214 | 682 | 55.8 | 735 | 26.0 | 4700 | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 31.8 | 31.0 | 30.2 | 9.93 | 19.0 | 43.0 | 15.0 | 50.0 | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 59 | na | 6.35 | 6.20 | 5.95 | 2.15 | 3.69 | 8.70 | 2.70 | 10 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 104 | 105 | 96.7 | 37.0 | 56.2 | 149 | 39.0 | 166 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 58 | na | 14.5 | 14.6 | 14.1 | 3.32 | 11.0 | 18.0 | 7.20 | 20.0 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 58 | na | 16.6 | 16.0 | 15.3 | 6.32 | 9.25 | 24.0 | 6.30 | 33.7 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 58 | na | 2.66 | 2.70 | 2.64 | 0.25 | 2.50 | 2.90 | 1.60 | 3.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 106 | 100 | 99.9 | 33.8 | 64.0 | 140 | 49.0 | 170 | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | 3.39 | 27.1 | 12.0 | 10.7 | 43.2 | 2.00 | 42.2 | 1.00 | 212 | 1.00 | 1.00 |
| NITROGEN AMM. | TNNH3 | MG/L AS N | 55 | 60.0 | 0.02 | 0.02 | 0.02 | 0.008 | 0.02 | 0.03 | 0.01 | 0.04 | 0.01 | 0.01 |
| UN-IONIZED AMM NH3- | NH3- | MG/L AS NH3 | 22 | na | 0.01 | 0.002 | na | 0.02 | 0 | 0.04 | 0 | 0.04 | na | na |
| NO2 + NO3 DISS. | NO23 | MG/L AS N | 55 | na | 0.83 | 0.86 | 0.77 | 0.27 | 0.50 | 1.10 | 0.12 | 1.30 | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 55 | 81.8 | 0.01 | 0.01 | 0.01 | 0.005 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 |
| NITROGEN AMM+ | TNTN | MG/L AS N | 59 | 76.3 | 0.31 | 0.21 | 0.28 | 0.15 | 0.20 | 0.45 | 0.20 | 0.70 | 0.20 | 0.20 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 55 | 80.0 | 0.01 | 0.01 | 0.01 | 0.005 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM DISS. | BA D | UG/L AS BA | 1 | na | 85.7 | 85.7 | 85.7 | na | na | na | 85.7 | 85.7 | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 1 | na | 45.8 | 45.8 | 45.8 | na | na | na | 45.8 | 45.8 | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | na | 0.99 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 98.3 | 3.00 | 3.00 | na | na | na | na | 3.00 | 3.00 | 1.00 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 59 | 96.6 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 59 | 86.4 | 1.43 | 1.20 | 1.36 | 0.46 | 1.00 | 2.07 | 1.00 | 2.10 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 79.7 | 1.18 | 1.00 | 1.13 | 0.44 | 1.00 | 1.46 | 0.89 | 2.50 | 1.00 | 1.00 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | 42.4 | 1.81 | 1.95 | 1.63 | 0.89 | 1.00 | 2.95 | 1.00 | 4.00 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 59 | na | 925 | 440 | 541 | 1180 | 180 | 1500 | 130 | 5900 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 59 | 5.08 | 40.9 | 37.5 | 31.7 | 30.9 | 12.5 | 60.0 | 6.52 | 189 | 10 | 10 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 96.6 | 1.45 | 1.33 | 0.79 | na | na | 0.89 | 2.00 | 1.00 | 1.00 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 50.8 | 3.72 | 2.00 | 2.81 | 3.17 | 1.10 | 8.00 | 1.00 | 12.0 | 1.00 | 1.00 |
| MANGANESE DISS. | MN D | UG/L AS MN | 59 | 1.69 | 30.2 | 29.1 | 28.2 | 10.6 | 17.0 | 41.5 | 9.00 | 53.0 | 10 | 10 |
| MANGANESE TOT | MD T | UG/L AS MN | 59 | na | 86.2 | 60.0 | 70.4 | 68.3 | 40.0 | 120 | 30.0 | 350 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 1 | na | 2.48 | 2.48 | 2.48 | na | na | na | 2.48 | 2.48 | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 59 | 93.2 | 1.32 | 1.15 | 1.27 | 0.47 | na | na | 1.00 | 2.00 | 1.00 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 59 | 64.4 | 1.68 | 1.00 | 1.40 | 1.39 | 1.00 | 2.70 | 1.00 | 7.00 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 1 | 100 | na | na | na | na | na | na | na | 0.20 | 0.20 | 0.20 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 59 | 52.5 | 4.79 | 5.00 | 4.64 | 1.20 | 3.15 | 6.00 | 3.00 | 7.00 | 4.35 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 59 | 61.0 | 21.3 | 20.0 | 19.0 | 10.6 | 10 | 30.0 | 10 | 50.0 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SUSP SED | SSED | MG/L | 51 | na | 383 | 31.0 | 45.1 | 1400 | 9.96 | 315 | 2.90 | 8020 | na | na |
| SUSP-SIEVE | SIEV | % | 1 | na | 60.0 | 60.0 | 60.0 | na | na | 60.0 | 60.0 | 60.0 | na | na |

Table 10. Univariate statistics for water-quality data collected for reach 2, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | |
|-----------------|-------|-----------------|---------|--------|---------|--------|------------|-------|------|------|------|--------|-----------|--------|
| | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Mean | Median |
| DISCHARGE | CFS | CFS | 386 | na | 27.6 | 16.0 | 12.5 | 44.3 | 2.70 | 41.3 | 0.27 | 333 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 362 | na | 367 | 342 | 325 | 176 | 184 | 526 | 77.0 | 901 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 236 | na | 383 | 351 | 327 | 203 | 166 | 663 | 75.0 | 931 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 230 | na | 8.20 | 8.20 | 8.19 | 0.31 | 7.80 | 8.50 | 7.30 | 9.00 | na | na |
| WATER TEMP. | TEMP | DEGREES | 366 | na | 11.6 | 11.5 | na | 8.07 | 1.53 | 21.0 | 0 | 30.0 | na | na |
| OXYGEN DISS. | DO | MG/L | 224 | na | 8.80 | 8.60 | 8.65 | 1.60 | 7.00 | 10.7 | 5.80 | 12.6 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 223 | na | 99.6 | 99.0 | 99.5 | 5.50 | 95.0 | 104 | 86.0 | 125 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 234 | 2.14 | 0.93 | 0.80 | na | 0.73 | 0.40 | 1.40 | 0 | 5.50 | 0.64 | 0.70 |
| COLIFORM FECAL | FCOL | COLS./100 ML | 222 | 2.25 | 138 | 45.0 | 45.0 | 278 | 8.70 | 233 | 1.00 | 2480 | 1.60 | 1.00 |
| FECAL STRPT | FSTRP | COLS./100 ML | 232 | 0.43 | 150 | 86.0 | 73.8 | 244 | 20.8 | 240 | 3.00 | 2100 | 1.00 | 1.00 |
| CALCIUM DISS. | CA | MG/L AS CA | 236 | na | 42.9 | 31.0 | 36.1 | 24.7 | 19.8 | 76.0 | 8.70 | 110 | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 236 | na | 6.95 | 5.13 | 5.73 | 4.52 | 3.26 | 13.5 | 1.10 | 23.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 236 | na | 97.2 | 90.0 | 89.3 | 37.9 | 58.0 | 146 | 20.0 | 197 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 236 | na | 58.2 | 32.2 | 33.1 | 56.8 | 8.17 | 140 | 3.00 | 240 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 236 | na | 18.4 | 20.0 | 14.8 | 9.92 | 6.16 | 27.2 | 1.40 | 54.0 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 236 | na | 1.39 | 1.40 | 1.36 | 0.27 | 1.10 | 1.70 | 0.50 | 2.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 236 | na | 136 | 97.5 | 114 | 79.6 | 63.6 | 245 | 26.0 | 370 | na | na |
| RESIDUE TOTAL | RES | MG/L | 235 | 5.96 | 104 | 58.0 | 34.4 | 165 | 5.00 | 187 | 1.00 | 1320 | 1.00 | 1.00 |
| NITROGEN AMM | TNH3 | MG/L AS N | 224 | 39.7 | 0.10 | 0.03 | 0.04 | 0.21 | 0.02 | 0.15 | 0.01 | 1.30 | 0.01 | 0.01 |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 130 | na | 0.04 | 0.01 | na | 0.15 | 0 | 0.04 | 0 | 1.34 | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 224 | 19.6 | 1.80 | 1.70 | 1.03 | 1.36 | 0.13 | 3.40 | 0.05 | 4.80 | 0.05 | 0.05 |
| NITROGEN, NO2 | NIT | MG/L AS N | 224 | 52.7 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.03 | 0.01 | 0.18 | 0.01 | 0.01 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 236 | 23.7 | 0.52 | 0.40 | 0.44 | 0.34 | 0.30 | 0.79 | 0.20 | 2.00 | 0.20 | 0.20 |
| PHOSPHORUS O | OP04 | MG/L AS P | 224 | 21.9 | 0.30 | 0.11 | 0.15 | 0.39 | 0.05 | 0.88 | 0.01 | 2.10 | 0.01 | 0.01 |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 236 | 99.2 | 1.50 | 1.50 | 1.41 | 0.71 | na | na | 1.00 | 2.00 | 1.00 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 235 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 236 | 95.3 | 2.10 | 1.10 | 1.67 | 1.66 | 1.00 | 4.40 | 1.00 | 6.00 | 1.00 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 234 | 94.0 | 1.43 | 1.00 | 1.32 | 0.65 | 1.00 | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 232 | 71.1 | 2.74 | 2.00 | 2.29 | 2.00 | 1.40 | 4.86 | 1.00 | 12.0 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 236 | 47.5 | 1.63 | 1.00 | 1.42 | 1.09 | 1.00 | 2.00 | 1.00 | 7.40 | 1.01 | 1.00 |
| COPPER TOTAL | CU T | UG/L AS CU | 235 | 20.4 | 3.86 | 3.00 | 3.01 | 3.86 | 2.00 | 5.08 | 1.00 | 33.0 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 235 | na | 1940 | 1100 | 1130 | 2670 | 384 | 3360 | 209 | 20000 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 229 | 19.7 | 72.5 | 60.0 | 38.1 | 67.9 | 7.00 | 140 | 3.00 | 310 | 5.49 | 3.00 |
| LEAD DISS. | PB D | UG/L AS PB | 236 | 98.3 | 2.75 | 2.50 | 2.34 | 1.71 | na | na | 1.00 | 5.00 | 1.00 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 235 | 42.1 | 4.81 | 3.00 | 3.21 | 6.43 | 1.51 | 7.00 | 1.00 | 43.0 | 1.00 | 1.00 |
| MANGANESE DISS | MN D | UG/L AS MN | 236 | 5.08 | 46.7 | 30.5 | 21.9 | 66.3 | 3.99 | 70.3 | 1.00 | 510 | 7.75 | 10 |
| MANGANESE TOT | MN T | UG/L AS MN | 235 | 0.43 | 109 | 80.0 | 87.3 | 86.7 | 50.0 | 160 | 10 | 590 | 10 | 10 |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 236 | 57.6 | 1.50 | 1.00 | 1.39 | 0.58 | 1.00 | 2.00 | 1.00 | 3.20 | 1.00 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 233 | 24.9 | 2.95 | 2.00 | 2.47 | 2.31 | 1.20 | 4.00 | 1.00 | 18.0 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 236 | 61.9 | 7.41 | 6.72 | 6.54 | 3.85 | 4.00 | 12.0 | 3.00 | 20.0 | 4.10 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 235 | 44.3 | 24.6 | 20.0 | 19.5 | 22.3 | 10 | 30.0 | 10 | 160 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SUSP SED | SSED | MG/L | 20 | na | 659 | 125 | 226 | 1050 | 59.6 | 2160 | 48.0 | 3770 | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na |

Table 11. Univariate statistics for water-quality data collected for reach 3, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | |
|---------------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median |
| DISCHARGE | CFS | CFS | 478 | na | 144 | 90.0 | 82.0 | 329 | 29.0 | 193 | 4.00 | 5750 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 445 | na | 818 | 804 | 769 | 262 | 533 | 1120 | 222 | 1390 | na | na |
| SPECIFIC COND. | COND | MICROSIEGENS/C | 195 | na | 772 | 772 | 736 | 222 | 530 | 1020 | 237 | 1240 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 196 | na | 8.04 | 8.00 | 8.04 | 0.20 | 7.90 | 8.30 | 7.50 | 8.40 | na | na |
| WATER TEMP. | TEMP | DEGREES | 456 | na | 13.0 | 13.0 | na | 7.15 | 4.50 | 21.0 | 0 | 29.0 | na | na |
| OXYGEN DISS. | DO | MG/L | 196 | na | 8.37 | 8.20 | 8.26 | 1.42 | 6.86 | 10 | 5.90 | 12.0 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 194 | na | 93.8 | 95.0 | 93.4 | 7.93 | 85.0 | 101 | 73.0 | 125 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 191 | na | 7.59 | 5.30 | 3.96 | 7.79 | 0.80 | 15.0 | 0.10 | 34.0 | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 177 | 0.56 | 396 | 200 | 194 | 530 | 50.7 | 749 | 9.00 | 3300 | 300 | 300 |
| FECAL STRPT | FSTRP | COLS./100 ML | 185 | na | 423 | 240 | 236 | 535 | 74.8 | 801 | 10 | 3300 | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 197 | na | 62.9 | 62.0 | 60.3 | 17.1 | 45.7 | 81.0 | 24.0 | 100 | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 197 | na | 18.1 | 17.0 | 16.9 | 6.17 | 12.0 | 25.0 | 4.00 | 33.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 197 | na | 126 | 127 | 121 | 33.3 | 87.7 | 160 | 55.0 | 205 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 197 | na | 184 | 170 | 168 | 72.9 | 112 | 270 | 32.0 | 380 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 197 | na | 35.7 | 37.0 | 33.0 | 12.9 | 20.6 | 51.0 | 8.40 | 59.0 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 197 | na | 1.83 | 1.80 | 1.80 | 0.31 | 1.50 | 2.20 | 0.80 | 3.10 | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 197 | na | 231 | 230 | 221 | 65.9 | 160 | 300 | 76.0 | 380 | na | na |
| RESIDUE TOTAL | RES | MG/L | 197 | na | 118 | 76.0 | 76.3 | 151 | 31.7 | 177 | 14.0 | 1340 | na | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 186 | 14.0 | 2.24 | 0.53 | 0.41 | 3.12 | 0.03 | 6.00 | 0.01 | 11.0 | 0.01 | 0.01 |
| UN-IONIZED AMM NH3- | NH3- | MG/L AS NH3 | 159 | na | 1.67 | 0.09 | na | 3.23 | 0 | 4.87 | 0 | 13.4 | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 186 | 0.54 | 3.32 | 3.00 | 2.90 | 1.64 | 1.60 | 5.30 | 0.59 | 7.80 | 0.05 | 0.05 |
| NITROGEN, NO2 | NIT | MG/L AS N | 186 | 17.2 | 0.11 | 0.08 | 0.07 | 0.15 | 0.02 | 0.20 | 0.01 | 1.60 | 0.01 | 0.01 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 197 | 7.11 | 3.18 | 1.20 | 1.50 | 3.81 | 0.30 | 7.70 | 0.20 | 16.0 | 0.20 | 0.20 |
| PHOSPHORUS O | OPO4 | MG/L AS P | 186 | 1.61 | 0.67 | 0.32 | 0.27 | 0.75 | 0.04 | 1.60 | 0.02 | 2.80 | 0.01 | 0.01 |
| ARSENIC DISS. | AS D | UG/L AS AS | 30 | 53.3 | 1.29 | 1.00 | 1.22 | 0.47 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 27 | 18.5 | 2.30 | 2.00 | 2.11 | 0.98 | 1.01 | 3.00 | 1.00 | 5.00 | 1.00 | 1.00 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 30 | na | 115 | 90.7 | 95.0 | 65.0 | 43.3 | 194 | 20.0 | 230 | na | na |
| BORON TOTAL | B T | UG/L AS B | 29 | na | 113 | 90.0 | 97.9 | 58.0 | 50.0 | 185 | 35.0 | 230 | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 197 | 99.5 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 197 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 197 | 92.4 | 1.52 | 1.20 | 1.42 | 0.62 | 1.04 | 2.36 | 1.00 | 3.00 | 1.00 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 196 | 94.9 | 2.20 | 2.00 | 2.02 | 0.92 | 1.00 | 3.35 | 1.00 | 4.00 | 1.00 | 1.00 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 195 | 30.8 | 2.40 | 2.00 | 2.05 | 1.76 | 1.20 | 3.32 | 1.00 | 15.0 | 1.00 | 1.00 |
| COPPER DISS. | CU D | UG/L AS CU | 197 | 17.3 | 2.50 | 2.00 | 2.16 | 1.54 | 1.00 | 4.00 | 1.00 | 12.1 | 1.00 | 1.00 |
| COPPER TOTAL | CU T | UG/L AS CU | 197 | 1.02 | 5.94 | 5.00 | 5.03 | 3.72 | 3.00 | 9.00 | 1.00 | 28.0 | 1.00 | 1.00 |
| IRON TOTAL | FE T | UG/L AS FE | 197 | na | 2860 | 1700 | 1800 | 4370 | 690 | 4630 | 280 | 45000 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 197 | 12.7 | 30.8 | 20.0 | 18.2 | 62.0 | 6.00 | 42.1 | 3.00 | 770 | 5.80 | 3.00 |
| LEAD DISS. | PB D | UG/L AS PB | 197 | 97.0 | 1.33 | 1.00 | 1.20 | 0.82 | 1.00 | 2.90 | 1.00 | 3.00 | 1.00 | 1.00 |
| LEAD TOTAL | PB T | UG/L AS PB | 197 | 1.02 | 6.17 | 4.00 | 4.13 | 7.30 | 2.00 | 10 | 1.00 | 50.0 | 1.00 | 1.00 |
| MANGANESE DISS | MN D | UG/L AS MN | 197 | 2.54 | 42.9 | 32.4 | 29.9 | 32.1 | 11.0 | 79.1 | 2.00 | 150 | 8.20 | 10 |
| MANGANESE TOT | MD T | UG/L AS MN | 197 | na | 136 | 110 | 117 | 91.2 | 70.0 | 180 | 30.0 | 809 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 197 | 18.3 | 2.54 | 3.00 | 2.26 | 1.20 | 1.00 | 3.67 | 1.00 | 9.00 | 1.00 | 1.00 |
| NICKEL TOTAL | NI T | UG/L AS NI | 196 | 1.53 | 4.41 | 4.00 | 3.86 | 2.59 | 2.00 | 6.00 | 1.00 | 22.0 | 1.00 | 1.00 |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 94 | 2.13 | 4.15 | 4.00 | 3.86 | 1.48 | 2.60 | 6.00 | 1.00 | 8.00 | 1.00 | 1.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 197 | 19.3 | 16.5 | 15.0 | 13.4 | 9.99 | 5.36 | 29.0 | 3.00 | 50.0 | 4.47 | 3.00 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 197 | 3.05 | 36.0 | 30.0 | 31.2 | 21.5 | 20.0 | 50.0 | 10 | 200 | 10 | 10 |
| SULFIDE TOTAL | H2S | MG/L AS S | 30 | 93.3 | 0.80 | 0.80 | 0.80 | 0 | na | na | 0.80 | 0.80 | 0.66 | 0.50 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 30 | 100 | na | na | na | na | na | na | na | na | 0.01 | 0.01 |
| SUSP SED | SSED | MG/L | 49 | na | 663 | 149 | 199 | 1760 | 63.5 | 630 | 44.0 | 10200 | na | na |
| SUSP-SIEVE | SIEV | % | 1 | na | 46.0 | 46.0 | 46.0 | na | na | na | 46.0 | 46.0 | na | na |

Table 12. Univariate statistics for water-quality data collected for reach 4, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; TOT, total; T, total; AMM, ammonia; HEX, hexavalent

| Variable | Abrv | Units | Samples | | DETECTIONS | | | | | | | CENSOREDS | | |
|----------------|-------|-----------------|---------|--------|------------|--------|-------|-------|-------|------|------|-----------|------|--------|
| | | | Mean | Median | G mean | Stddev | 15.0% | | 85.0% | | Min | Max | Mean | Median |
| | | | | | | | 15.0% | 85.0% | Min | Max | | | | |
| DISCHARGE | CFS | CFS | 63 | na | 177 | 122 | 113 | 266 | 41.2 | 262 | 11.0 | 2040 | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 63 | na | 1210 | 1220 | 1180 | 256 | 957 | 1470 | 591 | 2030 | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 61 | na | 1220 | 1200 | 1190 | 253 | 960 | 1490 | 656 | 2040 | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 61 | na | 8.31 | 8.40 | 8.31 | 0.13 | 8.20 | 8.40 | 7.90 | 8.50 | na | na |
| WATER TEMP. | TEMP | DEGREES | 63 | na | 14.4 | 14.5 | na | 8.23 | 4.80 | 24.4 | 0 | 30.5 | na | na |
| OXYGEN DISS. | DO | MG/L | 61 | na | 8.62 | 8.40 | 8.49 | 1.55 | 6.73 | 10.4 | 6.10 | 11.6 | na | na |
| OXYGEN DIS. % | %DO | % OF SATURATION | 61 | na | 98.7 | 98.0 | 98.6 | 4.11 | 95.0 | 103 | 90.0 | 115 | na | na |
| BOD 5-DAY | BOD5 | MG/L | 59 | na | 3.85 | 2.40 | na | 4.27 | 0.80 | 7.10 | 0 | 22.0 | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 56 | na | 370 | 135 | 144 | 564 | 28.1 | 836 | 10 | 2800 | na | na |
| FECAL STRPT | FSTRP | COLS./100 ML | 58 | na | 518 | 160 | 195 | 810 | 47.2 | 1240 | 10 | 3200 | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 3 | na | 100 | 100 | 100 | 9.50 | na | na | 91.0 | 110 | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 3 | na | 36.7 | 37.0 | 36.5 | 4.51 | na | na | 32.0 | 41.0 | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 4 | na | 196 | 196 | 195 | 21.2 | na | na | 173 | 220 | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 3 | na | 380 | 370 | 377 | 55.7 | na | na | 330 | 440 | na | na |
| CHLORIDE DISS. | CL | MG/L AS CL | 3 | na | 58.0 | 56.0 | 57.9 | 4.36 | na | na | 55.0 | 63.0 | na | na |
| FLUORIDE DISS. | F | MG/L AS F | 0 | na | na | na | na | na | na | na | na | na | na | na |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 3 | na | 400 | 400 | 399 | 40.0 | na | na | 360 | 440 | na | na |
| RESIDUE TOTAL | RES | MG/L | 58 | 1.72 | 333 | 194 | 186 | 481 | 71.0 | 436 | 6.00 | 2410 | 1.00 | 1.00 |
| NITROGEN AMM | TNH3 | MG/L AS N | 57 | 26.3 | 0.15 | 0.03 | 0.05 | 0.31 | 0.02 | 0.24 | 0.02 | 1.50 | 0.01 | 0.01 |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 41 | na | 0.04 | 0.02 | na | 0.11 | 0 | 0.05 | 0 | 0.71 | na | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 58 | na | 5.10 | 5.20 | 4.82 | 1.58 | 3.01 | 7.02 | 2.00 | 7.50 | na | na |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 46.4 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.05 | 0.01 | 0.09 | 0.01 | 0.01 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | na | 1.05 | 0.80 | 0.80 | 0.94 | 0.40 | 1.60 | 0.20 | 4.60 | na | na |
| PHOSPHORUS O | OP04 | MG/L AS P | 56 | na | 0.52 | 0.40 | 0.42 | 0.35 | 0.25 | 0.95 | 0.11 | 1.50 | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 3 | 66.7 | 0.10 | 0.10 | 0.10 | na | na | na | 0.10 | 0.10 | 0.10 | 0.10 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 3 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 |
| CHROMIUM DISS. | CR D | UG/L AS CR | 3 | 66.7 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 3 | na | 6.33 | 3.00 | 4.38 | 6.66 | na | na | 2.00 | 14.0 | na | na |
| COPPER DISS. | CU D | UG/L AS CU | 3 | na | 2.33 | 2.00 | 2.29 | 0.58 | na | na | 2.00 | 3.00 | na | na |
| COPPER TOTAL | CU T | UG/L AS CU | 3 | na | 8.33 | 8.00 | 8.32 | 0.58 | na | na | 8.00 | 9.00 | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 3 | na | 4500 | 4700 | 4340 | 1410 | na | na | 3000 | 5800 | na | na |
| IRON DISS. | FE D | UG/L AS FE | 3 | na | 11.3 | 13.0 | 10.8 | 3.79 | na | na | 7.00 | 14.0 | na | na |
| LEAD DISS. | PB D | UG/L AS PB | 3 | 66.7 | 0.80 | 0.80 | 0.80 | na | na | na | 0.80 | 0.80 | 0.50 | 0.50 |
| LEAD TOTAL | PB T | UG/L AS PB | 3 | na | 11.3 | 8.00 | 9.86 | 7.57 | na | na | 6.00 | 20.0 | na | na |
| MANGANESE DISS | MN D | UG/L AS MN | 3 | na | 5.00 | 5.00 | 4.72 | 2.00 | na | na | 3.00 | 7.00 | na | na |
| MANGANESE TOT | MN T | UG/L AS MN | 3 | na | 200 | 200 | 197 | 40.0 | na | na | 160 | 240 | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 3 | na | 2.67 | 3.00 | 2.62 | 0.58 | na | na | 2.00 | 3.00 | na | na |
| NICKEL TOTAL | NI T | UG/L AS NI | 3 | na | 6.33 | 7.00 | 6.26 | 1.15 | na | na | 5.00 | 7.00 | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 3 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 |
| SILVER TOTAL | AG T | UG/L AS AG | 3 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 |
| SELENIUM DISS. | SE D | UG/L AS SE | 31 | 3.23 | 16.5 | 14.5 | 15.0 | 7.64 | 8.94 | 26.0 | 6.00 | 38.0 | 1.00 | 1.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 3 | na | 23.7 | 21.0 | 23.1 | 6.43 | na | na | 19.0 | 31.0 | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 3 | na | 8.67 | 9.00 | 8.41 | 2.52 | na | na | 6.00 | 11.0 | na | na |
| ZINC TOTAL | ZN T | UG/L AS ZN | 3 | na | 30.0 | 40.0 | 25.2 | 17.3 | na | na | 10 | 40.0 | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na |
| SUSP SED | SSED | MG/L | 3 | na | 352 | 365 | 343 | 91.7 | na | na | 254 | 436 | na | na |
| SUSP-SIEVE | SIEV | % | 3 | na | 43.9 | 54.3 | 36.8 | 25.8 | na | na | 14.6 | 62.9 | na | na |

Figures describing correlations among water-quality properties and constituents for each reach (figs. 3–6) were compiled from correlation matrices for all stations in a given reach. Individual matrices, which are shown graphically in the Appendix, were reviewed to extract pairs having correlation coefficients with an absolute value greater than or equal to 0.80. A natural log transformation was applied to all values for the correlation exercise; the transformation sometimes provides more significant results for water-quality properties or constituents that range from very low values to very high values. The differences between the correlation matrices derived without the transformation and those presented in this report were generally minor except for one property, flow (shown as CFS in figures). Correlations of flow with other properties and constituents had higher absolute values when computed with transformed data than when computed with untransformed data.

Summaries depicting the spatial, or areal, relations as a function of relative station rank within the study area, and station, or local, variation for water-quality properties and constituents for each station during each evaluation period are presented in figures 7 and 8. The figures were prepared using station means to represent areal ranks and the 15th and 85 percentile of station values to describe local variations (from station means) for each water-quality property or constituent. To indicate areal variability within the study area, the rank for a given station is expressed as a percentage of the range of means for the given water-quality property or constituent from all stations in the study area. For example, figure 7 indicates that, based on the samples collected, the mean flow (indicated as CFS) at station 4905 is less than the mean flow at station 5500, which is downstream from station 4905, and that both are substantially greater than the mean flow at station 3700 at the beginning of reach 1.

To indicate local variation, or variation in measurements made at a given station, 15th and 85th percentiles were compared to the station mean. The position of the mean value in the distribution for all values measured at a given station is indicated with a horizontal bar, and the distance from the mean to the 15th and 85th percentiles is indicated with vectors or “whiskers” drawn from the mean. The length of each whisker is directly proportional to the difference between the mean value and the 15th (whisker going

downward) and 85th (whisker going upward) percentiles. For example, figure 7 indicates that the difference between the mean value and the 85th percentile for flow at station 5500 is very small compared to the difference between the mean and the 15th percentile. This indicates that the distribution of the series of flow measurements is not symmetrical about the mean as described in the next paragraph.

Figures 7 and 8 provide information about relative relations between water-quality properties and constituents for a given station and between stations. To assign quantitative values to information provided in figures 7 and 8, it is necessary to refer to the tables of univariate statistics in the Appendix. For example, table A6 indicates that, for station 5500 (1987 to 1992), the mean value for flow (discharge) was 92.6 cubic feet per second. The table also indicates this mean value is a little more than 2.5 times the median value of 35.5 cubic feet per second and that the mean is influenced by the maximum of 2,170 cubic feet per second. Readers that are concerned about what results might be affected by this bias toward high flow can look at figure 3 and determine that discharge is correlated with specific conductance, calcium, magnesium, alkalinity, and hardness.

General Water-Quality Characteristics

Edelmann (1990) described many of the basic processes affecting water-quality conditions and the resulting phenomena in the study area. The observations made in that report remained applicable during the analysis period for this report. Figures 7 and 8 highlight many of the phenomena described by Edelmann, and some are briefly reviewed here.

Some water-quality properties and constituents show a clear and almost steady increase from the headwater portion of the system to the end of the system. Flow is an excellent example of this phenomenon. Figures 7 and 8 clearly show that mean values of flow increase through the system. The more detailed summary data in table 4 provide an indication that flow is related to drainage area. For instance, selection of almost any duration interval shows that flow in cubic feet per second increases steadily through the system but that flow expressed as cubic feet per second per square mile (cfsm in table 4), which normalizes the effect of drainage area, stays relatively constant through the system.

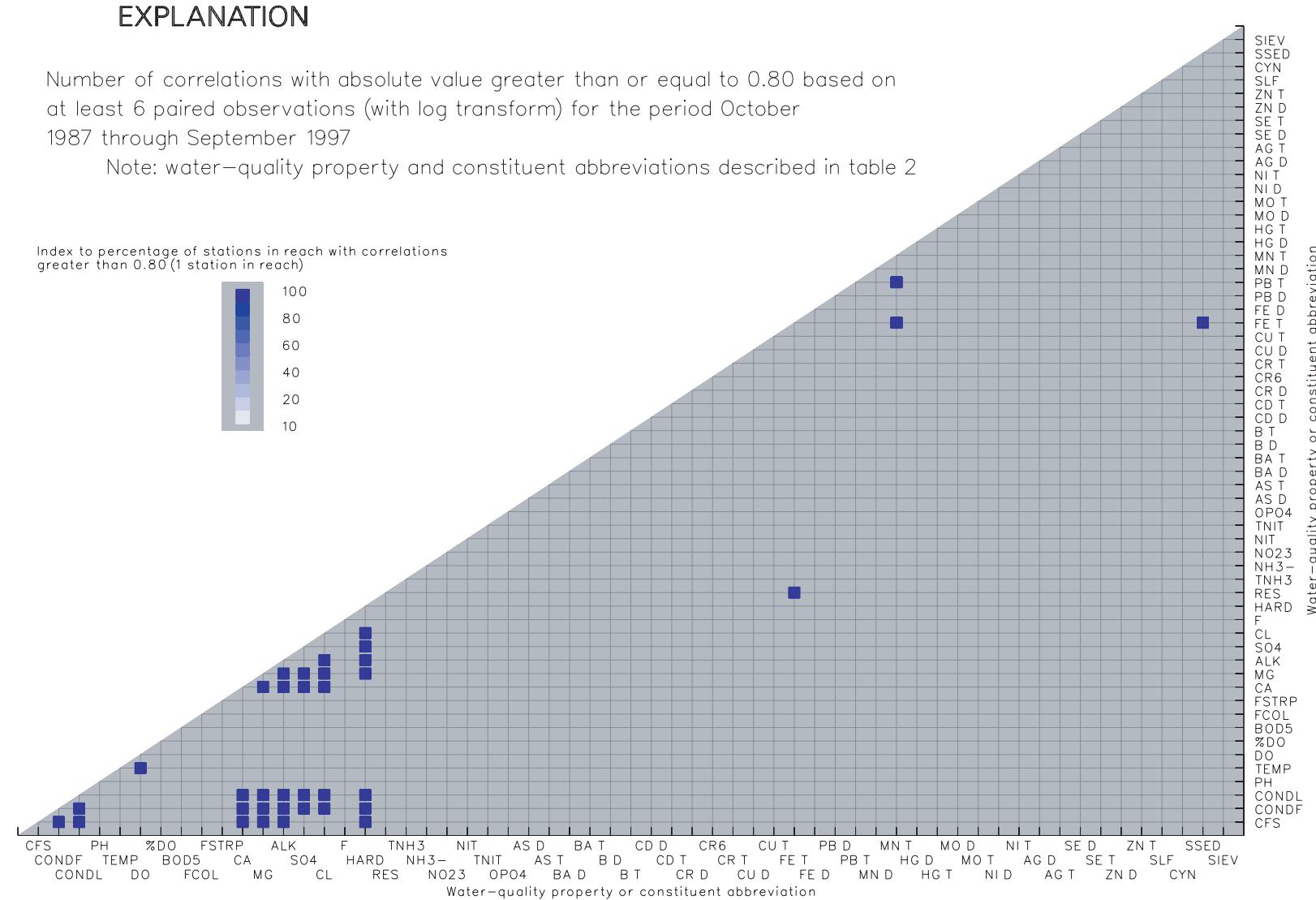


Figure 3. Correlation among water-quality properties and constituents within reach 1.

EXPLANATION

Number of correlations with absolute value greater than or equal to 0.80 based on at least 6 paired observations (with log transform) for the period October 1987 through September 1997

Note: water-quality property and constituent abbreviations described in table 2

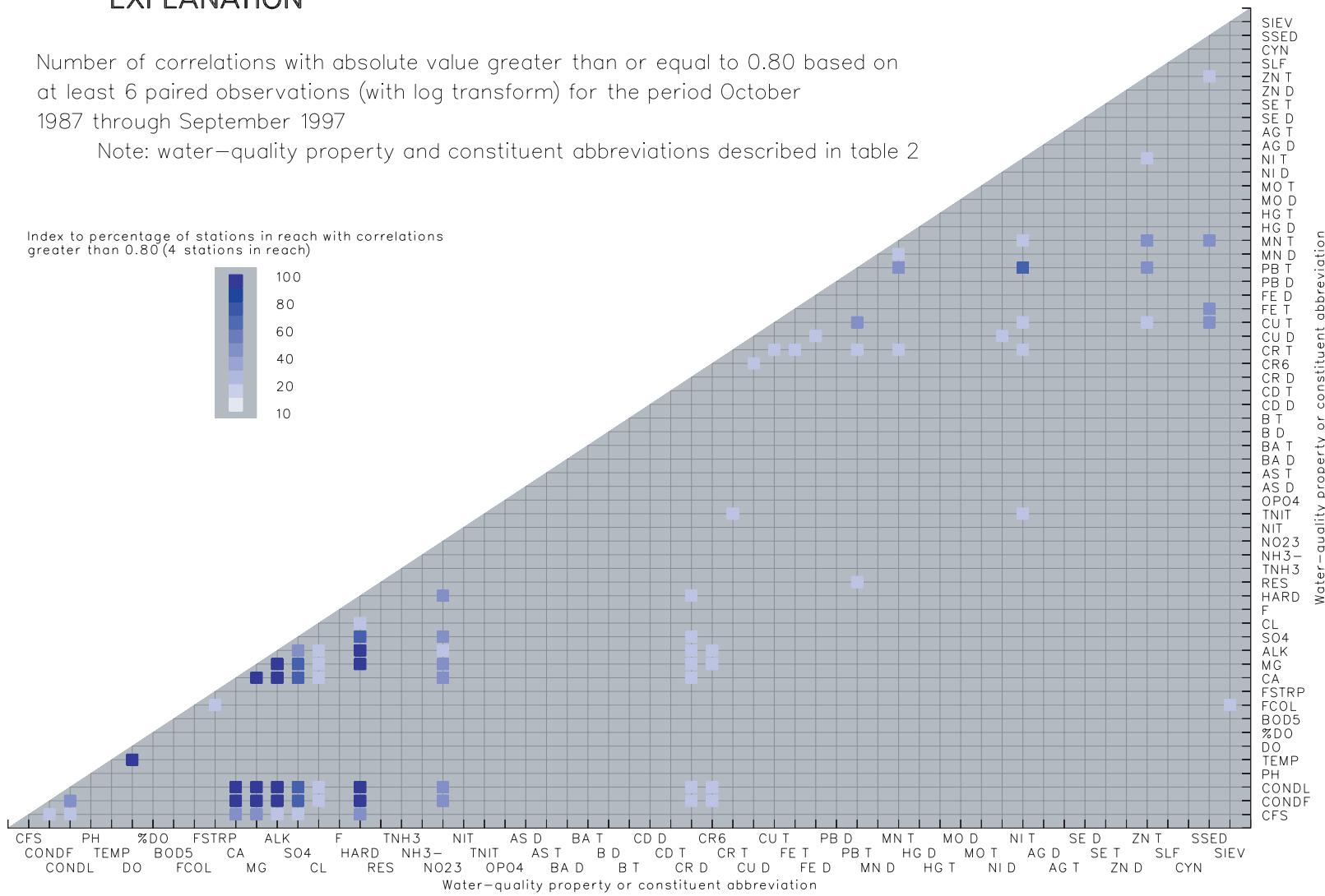


Figure 4. Correlation among water-quality properties and constituents within reach 2.

EXPLANATION

Number of correlations with absolute value greater than or equal to 0.80 based on at least 6 paired observations (with log transform) for the period October 1987 through September 1997

Note: water-quality property and constituent abbreviations described in table 2

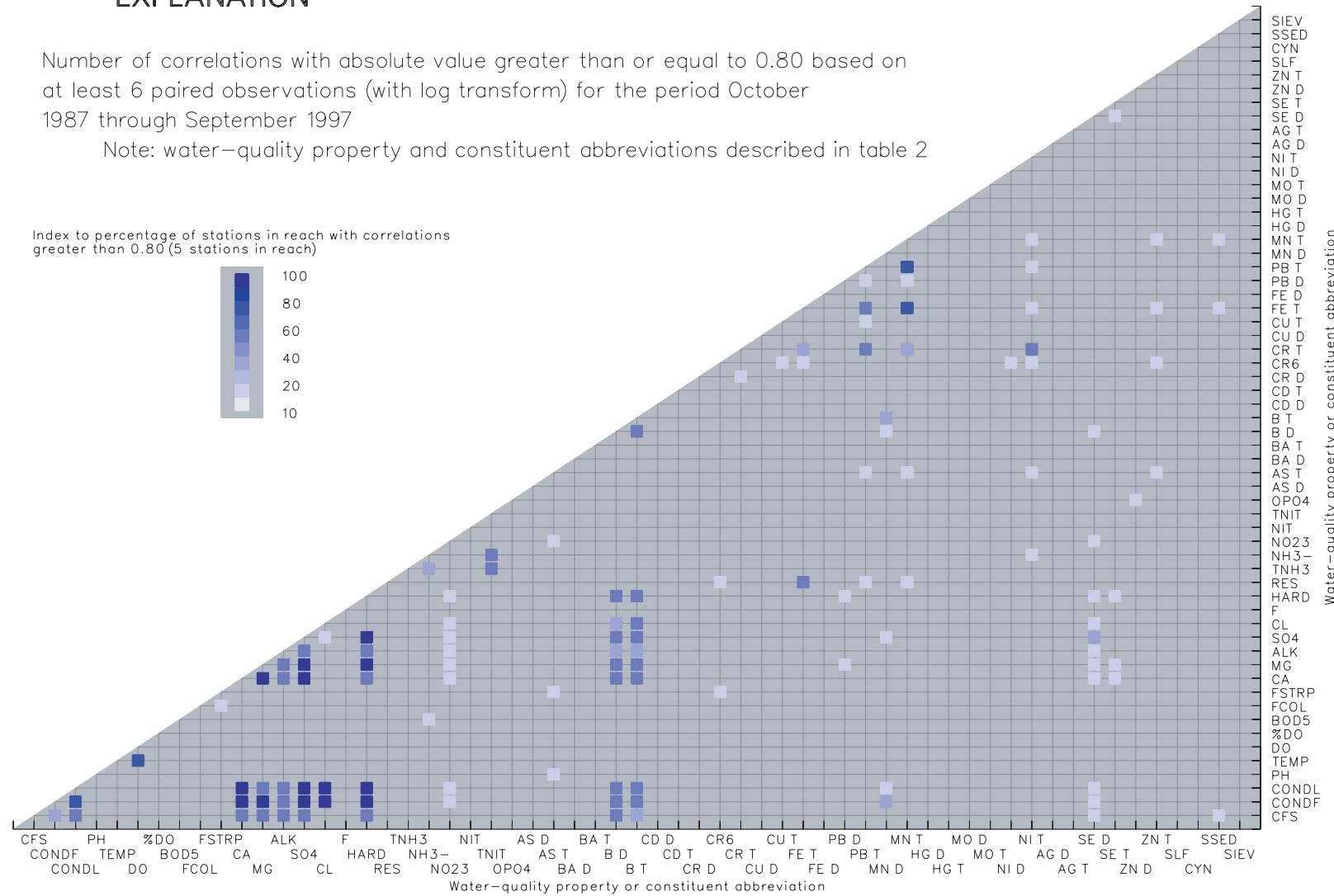


Figure 5. Correlation among water-quality properties and constituents within reach 3.

EXPLANATION

Number of correlations with absolute value greater than or equal to 0.80 based on at least 6 paired observations (with log transform) for the period October 1987 through September 1997

Note: water-quality property and constituent abbreviations described in table 2

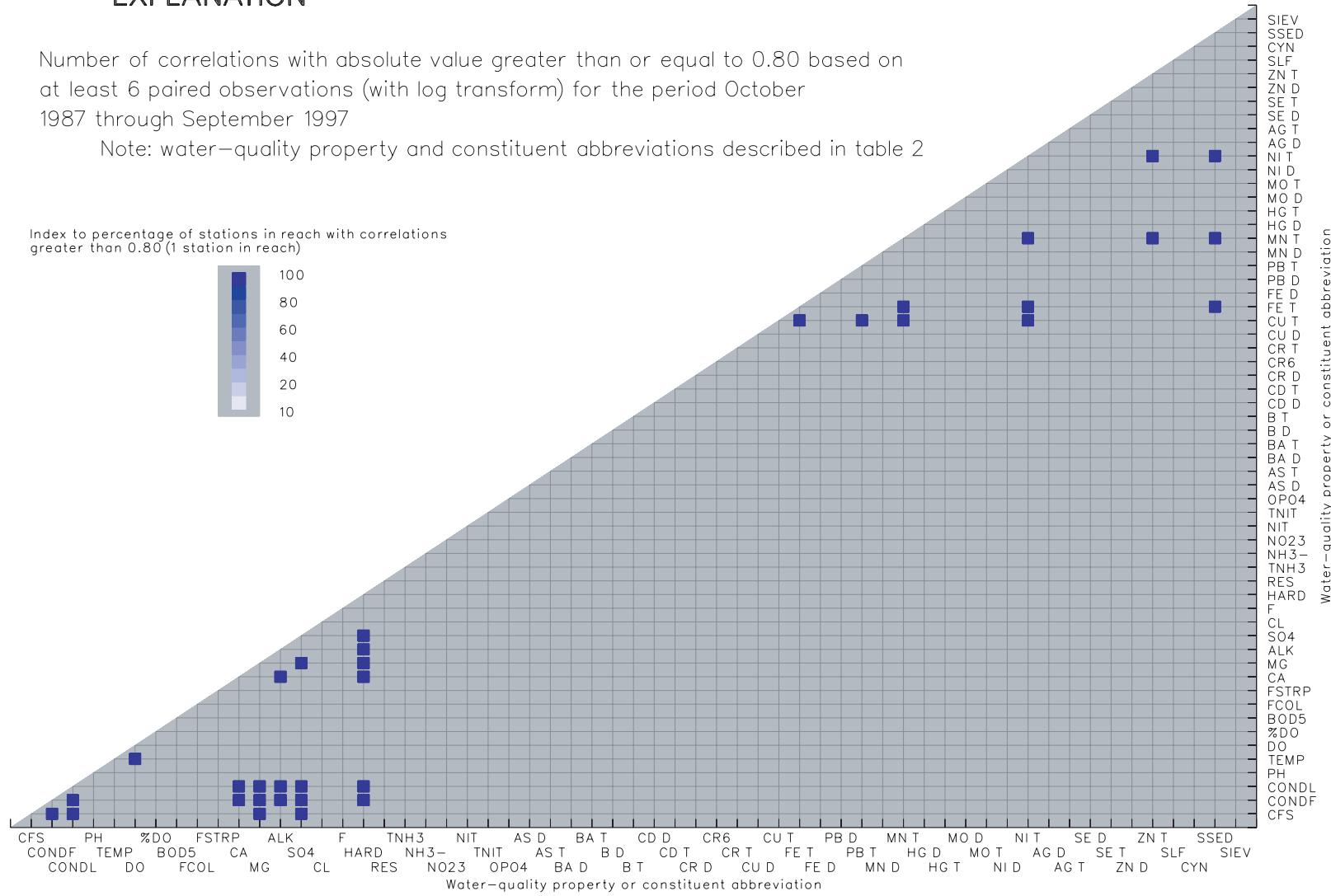


Figure 6. Correlation among water-quality properties and constituents within reach 4.



Figure 7. Rank in study area (areal) and station (local) variation of water-quality properties and constituents from samples collected in Fountain and Monument Creeks for the period October 1987 through September 1992.

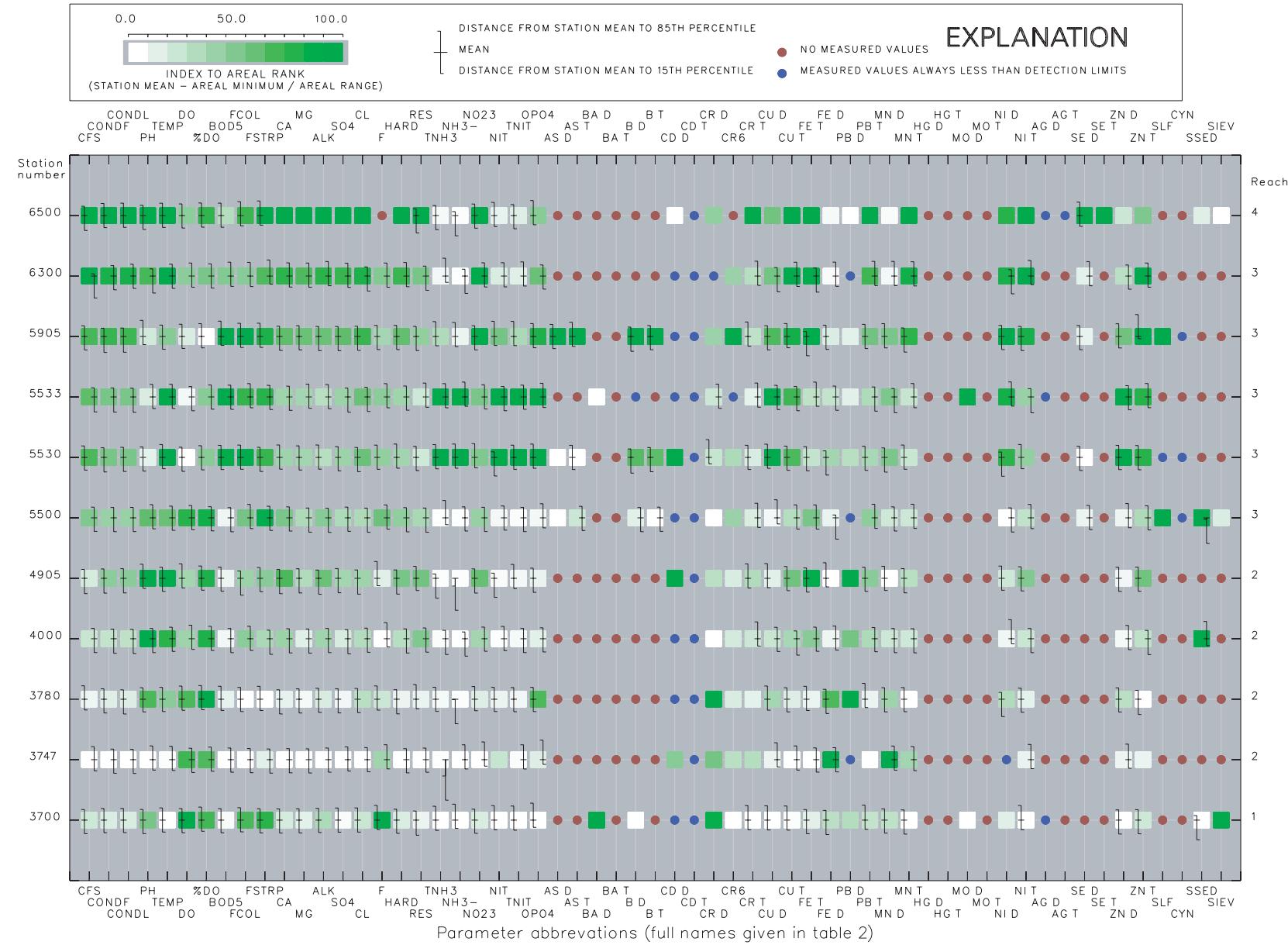


Figure 8. Rank in study area (areal) and station (local) variation of water-quality properties and constituents from samples collected in Fountain and Monument Creeks for the period October 1992 through September 1997.

The correlation summaries presented in figures 3–6 indicate that flow is correlated fairly well only with specific conductance and most of the available major ions such as calcium, magnesium, and sulfate; flow also correlates fairly well with some major-ion-related properties such as alkalinity and hardness. Increases in these properties and constituents are more complicated to explain than the relatively simple example of flow; however, they are certainly related to changes in geology, land use, and water use.

Another very prominent phenomenon present in the system is changes in water-quality properties and constituents downstream from station 5500 (figs. 7 and 8). In this area, some water-quality properties such as pH and dissolved oxygen noticeably decreased. Other water-quality properties and constituents such as 5-day biochemical oxygen demand; chloride; nutrients such as nitrogen ammonia, un-ionized ammonia, and orthophosphorus; and minor elements such as boron, copper, nickel, and zinc noticeably increased.

SUMMARY OF WATER-QUALITY CHARACTERISTICS COMPARED TO IN-STREAM REGULATORY STANDARDS

Regulatory criteria that can be used to assign in-stream regulatory standards to classified streams are established by the CDPHE (Colorado Department of Public Health and Environment, 1998). In-stream regulatory standards are referred to simply as “standards” in this section. Reaches 1, 2, 3, and 4 correspond to stream segments classified by CDPHE for standards (table 1). Standards normally apply throughout the reach; however, the reach 3 standard for dissolved manganese has a point of compliance, the Pinello Ranch Clear Well, located downstream from the beginning of the reach (fig. 1). Most standards can be compared to concentrations determined from individual samples to evaluate water-quality conditions in streams; however, the CDPHE recommends that, for fecal coliform, the geometric mean (listed in tables 5–12 and Appendix tables) be used rather than individual concentrations.

In this report, results were compared to the most stringent standard available, which in most cases was the chronic standard for aquatic life. Many standards for aquatic life are straightforward fixed values. Other standards, specifically for the following metals—cadmium, chromium, copper, lead, nickel,

silver, and zinc—are calculated values. Fixed and calculated standards are periodically reviewed and updated by the CDPHE. Calculated standards for the listed metals are a function of hardness values. The CDPHE guidelines for calculating standards provide some flexibility in determining what hardness value to use for the calculations; however, the guidelines do specify that a hardness value that is representative of low-flow conditions should be used in the calculation. The hardness values used to calculate the standards for this report were the 85th percentile, based on data from October 1992 through September 1997, except for station 6500, which had relatively few values, so the period was extended back to October 1987. Because hardness and flow have an inverse relation in the study area (figs. A1–11), the 85th percentile hardness values are representative of low-flow conditions. The fixed and calculated standards used in this report are listed in table 2 and also are included in tables of univariate statistics for each station included in the Appendix.

It should also be noted that there is a standard for nitrate. In this report, concentrations of nitrate plus nitrite have been compared to the nitrate standard. Concentrations for nitrite are typically a very small component of this sum, and the use of nitrate plus nitrite concentrations as a surrogate for nitrate is acceptable.

Water-quality properties and constituents for each evaluation period were compared to the standards listed in table 2. The results of the comparison are shown graphically in figures 9 and 10; measurements of water-quality properties and constituents that exceeded standards are also summarized in table 13.

For many water-quality properties or constituents that have standards, the samples collected showed no exceedances. Some water-quality properties and constituents—fecal coliform, total iron, and dissolved manganese—showed widespread exceedances with incidence rates that were usually relatively low. For example, figure 10 shows that, for the second evaluation period, results from samples analyzed for fecal coliform exceeded standards at almost every station in the system. Table 13 indicates that the percentage of samples at a given station that exceeded the fecal coliform standard, except for station 6300 where no exceedances were noted, was as little as about 2 percent to as much as about 40 percent, and that 64 percent of the stations had incidence rates of less than 15 percent.



Figure 9. Summary of in-stream regulatory standard exceedance for samples from Fountain and Monument Creeks for the period October 1987 through September 1992.



Figure 10. Summary of in-stream regulatory standard exceedance for samples from Fountain and Monument Creeks for the period October 1992 through September 1997.

Table 13. Cases of in-stream regulatory standard exceedances

[Constituent and property abbreviations shown in table 2; Standard, in-stream standard as listed in table 2, all standards units indicated in table 2; NS, number of samples; NE, number of exceedances; Percent, percentage of samples that exceeded standard]

| Station | Constituent | Standard | October 1987 - September 1992 | | | October 1992 - September 1997 | | |
|---------|--------------------|----------|-------------------------------|----|---------|-------------------------------|----|---------|
| | | | NS | NE | Percent | ----- | | Percent |
| | | | | | | NS | ND | |
| 3700 | WATER TEMPERATURE | 20.0 | 123 | 1 | 0.81 | 122 | 0 | 0.00 |
| 4000 | OXYGEN DISSOLVED | 6.00 | 65 | 2 | 3.08 | 56 | 0 | 0.00 |
| 4905 | OXYGEN DISSOLVED | 6.00 | 59 | 1 | 1.70 | 57 | 1 | 1.75 |
| 5530 | OXYGEN DISSOLVED | 5.00 | 65 | 1 | 1.54 | 58 | 0 | 0.00 |
| 5905 | OXYGEN DISSOLVED | 5.00 | 59 | 2 | 3.40 | 59 | 0 | 0.00 |
| 3700 | COLIFORM FECAL | 200 | 61 | 34 | 55.74 | 54 | 21 | 38.90 |
| 3747 | COLIFORM FECAL | 200 | 62 | 3 | 4.83 | 55 | 1 | 1.82 |
| 3780 | COLIFORM FECAL | 200 | 63 | 3 | 4.76 | 56 | 1 | 1.79 |
| 4000 | COLIFORM FECAL | 200 | 62 | 17 | 27.42 | 56 | 16 | 28.57 |
| 4905 | COLIFORM FECAL | 200 | 57 | 35 | 61.41 | 55 | 20 | 36.36 |
| 5500 | COLIFORM FECAL | 2000 | 57 | 15 | 26.31 | 53 | 0 | 0.00 |
| 5530 | COLIFORM FECAL | 2000 | 58 | 11 | 18.97 | 56 | 4 | 7.14 |
| 5533 | COLIFORM FECAL | 2000 | 34 | 3 | 8.82 | 55 | 1 | 1.82 |
| 5905 | COLIFORM FECAL | 2000 | 59 | 4 | 6.78 | 53 | 2 | 3.77 |
| 6500 | COLIFORM FECAL | 2000 | 78 | 4 | 5.13 | 56 | 2 | 3.57 |
| 5905 | SULFATE DISSOLVED | 330 | 36 | 4 | 11.11 | 59 | 2 | 3.39 |
| 6300 | SULFATE DISSOLVED | 330 | 12 | 3 | 25.00 | 20 | 3 | 15.00 |
| 6500 | SULFATE DISSOLVED | 490 | 23 | 2 | 8.70 | 3 | 0 | 0.00 |
| 5500 | CHLORIDE DISSOLVED | 250 | 62 | 1 | 1.61 | 59 | 0 | 0.00 |
| 3700 | FLUORIDE DISSOLVED | 2.00 | 25 | 23 | 92.00 | 58 | 56 | 96.55 |
| 3747 | FLUORIDE DISSOLVED | 2.00 | 25 | 0 | 0.00 | 59 | 1 | 1.70 |
| 4000 | FLUORIDE DISSOLVED | 2.00 | 25 | 1 | 4.00 | 59 | 0 | 0.00 |
| 5500 | FLUORIDE DISSOLVED | 2.00 | 30 | 12 | 40.00 | 59 | 24 | 40.68 |
| 5530 | FLUORIDE DISSOLVED | 2.00 | 29 | 6 | 20.69 | 59 | 10 | 16.95 |
| 5533 | FLUORIDE DISSOLVED | 2.00 | 25 | 4 | 16.00 | 58 | 13 | 22.41 |
| 5905 | FLUORIDE DISSOLVED | 2.00 | 25 | 1 | 4.00 | 59 | 5 | 8.48 |
| 6300 | FLUORIDE DISSOLVED | 2.00 | 12 | 4 | 33.33 | 20 | 3 | 15.00 |
| 6500 | FLUORIDE DISSOLVED | 2.00 | 9 | 1 | 11.11 | 0 | 0 | 0.00 |
| 5530 | UN-IONIZED AMMONIA | 0.10 | 4 | 1 | 75.00 | 55 | 23 | 41.82 |
| 5533 | UN-IONIZED AMMONIA | 0.10 | 0 | 0 | 0.00 | 54 | 25 | 46.30 |
| 5530 | NITROGEN, NITRITE | 1.00 | 1 | 0 | 0.00 | 56 | 1 | 1.79 |
| 5533 | NITROGEN, NITRITE | 1.00 | 0 | 0 | 0.00 | 55 | 1 | 1.82 |
| 3700 | IRON DISSOLVED | 300 | 62 | 1 | 1.61 | 59 | 0 | 0.00 |
| 3747 | IRON DISSOLVED | 300 | 60 | 0 | 0.00 | 58 | 2 | 3.45 |
| 4000 | IRON DISSOLVED | 300 | 60 | 2 | 3.33 | 58 | 0 | 0.00 |
| 5500 | IRON DISSOLVED | 300 | 65 | 3 | 4.62 | 59 | 0 | 0.00 |
| 5530 | IRON DISSOLVED | 300 | 41 | 0 | 0.00 | 59 | 1 | 1.70 |

Table 13. Cases of in-stream regulatory standard exceedances--continued

[Constituent and property abbreviations shown in table 2; Standard, in-stream standard as listed in table 2, all standards units indicated in table 2; NS, number of samples; NE, number of exceedances; Percent, percentage of samples that exceeded standard]

| Station | Constituent | Standard | October 1987 - September 1992 | | | October 1992 - September 1997 | | |
|---------|---------------------|----------|-------------------------------|----|---------|-------------------------------|----|---------|
| | | | NS | NE | Percent | NS | ND | Percent |
| 3700 | IRON TOTAL | 1000 | 62 | 18 | 29.03 | 59 | 14 | 23.73 |
| 3747 | IRON TOTAL | 1000 | 60 | 7 | 11.67 | 58 | 3 | 5.17 |
| 3780 | IRON TOTAL | 1000 | 60 | 13 | 21.67 | 59 | 12 | 20.34 |
| 4000 | IRON TOTAL | 1000 | 60 | 57 | 95.00 | 59 | 56 | 94.92 |
| 4905 | IRON TOTAL | 1000 | 61 | 57 | 93.44 | 59 | 51 | 86.44 |
| 5500 | IRON TOTAL | 8000 | 61 | 9 | 14.75 | 59 | 2 | 3.39 |
| 5530 | IRON TOTAL | 8000 | 57 | 5 | 8.77 | 59 | 1 | 1.70 |
| 5533 | IRON TOTAL | 8000 | 36 | 1 | 2.78 | 59 | 0 | 0.00 |
| 5905 | IRON TOTAL | 8000 | 57 | 9 | 15.79 | 59 | 7 | 11.86 |
| 6300 | IRON TOTAL | 8000 | 8 | 2 | 25.00 | 20 | 2 | 10.00 |
| 6500 | IRON TOTAL | 5100 | 20 | 13 | 65.00 | 3 | 1 | 33.33 |
| 3780 | LEAD DISSOLVED | 3.67 | 36 | 0 | 0.00 | 59 | 1 | 1.70 |
| 5533 | LEAD DISSOLVED | 11.9 | 36 | 1 | 2.78 | 59 | 0 | 0.00 |
| 3700 | MANGANESE DISSOLVED | 50.0 | 62 | 8 | 12.90 | 59 | 1 | 1.70 |
| 3747 | MANGANESE DISSOLVED | 71.0 | 60 | 11 | 18.33 | 59 | 29 | 49.15 |
| 3780 | MANGANESE DISSOLVED | 71.0 | 60 | 29 | 48.33 | 59 | 3 | 5.09 |
| 4000 | MANGANESE DISSOLVED | 71.0 | 60 | 1 | 1.67 | 59 | 0 | 0.00 |
| 5500 | MANGANESE DISSOLVED | 50.0 | 65 | 13 | 20.00 | 59 | 2 | 3.39 |
| 5530 | MANGANESE DISSOLVED | 50.0 | 40 | 31 | 77.50 | 59 | 39 | 66.10 |
| 5533 | MANGANESE DISSOLVED | 50.0 | 36 | 27 | 75.00 | 59 | 40 | 67.80 |
| 5905 | MANGANESE DISSOLVED | 50.0 | 36 | 22 | 61.11 | 59 | 33 | 55.93 |
| 6300 | MANGANESE DISSOLVED | 50.0 | 12 | 1 | 8.33 | 20 | 0 | 0.00 |
| 5500 | MERCURY DISSOLVED | 0.10 | 4 | 1 | 25.00 | 0 | 0 | 0.00 |
| 5530 | MERCURY DISSOLVED | 0.10 | 4 | 2 | 50.00 | 0 | 0 | 0.00 |
| 6300 | MERCURY DISSOLVED | 0.10 | 4 | 1 | 25.00 | 0 | 0 | 0.00 |
| 6500 | MERCURY DISSOLVED | 0.10 | 1 | 1 | 100.00 | 0 | 0 | 0.00 |
| 3700 | SILVER DISSOLVED | 0.13 | 2 | 1 | 50.00 | 1 | 0 | 0.00 |
| 5500 | SELENIUM DISSOLVED | 5.00 | 4 | 1 | 25.00 | 28 | 10 | 35.71 |
| 5530 | SELENIUM DISSOLVED | 5.00 | 25 | 10 | 40.00 | 28 | 2 | 7.14 |
| 5905 | SELENIUM DISSOLVED | 5.00 | 21 | 9 | 42.86 | 29 | 4 | 13.80 |
| 6500 | SELENIUM DISSOLVED | 20.00 | 19 | 7 | 36.84 | 31 | 6 | 19.36 |
| 5500 | SULFIDE TOTAL | 0.002 | 6 | 0 | 0.00 | 10 | 1 | 10.00 |
| 5530 | SULFIDE TOTAL | 0.002 | 5 | 1 | 20.00 | 10 | 0 | 0.00 |
| 5905 | SULFIDE TOTAL | 0.002 | 4 | 0 | 0.00 | 10 | 1 | 10.00 |
| 5530 | CYANIDE TOTAL | 0.005 | 6 | 1 | 16.67 | 10 | 0 | 0.00 |
| 5905 | CYANIDE TOTAL | 0.005 | 6 | 1 | 16.67 | 10 | 0 | 0.00 |

Figures 9 and 10 indicate that some water-quality properties and constituents have localized exceedances. This is apparent for sulfate, in the lower part of reach 3 and in reach 4, and dissolved selenium in reach 4. In addition, figure 10 indicates that un-ionized ammonia, nitrite, and dissolved manganese have localized exceedances in reach 3 downstream from station 5500 and that these exceedances attenuate downstream. Figures 9 and 10 indicate a tendency for fluoride to exceed standards in reach 2 that remains through the rest of the system, although it does attenuate.

The percentages for exceedances listed in table 13 also can be used to make general and qualitative observations concerning temporal trends. The side-by-side comparisons for many water-quality properties and constituents for the two evaluation periods shown in table 13 indicate that, for cases where pairs were available, the percentage of exceedance decreased 51 out of 66 times, or about 77 percent, from the first evaluation period to the second.

SUMMARY OF MONOTONIC TRENDS IN WATER QUALITY

The presence or absence of monotonic trends was tested to provide some quantitative evaluation of temporal change within the system. The tests were made for the period of October 1987 through September 1997.

Methods Used to Evaluate Monotonic Trends

A nonparametric test was selected to evaluate monotonic trends. Nonparametric tests do not involve assumptions about normality required for parametric tests and also are robust to outliers and do not present computational problems when dealing with censored values.

The test selected for use in this report is known as Sen's test (Gibbons, 1994). The test evaluates trends by computing a slope between all possible pairs of data for a given constituent, ranking the resultant series of slopes, and then assigning the median value of the ranked series as the representative slope for the entire series of measurements.

To assign confidence, a nonparametric variance is calculated and used to define confidence intervals. If the hypothesis is that there is no slope, and the sign of computed slopes changes or remains zero within the defined interval, then the hypothesis that there is no slope is accepted. If the sign of the computed slopes remains the same, then the hypothesis that there is no slope is rejected and one-sided methods are used to test for direction at the desired confidence. The reader is referred to Gibbons (1994) for additional details concerning the mechanics of Sen's test.

All tests in this report were made at the 95-percent confidence interval. A seasonal adjustment was made as described in the "Seasons" section. A positive slope was interpreted as an upward monotonic trend, and a negative monotonic slope was interpreted as a downward trend. Only the direction of trend is considered in this report.

Seasons

Many of the water-quality properties and constituents addressed by this report typically demonstrate seasonal variations. To address potential seasonality in the study area, multiyear records of daily values for flow, water temperature, specific conductance, and dissolved oxygen for several stations in the system were evaluated. In this evaluation, the mean of all values, for a given day in the series of 1-year periods, was plotted. The results for station 5530 are shown in figure 11; these results have been used to define three sets of conditions for the seasons used in this report (table 14). Perhaps most prominent is increased flow during the period from about April 15 through June. This period is sometimes generally called spring runoff and is associated with snowmelt processes in the headwater portions of the system. The influx of water derived from snowmelt, which is relatively low in dissolved solids, also lowers specific conductance.

Following spring runoff, flow recedes to a base of steady flows punctuated by short periods of precipitation-derived runoff. During this second period, from the beginning of July through about the middle of September, stream temperatures are relatively high, dissolved oxygen levels are relatively low, and specific conductance is higher than in the first period.

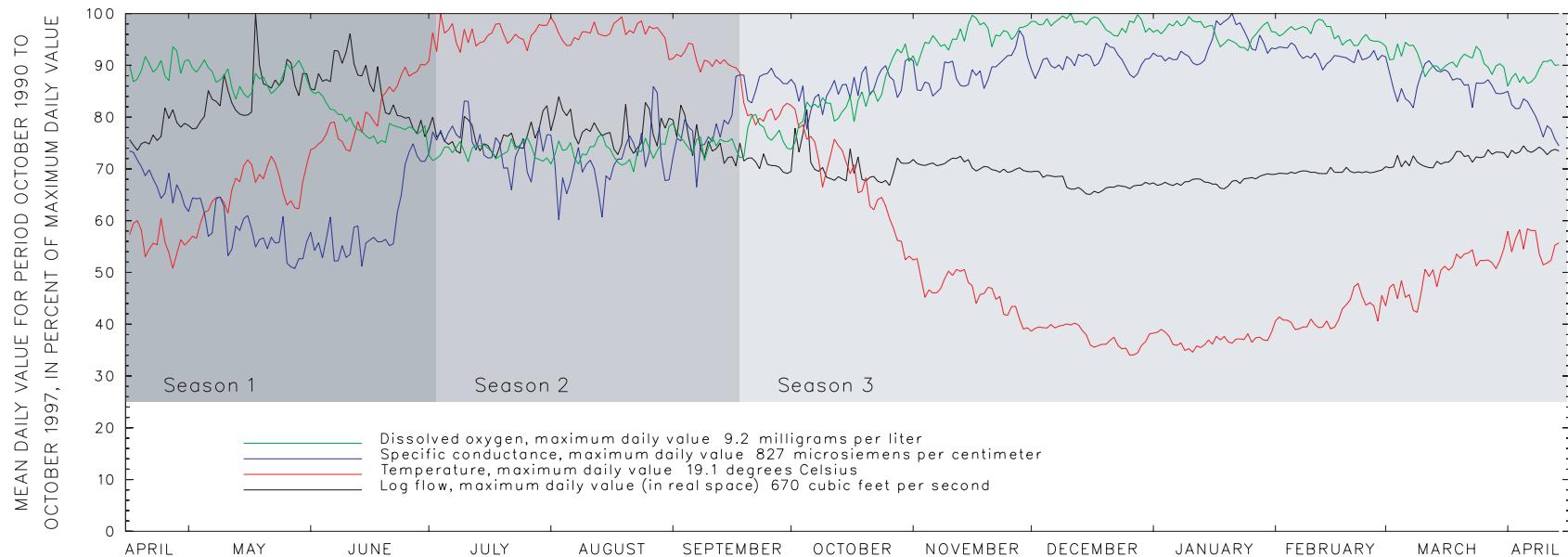


Figure 11. Seasonal variation of water-quality properties at station 5530.

Table 14. Characteristics of seasons defined and used for trend tests

| Season number | Periods included | Flow | Status of distinctive characteristics | | |
|---------------|-------------------------------|------|---------------------------------------|--------------------|------------------|
| | | | Specific conductance | Stream temperature | Dissolved oxygen |
| 1 | April 15 through June 30 | high | low | variable | variable |
| 2 | July 1 through September 15 | low | high | high | low |
| 3 | September 16 through April 14 | low | high | low | high |

For the remainder of the year, from September 15 through April 15, flow conditions were similar to those in the second period; however, stream temperatures decreased and dissolved oxygen levels were relatively high. These three seasons were evaluated independently. To adjust for these seasons, all values for each annual given season were aggregated and represented by their mean; Sen's test was applied to these means.

Discussion of Monotonic Trends

Figure 12 portrays the results from trend tests. The reader should note that, for water-quality properties or constituents that do not have samples for the same season for at least 3 years, the results will be shown as "too few," even though there may be several samples.

The figure indicates that many water-quality properties and constituents do not have monotonic trends that can be identified with 95-percent confidence. The figure also indicates that when trends are detected, they are usually negative, or downward, monotonic trends. The results of the trend tests permit additional general observations regarding cases where monotonic trends were detected with 95-percent confidence. Some of these observations are briefly discussed here.

When downward or upward trends for a given water-quality property or constituent are detected, they are generally local; that is, they do not occur through the entire system. For instance, many constituents, including most nutrients and many minor elements, showed downward trends downstream from station 5500. In addition, detectable monotonic trends

are not always the same for all three seasons. For instance, figure 12 indicates that, for stations 5500 through 6300, orthophosphorus tends to have a downward trend for periods other than spring runoff (season 1).

The station with the most upward trends was station 3747 where ammonia nitrogen and both dissolved and total manganese showed upward trends for two seasons, or most of the year. The station with the most downward trends was station 5530, downstream from station 5500, where many nutrients and minor elements showed downward trends.

Summary of Monotonic Trends for Regulated Water-Quality Properties and Constituents

Some of the most prominent trends for water-quality properties and constituents occurred downstream from station 5500 at station 5530 where nutrients, such as ammonia nitrogen, un-ionized ammonia, total nitrogen, and orthophosphorus, all showed downward monotonic trends, mostly at times other than spring runoff. It is likely that advanced wastewater-treatment procedures designed to control concentrations of nitrogen-related compounds implemented by Colorado Springs Utilities are related to some of these downward trends. Minor elements such as chromium, copper, lead, nickel, and zinc also had decreasing monotonic trends downstream from station 5500 at station 5530, again mostly at times other than spring runoff. During periods of low flow in the winter (season 3), fluoride showed a tendency to increase at station 5530.

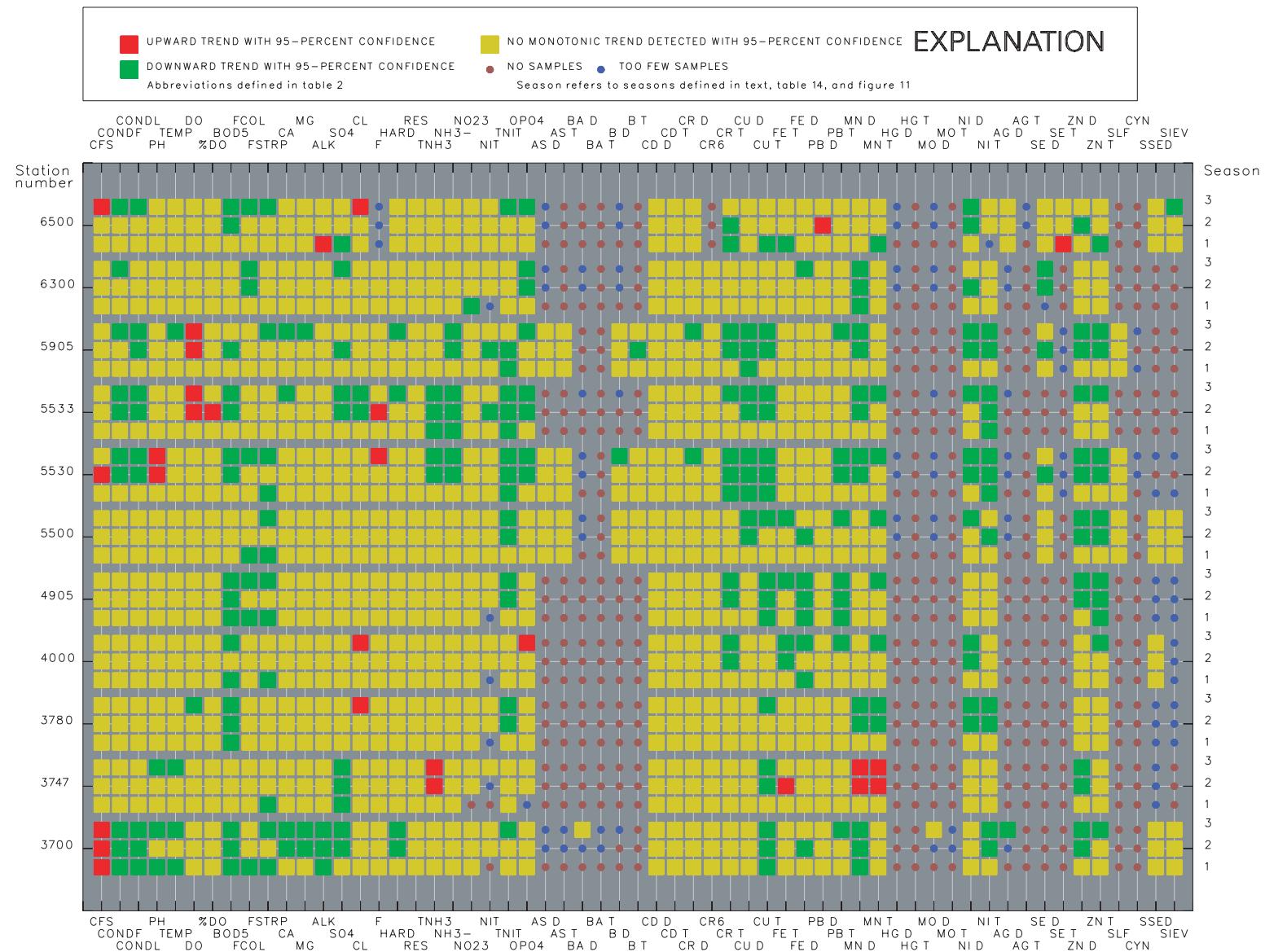


Figure 12. Summary of nonparametric monotonic trends for samples from Fountain and Monument Creeks for the period October 1987 through September 1997.

SUMMARY

Samples analyzed for water-quality properties and constituents have been collected at 11 stations on Fountain and Monument Creeks for many years. From October 1987 through September 1997, most samples were collected at about a monthly interval between the hours of about 7 a.m. and 4 p.m. All intervals of flow defined in a simple flow-duration analysis were evenly represented in the long term. For shorter time periods, most intervals are represented; however, there was a tendency for some intervals of flow to be sampled more than others.

Statistical summaries of these data indicate that some water-quality properties and constituents such as flow, specific conductance, most major ions, alkalinity and hardness, generally showed steady increases through the system. Some properties and constituents showed local changes in their values, some increasing and some decreasing. The pH and dissolved oxygen content of water decreased downstream from station 5500. Nitrogen ammonia, un-ionized ammonia, orthophosphorus, and 5-day biochemical oxygen demand, as well as some minor elements, all increased downstream from station 5500.

In-stream regulatory standards were exceeded for some water-quality properties and constituents. Exceedances for sulfate, un-ionized ammonia, and selenium occurred locally, mostly in the lower parts of the system. Fecal coliform and total iron exceedances were widespread throughout the system. Simple comparison of incidence rates from one period to another indicates that many rates of incidence have decreased.

A nonparametric test to detect monotonic trends that was applied to identified seasons indicates that there were many water-quality properties and constituents for which monotonic trends could not be identified with 95-percent confidence. For cases when trends were identified, most were negative or downward. In addition, detected trends sometimes were local and did not always occur in all of the seasons. In addition, many regulated constituents showed a tendency to have downward trends.

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- U.S. Environmental Protection Agency, 1987, Quality criteria for water 1986 [update 2]: U.S. Environmental Protection Agency, Office of Water Regulations and Standards, EPA Report 440/5-86-001, variously paginated.

APPENDIX

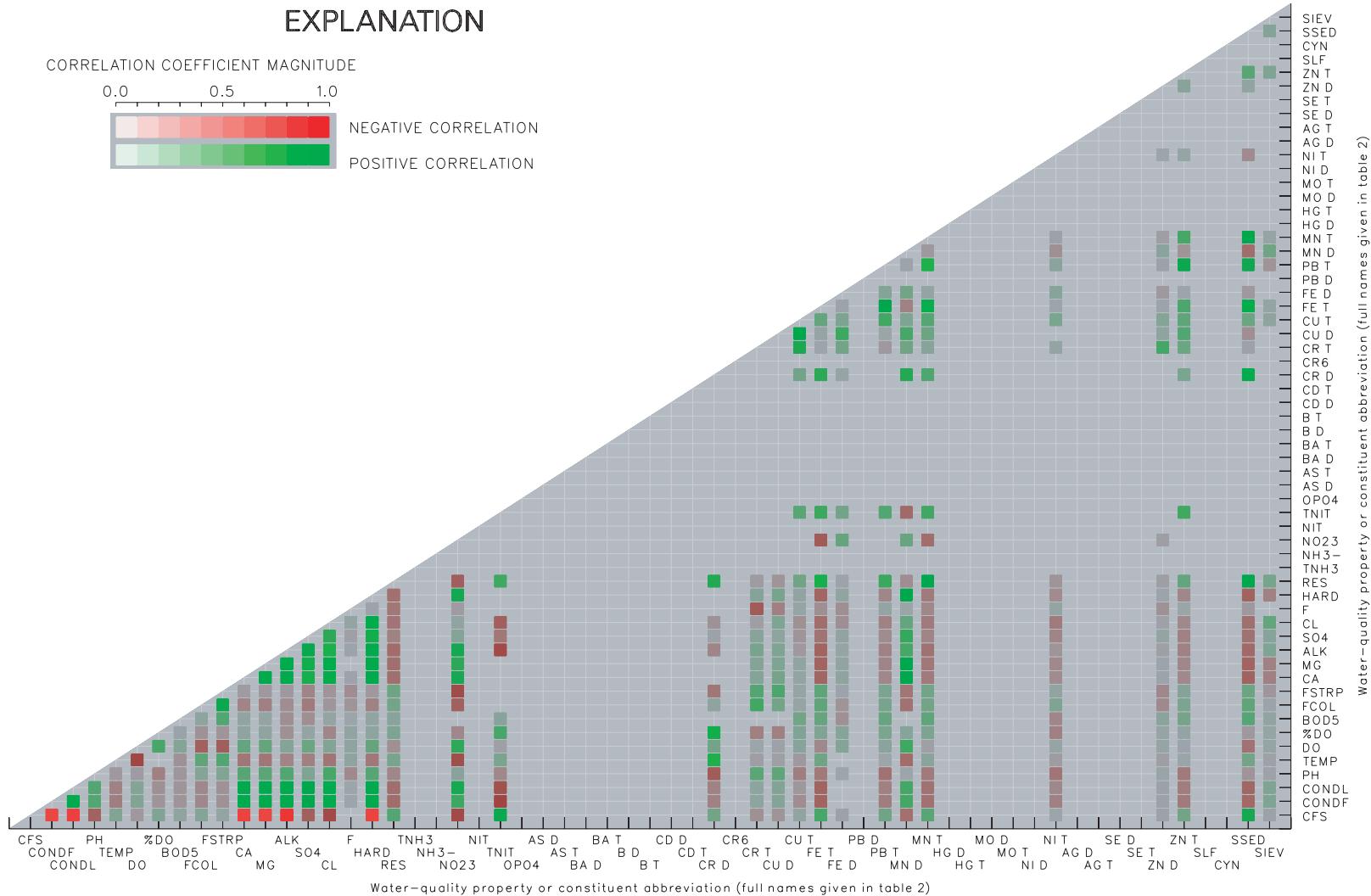


Figure A1. Correlation among log-transformed water-quality properties and constituents at station 3700, for the period October 1987 through September 1997.

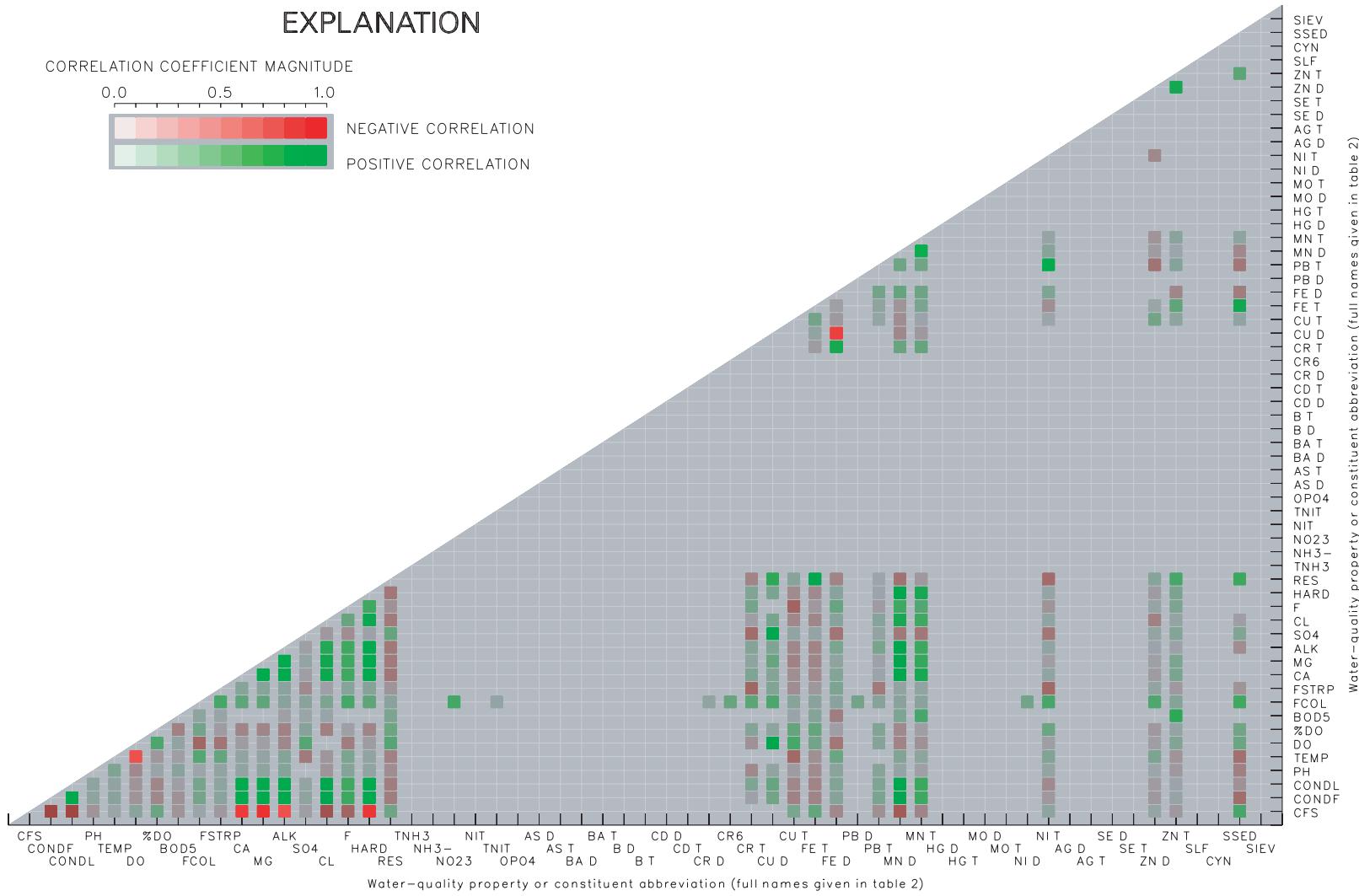


Figure A2. Correlation among log-transformed water-quality properties and constituents at station 3747, for the period October 1987 through September 1997.

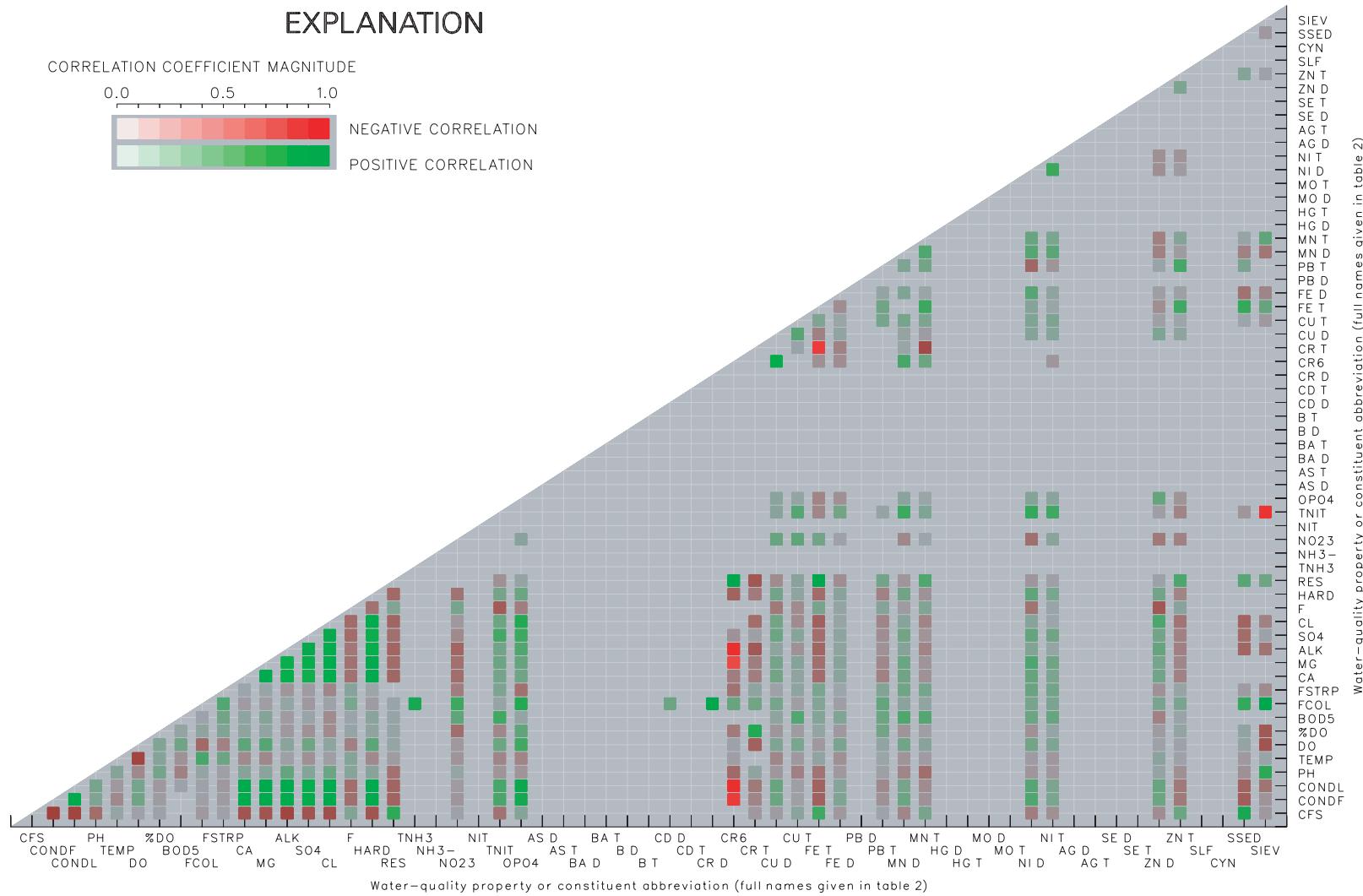


Figure A3. Correlation among log-transformed water-quality properties and constituents at station 3780, for the period October 1987 through September 1997.

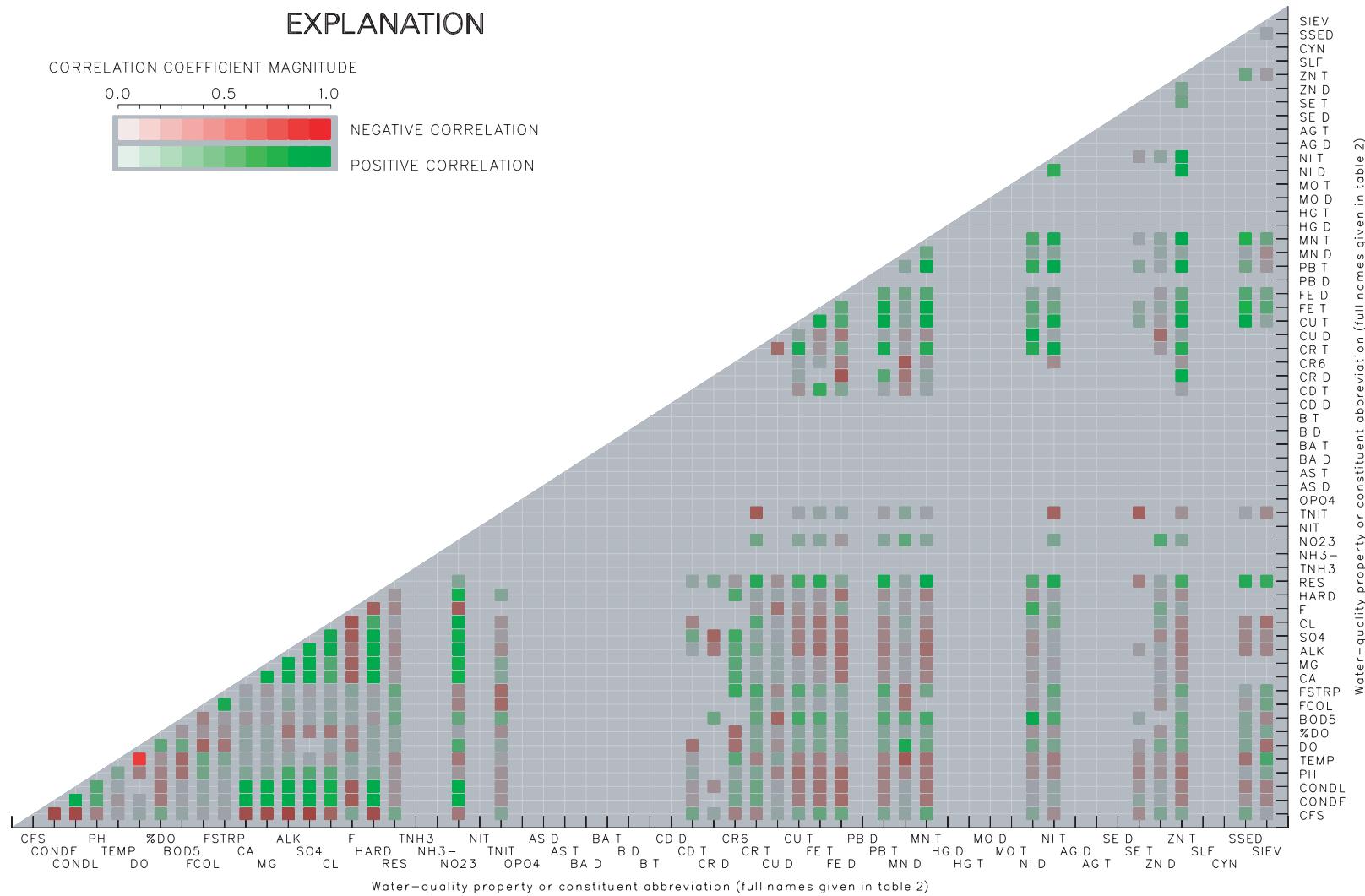


Figure A4. Correlation among log-transformed water-quality properties and constituents at station 4000, for the period October 1987 through September 1997.

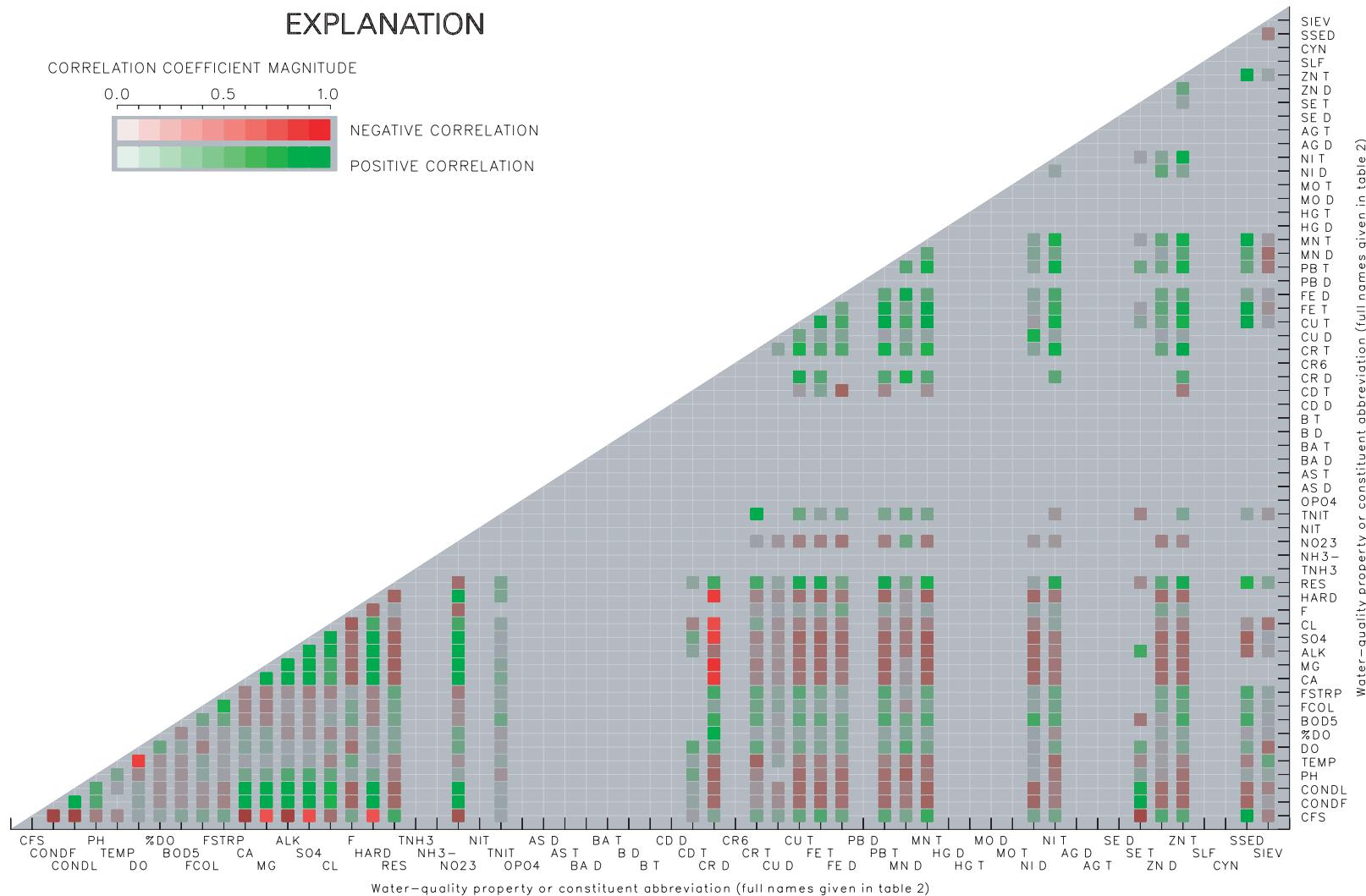


Figure A5. Correlation among log-transformed water-quality properties and constituents at station 4905, for the period October 1987 through September 1997.

EXPLANATION

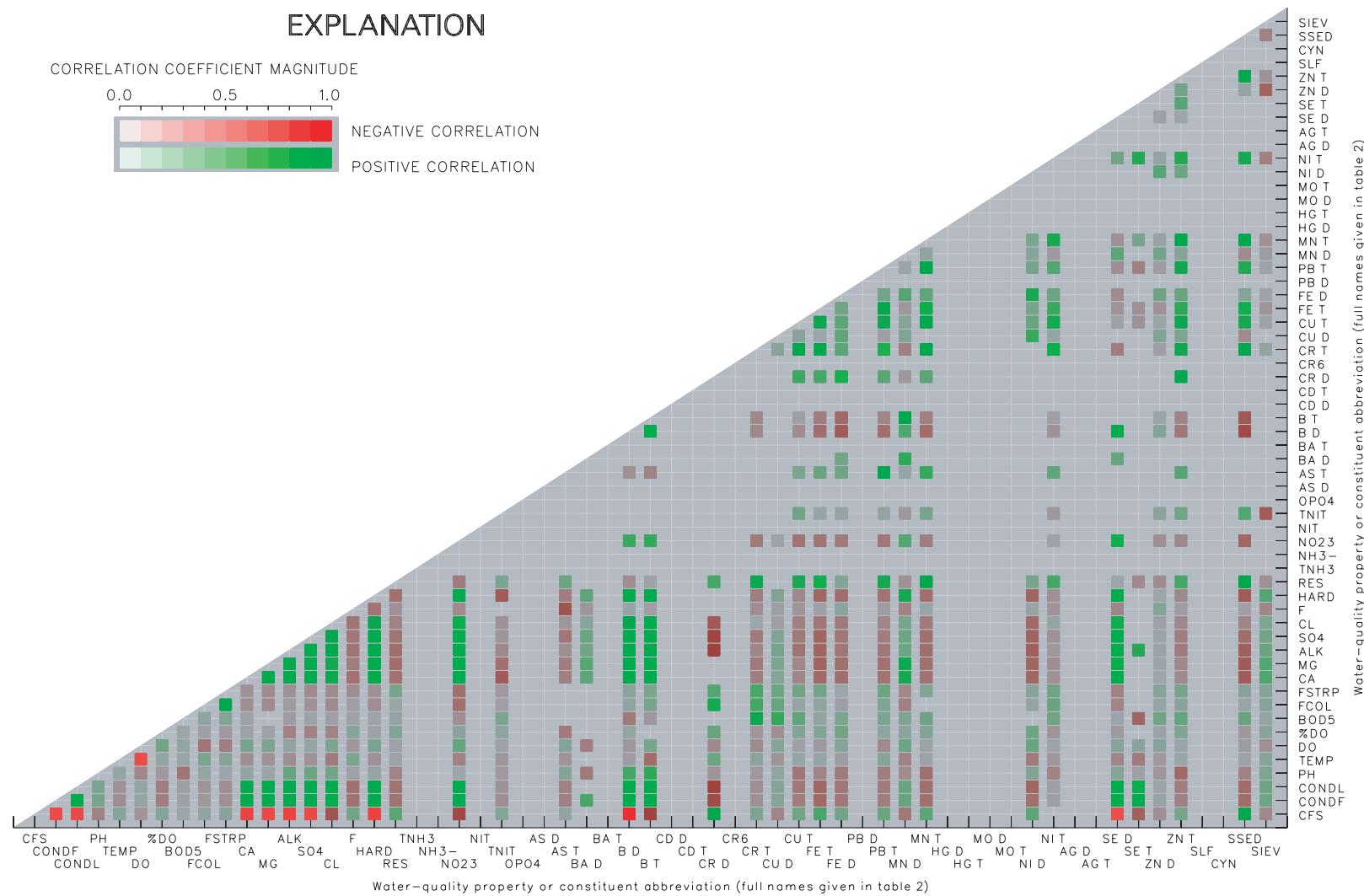


Figure A6. Correlation among log-transformed water-quality properties and constituents at station 5500, for the period October 1987 through September 1997.

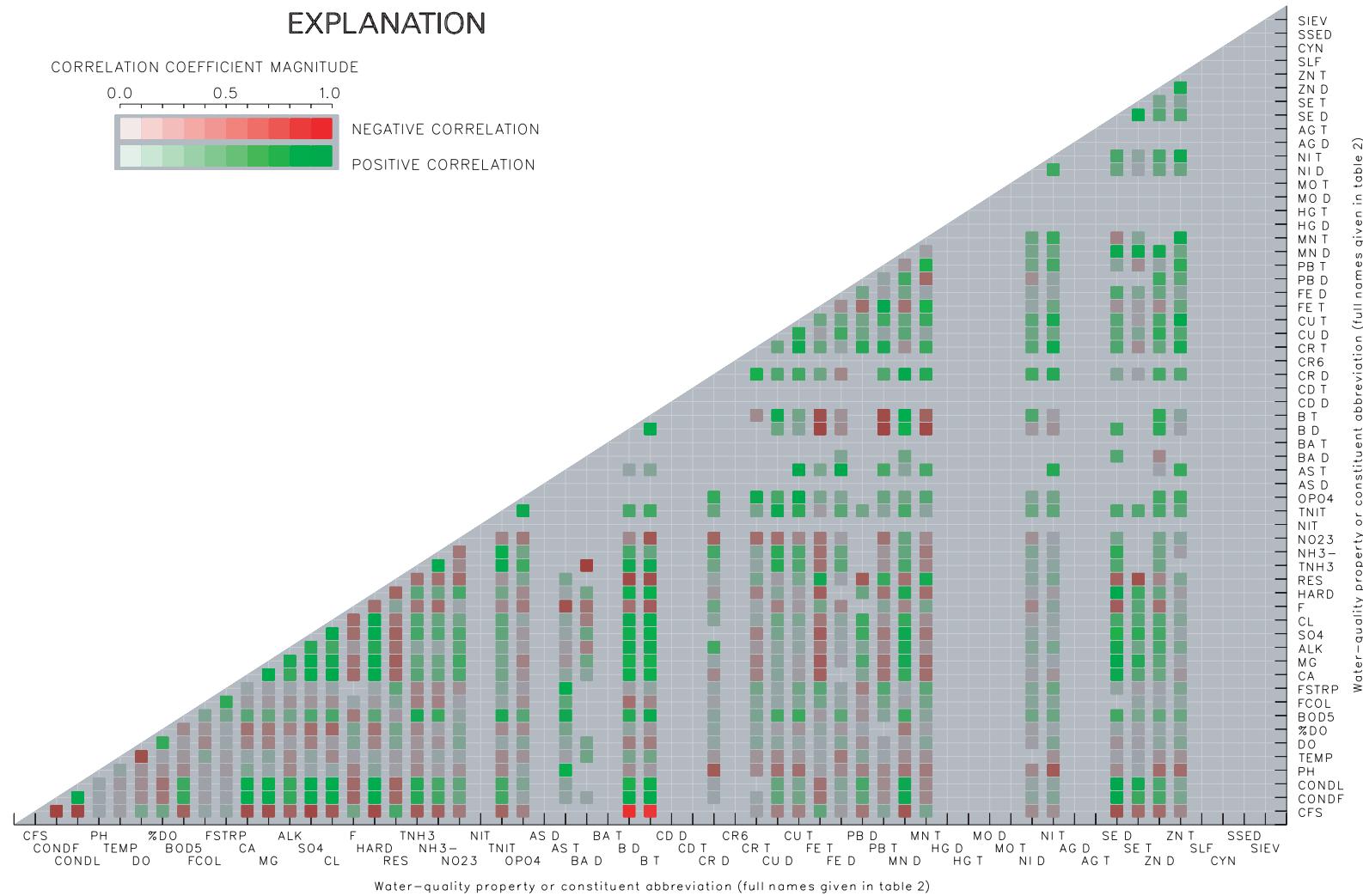


Figure A7. Correlation among log-transformed water-quality properties and constituents at station 5530, for the period October 1987 through September 1997.

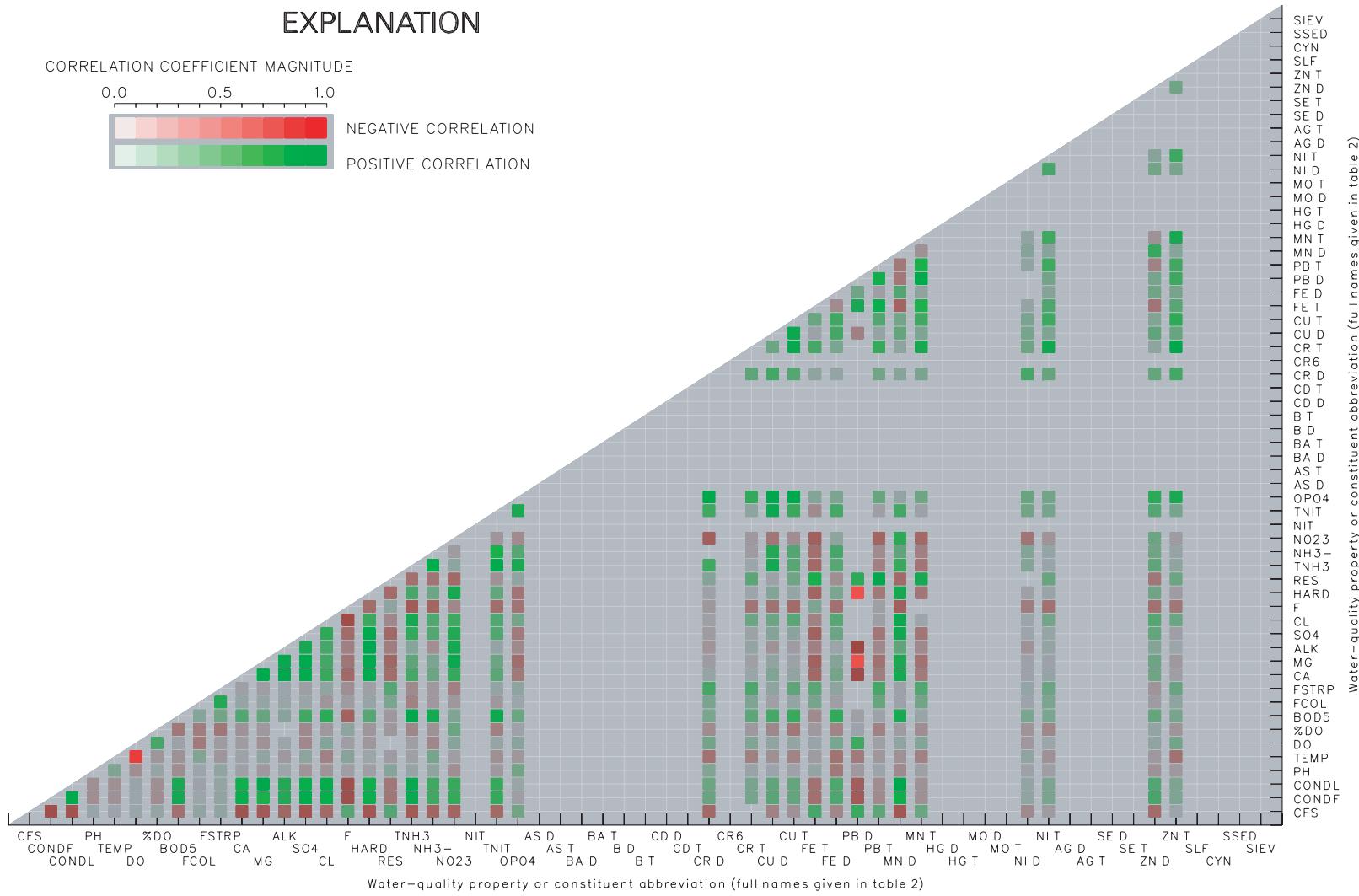


Figure A8. Correlation among log-transformed water-quality properties and constituents at station 5533, for the period October 1987 through September 1997.

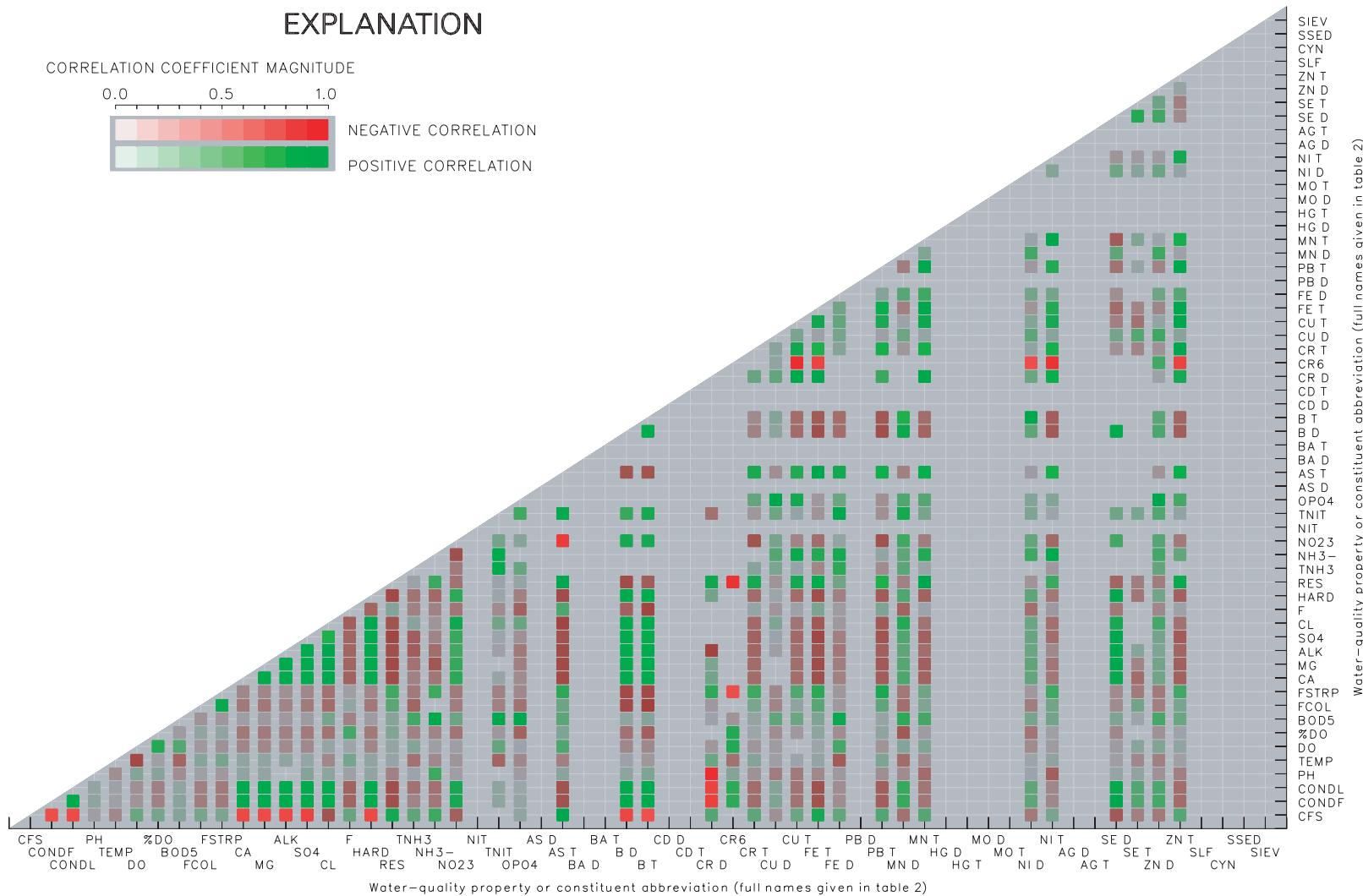


Figure A9. Correlation among log-transformed water-quality properties and constituents at station 5905, for the period October 1987 through September 1997.

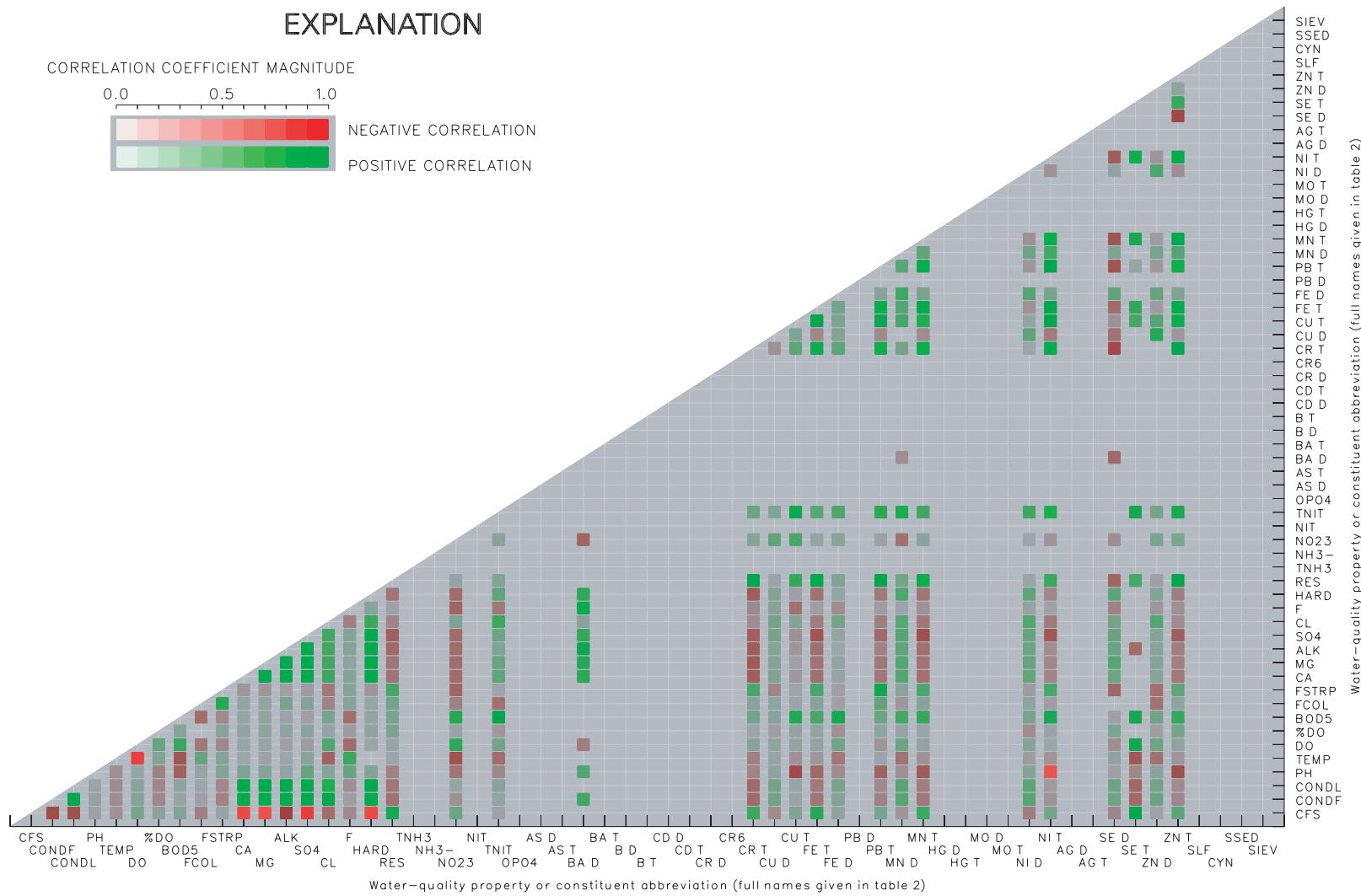


Figure A10. Correlation among log-transformed water-quality properties and constituents at station 6300, for the period October 1987 through September 1997.

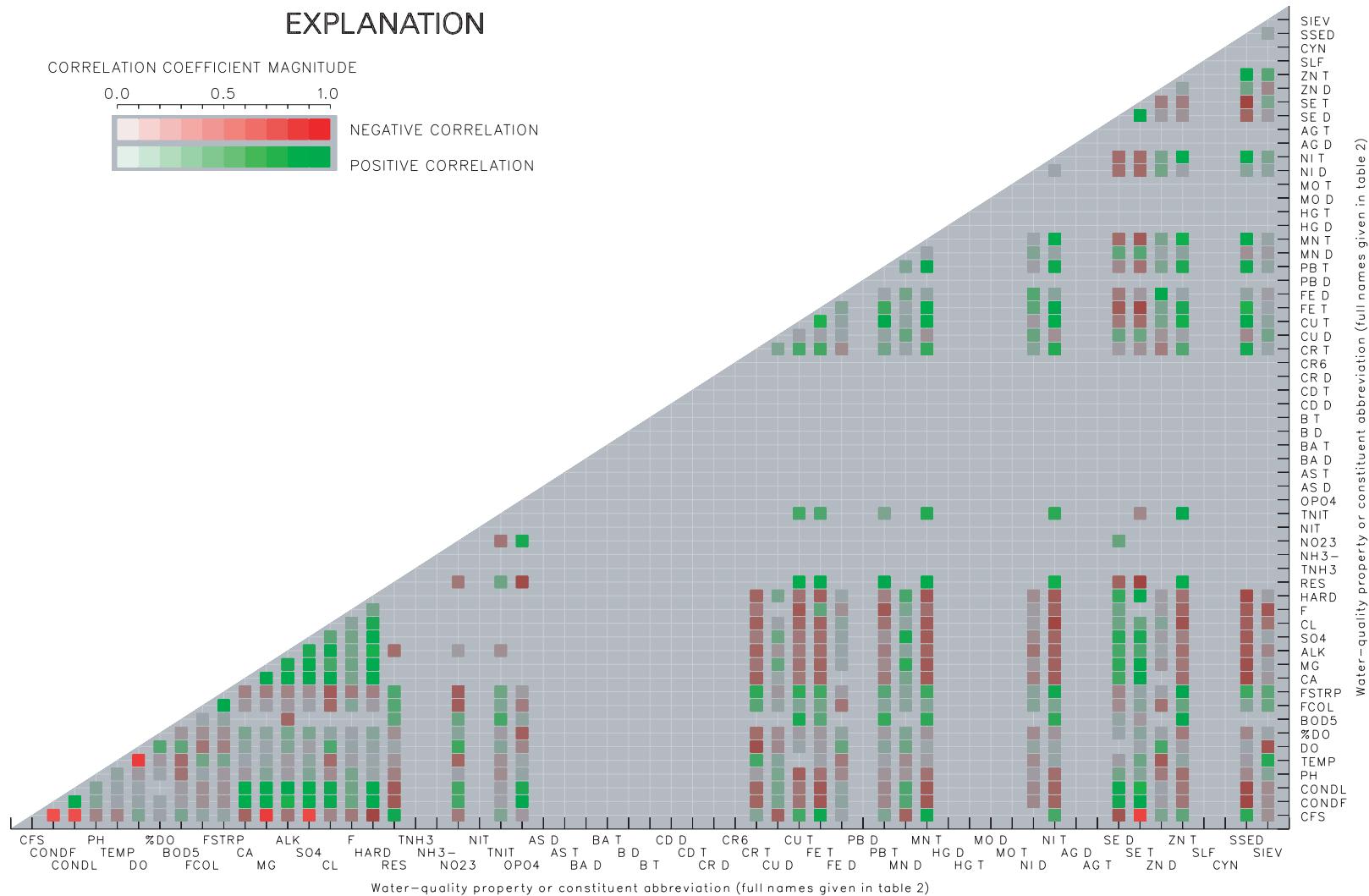


Figure A11. Correlation among log-transformed water-quality properties and constituents at station 6500, for the period October 1987 through September 1997.

Table A1. Univariate statistics for water-quality data collected for station 3700, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | % < MRL | | DETECTIONS | | | | | | | CENSOREDS | | |
|---------------------|-------------|-----------------|---------|---------|--------|------------|--------|-------|-------|------|------|-------|-----------|--------|----------|
| | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 144 | na | 13.5 | 9.45 | 10.7 | 13.6 | 6.08 | 19.0 | 2.60 | 87.0 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 121 | na | 335 | 329 | 322 | 94.7 | 232 | 443 | 176 | 649 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 66 | na | 347 | 335 | 335 | 91.8 | 242 | 435 | 172 | 604 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 67 | na | 8.27 | 8.30 | 8.27 | 0.17 | 8.10 | 8.40 | 7.90 | 9.00 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 123 | na | 8.43 | 8.50 | na | 5.48 | 1.80 | 15.0 | 0 | 22.0 | na | na | 20.0 |
| OXYGEN DISS. | DO | MG/L | 67 | na | 9.54 | 9.40 | 9.44 | 1.39 | 7.90 | 11.3 | 7.10 | 11.9 | na | na | 7.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 65 | na | 98.5 | 98.0 | 98.4 | 2.91 | 96.0 | 101 | 91.0 | 106 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 3.45 | 1.11 | 0.90 | 0.85 | 0.97 | 0.40 | 1.69 | 0.10 | 5.70 | 0.50 | 0.50 | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 61 | 4.92 | 1100 | 365 | 222 | 1990 | 16.0 | 2250 | 2.00 | 9300 | 45.7 | 30.0 | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 60 | na | 1310 | 390 | 398 | 2640 | 52.6 | 1860 | 7.00 | 15000 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 46 | na | 35.6 | 34.5 | 34.0 | 10.6 | 25.0 | 47.0 | 17.0 | 65.0 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 46 | na | 7.04 | 6.70 | 6.65 | 2.38 | 4.50 | 9.90 | 3.20 | 14.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 60 | na | 121 | 120 | 116 | 35.0 | 84.0 | 160 | 58.0 | 227 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 62 | na | 16.5 | 16.0 | 15.8 | 4.62 | 11.0 | 21.0 | 7.30 | 27.0 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 64 | na | 18.1 | 16.5 | 16.7 | 8.59 | 11.0 | 23.3 | 7.10 | 66.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 25 | na | 2.57 | 2.60 | 2.55 | 0.31 | 2.40 | 2.71 | 1.50 | 3.10 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 46 | na | 118 | 115 | 112 | 36.7 | 81.0 | 160 | 58.0 | 220 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 60 | 6.67 | 28.7 | 13.0 | 15.6 | 35.6 | 5.00 | 54.9 | 2.00 | 179 | 1.00 | 1.00 | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.02 | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.05 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 62 | 32.3 | 0.41 | 0.30 | 0.36 | 0.25 | 0.20 | 0.60 | 0.20 | 1.40 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 2 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 1 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 2 | na | 72.0 | 72.0 | 70.4 | 21.2 | na | na | 57.0 | 87.0 | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 2 | 50.0 | 100 | 100 | 100 | na | na | na | 100 | 100 | 100 | 100 | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 38 | 94.7 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 61 | 90.2 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 62 | 88.7 | 2.00 | 1.00 | 1.46 | 2.24 | 1.00 | 6.00 | 1.00 | 7.00 | 1.31 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 36 | 86.1 | 2.60 | 2.00 | 2.09 | 1.82 | na | na | 1.00 | 5.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 37 | 54.1 | 1.76 | 1.00 | 1.51 | 1.25 | 1.00 | 2.30 | 1.00 | 6.00 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 38 | 31.6 | 1.35 | 1.00 | 1.26 | 0.56 | 1.00 | 2.00 | 1.00 | 3.00 | 2.50 | 1.00 | 15.8 |
| COPPER TOTAL | CU T | UG/L AS CU | 62 | 6.45 | 3.45 | 3.00 | 2.97 | 1.94 | 2.00 | 6.00 | 1.00 | 11.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 62 | na | 1260 | 640 | 724 | 1890 | 290 | 2360 | 120 | 12000 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 62 | 3.23 | 58.9 | 37.5 | 39.0 | 102 | 19.2 | 81.7 | 5.00 | 790 | 10 | 10 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 38 | 86.8 | 1.60 | 1.00 | 1.32 | 1.34 | na | na | 1.00 | 4.00 | 1.55 | 1.00 | 6.27 |
| LEAD TOTAL | PB T | UG/L AS PB | 61 | 36.1 | 4.49 | 3.00 | 3.01 | 5.86 | 1.00 | 7.00 | 1.00 | 35.0 | 4.45 | 5.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 62 | na | 40.4 | 40.0 | 36.3 | 20.9 | 20.0 | 50.0 | 10 | 160 | na | na | 50.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 62 | na | 100 | 80.0 | 86.2 | 74.6 | 50.0 | 157 | 40.0 | 500 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 2 | 100 | na | na | na | na | na | na | na | 10 | 10 | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 2 | na | 4.50 | 4.50 | 4.24 | 2.12 | na | na | 3.00 | 6.00 | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 38 | 57.9 | 1.13 | 1.00 | 1.09 | 0.34 | 1.00 | 1.45 | 1.00 | 2.00 | 1.82 | 1.00 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 38 | 31.6 | 2.31 | 2.00 | 2.08 | 1.16 | 1.00 | 3.00 | 1.00 | 6.00 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 2 | 50.0 | 2.00 | 2.00 | 2.00 | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 0.13 | na |
| SILVER TOTAL | AG T | UG/L AS AG | 2 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | 5.00 | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 38 | 23.7 | 7.45 | 6.00 | 6.71 | 3.65 | 4.00 | 12.5 | 3.00 | 16.0 | 3.00 | 3.00 | 141 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 62 | 29.0 | 30.5 | 20.0 | 22.7 | 36.8 | 10 | 40.0 | 10 | 240 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 2 | 100 | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.005 | na |
| SUSP SED | SSED | MG/L | 80 | na | 665 | 42.7 | 63.0 | 2250 | 11.0 | 398 | 2.90 | 11600 | na | na | na |
| SUSP-SIEVE | SIEV | % | 32 | na | 74.0 | 78.0 | 72.3 | 15.2 | 53.0 | 89.1 | 41.0 | 98.3 | na | na | na |

Table A2. Univariate statistics for water-quality data collected for station 3747, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 82 | 1.22 | 3.36 | 1.40 | 1.44 | 5.93 | 0.40 | 6.00 | 0.20 | 40.0 | 1.40 | 1.40 | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 73 | na | 154 | 157 | 149 | 38.0 | 105 | 196 | 75.0 | 235 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 65 | na | 156 | 162 | 151 | 36.0 | 108 | 190 | 76.0 | 231 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 64 | na | 7.96 | 8.00 | 7.96 | 0.19 | 7.80 | 8.20 | 7.50 | 8.40 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 82 | na | 9.55 | 8.00 | na | 7.31 | 1.50 | 19.0 | 0 | 26.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 64 | na | 9.02 | 9.00 | 8.91 | 1.40 | 7.48 | 10.8 | 6.40 | 11.6 | na | na | 6.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 55 | na | 99.1 | 99.0 | 99.0 | 3.23 | 96.0 | 103 | 92.0 | 108 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 1.72 | 0.54 | 0.50 | 0.45 | 0.32 | 0.20 | 0.80 | 0.10 | 2.10 | 0.50 | 0.50 | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 62 | 14.5 | 29.8 | 8.00 | 7.98 | 57.4 | 1.00 | 59.9 | 1.00 | 240 | 1.67 | 1.00 | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 64 | na | 117 | 66.5 | 65.7 | 145 | 22.8 | 263 | 3.00 | 950 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 44 | na | 18.6 | 18.0 | 18.1 | 4.51 | 13.8 | 23.3 | 8.80 | 29.0 | na | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 44 | na | 3.28 | 3.45 | 3.13 | 0.91 | 2.10 | 4.13 | 1.20 | 5.10 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 60 | na | 59.2 | 61.0 | 56.6 | 16.6 | 37.0 | 74.9 | 26.0 | 93.0 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 10.5 | 10 | 10.0 | 3.10 | 7.20 | 13.0 | 4.00 | 20.0 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 62 | na | 3.12 | 3.15 | 2.72 | 1.49 | 1.49 | 4.26 | 0.20 | 8.30 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 25 | na | 1.65 | 1.70 | 1.64 | 0.20 | 1.50 | 1.80 | 1.00 | 2.00 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 44 | na | 60.0 | 58.5 | 58.0 | 14.9 | 43.3 | 74.8 | 27.0 | 93.0 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 60 | 23.3 | 16.4 | 10 | 9.82 | 18.3 | 3.00 | 28.8 | 1.00 | 99.0 | 1.00 | 1.00 | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.50 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 62 | 54.8 | 0.29 | 0.30 | 0.28 | 0.10 | 0.20 | 0.40 | 0.20 | 0.60 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 35 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | 3.09 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 88.1 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 88.1 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.17 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 36 | 88.9 | 1.25 | 1.00 | 1.19 | 0.50 | na | 1.00 | 2.00 | 1.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 35 | 68.6 | 1.27 | 1.00 | 1.21 | 0.47 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 36 | 47.2 | 1.63 | 1.00 | 1.26 | 1.89 | 1.00 | 3.00 | 1.00 | 9.00 | 1.00 | 1.00 | 9.88 |
| COPPER TOTAL | CU T | UG/L AS CU | 60 | 16.7 | 2.68 | 2.00 | 2.20 | 2.14 | 1.00 | 4.35 | 1.00 | 14.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 60 | na | 641 | 475 | 495 | 679 | 250 | 871 | 190 | 4800 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 60 | na | 96.1 | 80.0 | 72.7 | 66.7 | 31.0 | 180 | 8.00 | 270 | na | na | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 36 | 69.4 | 1.18 | 1.00 | 1.13 | 0.41 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 2.89 |
| LEAD TOTAL | PB T | UG/L AS PB | 60 | 48.3 | 1.84 | 2.00 | 1.63 | 1.04 | 1.00 | 2.20 | 1.00 | 5.00 | 3.62 | 5.00 | na |
| MANGANESE DISS. | MN D | UG/L AS MN | 60 | 1.67 | 49.6 | 43.0 | 38.8 | 35.6 | 16.0 | 80.0 | 7.00 | 180 | 10 | 10 | 71.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 60 | na | 71.2 | 60.0 | 61.6 | 40.3 | 40.0 | 117 | 20.0 | na | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 36 | 66.7 | 1.08 | 1.00 | 1.06 | 0.29 | 1.00 | 1.05 | 1.00 | 2.00 | 1.00 | 1.00 | 81.4 |
| NICKEL TOTAL | NI T | UG/L AS NI | 36 | 47.2 | 2.37 | 1.00 | 1.72 | 2.50 | 1.00 | 4.00 | 1.00 | 10 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.05 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 36 | 22.2 | 8.65 | 7.50 | 7.62 | 4.88 | 4.00 | 13.3 | 4.00 | 22.0 | 3.00 | 3.00 | 88.7 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 60 | 65.0 | 28.9 | 10 | 18.2 | 40.5 | 10 | 47.0 | 10 | 180 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 14 | na | 23.3 | 17.0 | 17.4 | 21.9 | 8.25 | 34.8 | 5.00 | 91.0 | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A3. Univariate statistics for water-quality data collected for station 3780, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | % < MRL | | DETECTIONS | | | | | | | CENSOREDS | | |
|---------------------|---------------------|-------|---------|---------|--------|------------|--------|-------|-------|------|------|------|-----------|----------|-------|
| | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard | |
| DISCHARGE | CFS | CFS | 115 | na | 10.5 | 5.00 | 5.52 | 13.6 | 1.64 | 22.4 | 0.39 | 74.0 | na | na | na |
| SPECIFIC COND. | COND US/CM @ 25C | | 111 | na | 272 | 275 | 257 | 86.3 | 162 | 368 | 121 | 474 | na | na | na |
| SPECIFIC COND. | COND MICROSIEMENS/C | | 65 | na | 282 | 285 | 267 | 87.9 | 167 | 376 | 123 | 501 | na | na | na |
| PH, WH, FIELD | PH STANDARD UNITS | | 64 | na | 8.13 | 8.10 | 8.13 | 0.29 | 7.88 | 8.40 | 7.40 | 8.90 | na | na | na |
| WATER TEMP. | TEMP DEGREES | | 114 | na | 11.0 | 10 | na | 8.29 | 1.00 | 21.3 | 0 | 29.0 | na | na | na |
| OXYGEN DISS. | DO MG/L | | 65 | na | 9.40 | 9.60 | 9.28 | 1.49 | 7.80 | 11.0 | 6.70 | 11.8 | na | na | 6.00 |
| OXYGEN DIS. % | %DO % OF SATURATION | | 62 | na | 104 | 102 | 104 | 8.07 | 97.0 | 114 | 87.0 | 128 | na | na | na |
| BOD 5-DAY | BOD5 MG/L | | 56 | 1.79 | 2.91 | 2.20 | 2.29 | 2.04 | 1.04 | 5.60 | 0.40 | 8.40 | 6.70 | 6.70 | na |
| COLIFORM FECAL | FECOL COLS./100 ML | | 63 | 15.9 | 85.2 | 32.0 | 23.5 | 225 | 3.10 | 129 | 1.00 | 1600 | 2.70 | 2.00 | 200 |
| FECAL STRPT | FSTRP COLS./100 ML | | 63 | na | 161 | 82.0 | 74.4 | 251 | 16.0 | 278 | 2.00 | 1600 | na | na | na |
| CALCIUM DISS. | CA MG/L AS CA | | 44 | na | 26.4 | 28.0 | 25.8 | 5.23 | 18.8 | 32.0 | 14.0 | 34.0 | na | na | na |
| MAGNESIUM DISS | MG MG/L AS MG | | 44 | na | 4.42 | 4.50 | 4.29 | 1.00 | 3.38 | 5.45 | 2.00 | 6.30 | na | na | na |
| ALKALINITY | ALK MG/L AS CACO3 | | 60 | na | 73.6 | 72.0 | 71.1 | 19.0 | 51.2 | 92.0 | 37.0 | 118 | na | na | na |
| SULFATE DISS. | SO4 MG/L AS SO4 | | 60 | na | 25.8 | 25.0 | 23.3 | 14.2 | 13.2 | 37.0 | 10 | 110 | na | na | 250 |
| CHLORIDE DISS. | CL MG/L AS CL | | 62 | na | 16.2 | 15.0 | 14.1 | 8.11 | 7.78 | 25.0 | 3.70 | 40.0 | na | na | 250 |
| FLUORIDE DISS. | F MG/L AS F | | 25 | na | 1.35 | 1.40 | 1.33 | 0.24 | 1.00 | 1.60 | 0.80 | 1.70 | na | na | 2.00 |
| HARDNESS TOTAL | HARD MG/L AS CAO3 | | 44 | na | 84.0 | 88.0 | 82.0 | 17.2 | 59.8 | 100 | 43.0 | 110 | na | na | na |
| RESIDUE TOTAL | RES MG/L | | 60 | 5.00 | 27.9 | 14.0 | 14.9 | 42.8 | 6.70 | 39.1 | 1.00 | 243 | 1.00 | 1.00 | na |
| NITROGEN AMM | TNH3 MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM NH3- | MG/L AS NH3 | | 0 | na | na | na | na | na | na | na | na | na | na | 0.10 | na |
| NO2 + NO3 DISS | NO23 MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.50 |
| NITROGEN AMM+ | TNIT MG/L AS N | | 62 | 1.61 | 1.75 | 1.00 | 1.12 | 1.95 | 0.43 | 3.49 | 0.30 | 9.30 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 MG/L AS P | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D UG/L AS AS | | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T UG/L AS AS | | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D UG/L AS BA | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T UG/L AS BA | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D UG/L AS B | | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T UG/L AS B | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D UG/L AS CD | | 36 | 88.9 | 1.75 | 2.00 | 1.68 | 0.50 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | 3.75 |
| CADMIUM TOTAL | CD T UG/L AS CD | | 59 | 94.9 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D UG/L AS CR | | 60 | 86.7 | 1.63 | 1.00 | 1.25 | 1.77 | 1.00 | 4.25 | 1.00 | 6.00 | 1.17 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 UG/L AS CR | | 36 | 80.6 | 3.00 | 3.00 | 2.48 | 1.83 | 1.00 | 5.60 | 1.00 | 6.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T UG/L AS CR | | 35 | 57.1 | 1.20 | 1.00 | 1.15 | 0.41 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D UG/L AS CU | | 36 | 13.9 | 1.71 | 2.00 | 1.53 | 0.90 | 1.00 | 2.20 | 1.00 | 5.00 | 1.00 | 1.00 | 11.4 |
| COPPER TOTAL | CU T UG/L AS CU | | 60 | 8.33 | 3.69 | 3.00 | 3.22 | 1.97 | 2.00 | 6.00 | 1.00 | 10 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T UG/L AS FE | | 60 | na | 1040 | 745 | 845 | 984 | 562 | 1100 | 310 | 5900 | na | na | 1000 |
| IRON DISS. | FE D UG/L AS FE | | 60 | 1.67 | 86.9 | 72.0 | 73.5 | 53.2 | 36.0 | 130 | 19.0 | 260 | 10 | 10 | 300 |
| LEAD DISS. | PB D UG/L AS PB | | 36 | 75.0 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 3.67 |
| LEAD TOTAL | PB T UG/L AS PB | | 60 | 40.0 | 2.61 | 2.00 | 1.89 | 3.80 | 1.00 | 3.00 | 1.00 | 24.0 | 4.17 | 5.00 | na |
| MANGANESE DISS | MN D UG/L AS MN | | 60 | na | 79.9 | 70.5 | 70.2 | 44.2 | 40.0 | 130 | 20.0 | 250 | na | na | 71.0 |
| MANGANESE TOT | MD T UG/L AS MN | | 60 | na | 128 | 110 | 117 | 54.9 | 80.0 | 199 | 60.0 | 290 | na | na | na |
| MERCURY DISS. | HG D UG/L AS HG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T UG/L AS HG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D UG/L AS MO | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T UG/L AS MO | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D UG/L AS NI | | 36 | 22.2 | 3.04 | 2.00 | 2.52 | 2.13 | 1.35 | 5.30 | 1.00 | 10 | 1.00 | 1.00 | 92.7 |
| NICKEL TOTAL | NI T UG/L AS NI | | 36 | 8.33 | 3.58 | 3.00 | 3.09 | 1.90 | 2.00 | 6.00 | 1.00 | 9.00 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D UG/L AS AG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.07 |
| SILVER TOTAL | AG T UG/L AS AG | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D UG/L AS SE | | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T UG/L AS SE | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D UG/L AS ZN | | 35 | 8.57 | 6.88 | 6.00 | 6.38 | 2.68 | 3.99 | 10 | 3.00 | 14.0 | 3.00 | 3.00 | 102 |
| ZINC TOTAL | ZN T UG/L AS ZN | | 60 | 48.3 | 18.7 | 10 | 15.5 | 13.4 | 10 | 32.0 | 10 | 60.0 | 10 | 10 | na |
| SULFIDE TOTAL | H2S MG/L AS S | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN MG/L AS CN | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED MG/L | | 16 | na | 50.5 | 43.0 | 35.2 | 50.3 | 15.3 | 82.7 | 4.00 | 213 | na | na | na |
| SUSP-SIEVE | SIEV % | | 5 | na | 69.4 | 75.0 | 66.6 | 20.5 | na | na | 39.2 | 88.8 | na | na | na |

Table A4. Univariate statistics for water-quality data collected for station 4000, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|-------|-----------------|---------|--------|---------|--------|------------|-------|-------|------|------|-------|-----------|--------|----------|
| | | | Mean | Median | G mean | Stddev | 15.0% | | 85.0% | | Min | Max | Mean | Median | Standard |
| | | | | | | | 15.0% | 85.0% | Min | Max | | | | | |
| DISCHARGE | CFS | CFS | 125 | na | 28.6 | 22.4 | 23.6 | 20.9 | 12.9 | 43.3 | 7.42 | 127 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 120 | na | 388 | 405 | 373 | 97.5 | 282 | 484 | 104 | 577 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 65 | na | 408 | 428 | 396 | 91.7 | 296 | 490 | 184 | 584 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 63 | na | 8.32 | 8.30 | 8.32 | 0.20 | 8.10 | 8.50 | 7.70 | 8.80 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 122 | na | 14.0 | 15.3 | na | 8.78 | 2.73 | 24.0 | 0 | 28.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 65 | na | 8.47 | 8.20 | 8.28 | 1.80 | 6.50 | 10.8 | 5.80 | 11.7 | na | na | 6.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 63 | na | 98.2 | 97.0 | 98.1 | 4.44 | 94.0 | 103 | 89.0 | 112 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | na | 2.00 | 1.20 | 1.40 | 2.23 | 0.70 | 3.00 | 0.30 | 13.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 62 | 8.06 | 240 | 66.0 | 70.0 | 419 | 10 | 513 | 3.00 | 2500 | 10.8 | 5.00 | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 63 | na | 804 | 240 | 226 | 3510 | 67.6 | 660 | 16.0 | 28000 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 44 | na | 49.7 | 52.0 | 48.3 | 11.1 | 35.0 | 62.3 | 21.0 | 67.0 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 44 | na | 6.50 | 6.70 | 6.34 | 1.34 | 4.60 | 7.93 | 2.80 | 8.60 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 60 | na | 107 | 111 | 104 | 22.7 | 77.5 | 131 | 51.0 | 146 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 60 | na | 59.6 | 62.5 | 57.1 | 16.2 | 38.2 | 77.6 | 27.0 | 87.0 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 62 | na | 17.3 | 16.0 | 15.8 | 8.99 | 10.5 | 21.6 | 6.10 | 72.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 25 | na | 1.32 | 1.30 | 1.24 | 0.44 | 0.80 | 1.91 | 0.50 | 2.10 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 44 | na | 152 | 160 | 147 | 33.2 | 110 | 190 | 64.0 | 200 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | 1.69 | 268 | 144 | 144 | 512 | 67.9 | 405 | 1.00 | 3750 | 33.0 | 33.0 | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | 0.10 | na |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.50 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 62 | 3.23 | 0.73 | 0.50 | 0.57 | 0.58 | 0.30 | 1.30 | 0.20 | 2.70 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OP04 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 36 | 94.4 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 93.2 | 1.25 | 1.00 | 1.19 | 0.50 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 60 | 86.7 | 1.38 | 1.00 | 1.25 | 0.74 | 1.00 | 2.65 | 1.00 | 3.00 | 1.17 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR 6 | UG/L AS CR | 36 | 86.1 | 3.60 | 4.00 | 3.13 | 1.67 | na | na | 1.00 | 5.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 35 | 37.1 | 4.68 | 3.00 | 3.32 | 6.14 | 2.00 | 6.00 | 1.00 | 31.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 36 | 30.6 | 1.28 | 1.00 | 1.21 | 0.46 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 20.5 |
| COPPER TOTAL | CU T | UG/L AS CU | 60 | 1.67 | 7.25 | 6.00 | 5.64 | 7.39 | 3.00 | 9.00 | 2.00 | 52.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 60 | na | 4500 | 3350 | 3280 | 4280 | 1420 | 7860 | 270 | 25000 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 60 | 15.0 | 93.9 | 11.0 | 14.9 | 476 | 6.00 | 30.4 | 4.00 | 3400 | 11.1 | 10 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 36 | 86.1 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 9.66 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 15.3 | 9.60 | 5.00 | 6.25 | 16.9 | 3.00 | 14.0 | 2.00 | 120 | 5.00 | 5.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 60 | 8.33 | 22.1 | 19.0 | 16.7 | 22.0 | 6.40 | 32.8 | 4.00 | 160 | 10 | 10 | 71.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 60 | na | 160 | 100 | 117 | 196 | 61.5 | 230 | 30.0 | 1400 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | 0.10 | na |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 36 | 25.0 | 1.48 | 1.00 | 1.38 | 0.58 | 1.00 | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 36 | 8.33 | 4.88 | 4.00 | 3.66 | 5.93 | 2.00 | 6.90 | 1.00 | 36.0 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.23 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 36 | 41.7 | 6.24 | 6.00 | 5.73 | 2.70 | 4.00 | 9.00 | 3.00 | 13.0 | 3.00 | 3.00 | 183 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 60 | 11.7 | 46.2 | 30.0 | 31.8 | 78.7 | 20.0 | 69.0 | 10 | 580 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 17 | na | 744 | 467 | 502 | 700 | 182 | 1730 | 98.0 | 2660 | na | na | na |
| SUSP-SIEVE | SIEV | % | 13 | na | 52.4 | 61.1 | 49.6 | 16.0 | 29.7 | 67.3 | 25.4 | 69.1 | na | na | na |

Table A5. Univariate statistics for water-quality data collected for station 4905, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | % < MRL | | DETECTIONS | | | | | | | CENSOREDS | | |
|---------------------|---------------------|-------|---------|---------|--------|------------|--------|-------|-------|-------|------|-------|-----------|----------|-------|
| | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard | |
| DISCHARGE | CFS | CFS | 61 | na | 32.8 | 24.0 | 25.3 | 34.4 | 15.3 | 45.7 | 5.90 | 222 | na | na | na |
| SPECIFIC COND. | COND US/CM @ 25C | | 59 | na | 588 | 602 | 567 | 148 | 391 | 737 | 233 | 949 | na | na | na |
| SPECIFIC COND. | COND MICROSIEMENS/C | | 60 | na | 588 | 605 | 569 | 140 | 422 | 717 | 242 | 925 | na | na | na |
| PH, WH, FIELD | PH STANDARD UNITS | | 59 | na | 8.29 | 8.40 | 8.29 | 0.25 | 8.10 | 8.50 | 7.20 | 8.60 | na | na | na |
| WATER TEMP. | TEMP DEGREES | | 60 | na | 14.3 | 16.0 | na | 9.80 | 0.50 | 24.0 | 0 | 31.0 | na | na | na |
| OXYGEN DISS. | DO MG/L | | 59 | na | 8.46 | 8.20 | 8.24 | 2.01 | 6.20 | 11.2 | 5.70 | 13.4 | na | na | 6.00 |
| OXYGEN DIS. % | %DO % OF SATURATION | | 58 | na | 99.0 | 98.0 | 98.9 | 5.06 | 95.0 | 104 | 82.0 | 114 | na | na | na |
| BOD 5-DAY | BOD5 MG/L | | 58 | na | 2.77 | 1.50 | 1.72 | 3.24 | 0.80 | 5.01 | 0.20 | 15.0 | na | na | na |
| COLIFORM FECAL | FCOL COLS./100 ML | | 57 | 5.26 | 3450 | 320 | 416 | 10600 | 40.0 | 4430 | 5.00 | 70000 | 240 | 100 | 200 |
| FECAL STRPT | FSTRP COLS./100 ML | | 57 | 1.75 | 3320 | 820 | 855 | 7600 | 158 | 7900 | 47.0 | 50000 | 80.0 | 80.0 | na |
| CALCIUM DISS. | CA MG/L AS CA | | 44 | na | 67.4 | 69.5 | 65.2 | 16.4 | 47.5 | 86.3 | 26.0 | 98.0 | na | na | na |
| MAGNESIUM DISS | MG MG/L AS MG | | 44 | na | 11.6 | 12.0 | 11.1 | 3.25 | 7.80 | 15.0 | 3.90 | 19.0 | na | na | na |
| ALKALINITY | ALK MG/L AS CACO3 | | 61 | na | 133 | 134 | 129 | 27.2 | 101 | 165 | 63.0 | 183 | na | na | na |
| SULFATE DISS. | SO4 MG/L AS SO4 | | 61 | na | 119 | 120 | 113 | 36.5 | 77.9 | 160 | 38.0 | 210 | na | na | 250 |
| CHLORIDE DISS. | CL MG/L AS CL | | 58 | na | 21.9 | 20.0 | 19.8 | 13.7 | 12.9 | 25.2 | 8.00 | 110 | na | na | 250 |
| FLUORIDE DISS. | F MG/L AS F | | 26 | na | 1.43 | 1.35 | 1.39 | 0.33 | 1.10 | 1.80 | 0.80 | 2.00 | na | na | 2.00 |
| HARDNESS TOTAL | HARD MG/L AS CAO3 | | 44 | na | 216 | 220 | 209 | 54.0 | 150 | 280 | 81.0 | 310 | na | na | na |
| RESIDUE TOTAL | RES MG/L | | 61 | na | 273 | 153 | 168 | 354 | 70.9 | 510 | 11.0 | 2490 | na | na | na |
| NITROGEN AMM | TNH3 MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM NH3- | -MG/L AS NH3 | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT MG/L AS N | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.50 |
| NITROGEN AMM+ | TNIT MG/L AS N | | 60 | na | 0.70 | 0.60 | 0.60 | 0.38 | 0.30 | 1.00 | 0.20 | 1.90 | na | na | na |
| PHOSPHORUS O | OPO4 MG/L AS P | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D UG/L AS AS | | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T UG/L AS AS | | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D UG/L AS BA | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T UG/L AS BA | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D UG/L AS B | | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T UG/L AS B | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D UG/L AS CD | | 37 | 83.8 | 1.17 | 1.00 | 1.12 | 0.41 | 1.00 | 1.95 | 1.00 | 2.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T UG/L AS CD | | 60 | 91.7 | 1.20 | 1.00 | 1.15 | 0.45 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D UG/L AS CR | | 60 | 80.0 | 1.42 | 1.00 | 1.30 | 0.67 | 1.00 | 2.05 | 1.00 | 3.00 | 1.25 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 UG/L AS CR | | 37 | 83.8 | 1.83 | 1.00 | 1.47 | 1.60 | 1.00 | 4.85 | 1.00 | 5.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T UG/L AS CR | | 36 | 19.4 | 6.52 | 5.00 | 4.74 | 6.01 | 2.00 | 11.5 | 1.00 | 28.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D UG/L AS CU | | 37 | 13.5 | 1.50 | 1.00 | 1.39 | 0.62 | 1.00 | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 | 29.4 |
| COPPER TOTAL | CU T UG/L AS CU | | 61 | na | 9.69 | 8.00 | 7.93 | 6.95 | 4.00 | 14.0 | 2.00 | 39.0 | na | na | na |
| IRON TOTAL | FE T UG/L AS FE | | 61 | 1.64 | 7220 | 3800 | 4180 | 8900 | 1620 | 12900 | 160 | 50000 | 10 | 10 | 1000 |
| IRON DISS. | FE D UG/L AS FE | | 60 | 15.0 | 17.3 | 10 | 12.5 | 19.9 | 6.00 | 21.8 | 4.00 | 120 | 7.67 | 10 | 300 |
| LEAD DISS. | PB D UG/L AS PB | | 37 | 86.5 | 2.80 | 1.00 | 1.58 | 4.02 | na | na | 1.00 | 10 | 1.00 | 1.00 | 17.6 |
| LEAD TOTAL | PB T UG/L AS PB | | 60 | 10 | 13.0 | 8.00 | 8.53 | 14.0 | 3.00 | 19.5 | 1.00 | 64.0 | 5.00 | 5.00 | na |
| MANGANESE DISS | MN D UG/L AS MN | | 60 | 26.7 | 5.00 | 3.00 | 3.35 | 5.62 | 1.00 | 8.50 | 1.00 | 30.0 | 7.75 | 10 | 71.0 |
| MANGANESE TOT | MN T UG/L AS MN | | 61 | na | 199 | 110 | 123 | 216 | 50.0 | 391 | 10 | 980 | na | na | na |
| MERCURY DISS. | HG D UG/L AS HG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T UG/L AS HG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D UG/L AS MO | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T UG/L AS MO | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D UG/L AS NI | | 37 | 27.0 | 1.63 | 1.00 | 1.47 | 0.88 | 1.00 | 2.00 | 1.00 | 5.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NI T UG/L AS NI | | 37 | na | 7.11 | 5.00 | 5.12 | 6.55 | 2.00 | 12.9 | 1.00 | 34.0 | na | na | na |
| SILVER DISS. | AG D UG/L AS AG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.47 |
| SILVER TOTAL | AG T UG/L AS AG | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D UG/L AS SE | | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T UG/L AS SE | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D UG/L AS ZN | | 37 | 24.3 | 7.36 | 6.00 | 6.55 | 4.41 | 4.00 | 11.3 | 4.00 | 25.0 | 3.00 | 3.00 | 261 |
| ZINC TOTAL | ZN T UG/L AS ZN | | 61 | 6.56 | 66.8 | 40.0 | 44.1 | 70.9 | 20.0 | 129 | 10 | 360 | 10 | 10 | na |
| SULFIDE TOTAL | H2S MG/L AS S | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN MG/L AS CN | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED MG/L | | 15 | na | 878 | 409 | 476 | 1440 | 148 | 1480 | 105 | 5820 | na | na | na |
| SUSP-SIEVE | SIEV % | | 13 | na | 60.8 | 65.9 | 58.0 | 18.2 | 35.5 | 78.9 | 33.9 | 83.8 | na | na | na |

Table A6. Univariate statistics for water-quality data collected for station 5500, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | DETECTIONS | | | | | | | CENSOREDS | | | |
|----------------|-------|-----------------|---------|---------|------------|--------|--------|--------|-------|-------|------|-----------|------|--------|----------|
| | | | | % < MRL | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 193 | na | 92.6 | 35.5 | 44.4 | 232 | 18.8 | 97.9 | 8.63 | 2170 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 157 | na | 605 | 610 | 575 | 186 | 401 | 781 | 218 | 1300 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 63 | na | 613 | 645 | 580 | 201 | 385 | 764 | 244 | 1330 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 64 | na | 8.16 | 8.20 | 8.16 | 0.23 | 8.00 | 8.30 | 7.09 | 8.40 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 163 | na | 12.9 | 13.5 | na | 7.96 | 2.50 | 21.7 | 0 | 28.0 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 64 | na | 8.85 | 8.75 | 8.71 | 1.56 | 6.90 | 10.8 | 6.20 | 11.7 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 57 | na | 101 | 99.0 | 101 | 6.40 | 95.0 | 107 | 90.0 | 130 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 57 | 1.75 | 2.05 | 1.40 | 1.35 | 3.21 | 0.71 | 2.60 | 0.20 | 22.0 | 0.50 | 0.50 | na |
| CALIFORN FECAL | FCOL | COLS./100 ML | 57 | na | 3590 | 530 | 531 | 9580 | 35.7 | 5830 | 12.0 | 64000 | na | na | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 57 | na | 3240 | 660 | 809 | 9550 | 197 | 3920 | 50.0 | 66000 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 49 | na | 63.0 | 65.0 | 60.2 | 18.6 | 41.5 | 81.5 | 26.0 | 110 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 49 | na | 13.8 | 14.0 | 12.9 | 4.89 | 8.35 | 19.0 | 4.60 | 25.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 65 | na | 133 | 138 | 129 | 32.2 | 94.7 | 164 | 65.0 | 210 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 65 | na | 133 | 140 | 120 | 52.0 | 70.8 | 180 | 14.0 | 250 | na | na | 330 |
| CHLORIDE DISS. | CL | MG/L AS CL | 62 | na | 25.6 | 21.0 | 20.8 | 32.2 | 12.0 | 29.6 | 8.70 | 260 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 30 | na | 2.03 | 1.95 | 1.97 | 0.49 | 1.50 | 2.54 | 1.30 | 3.10 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 49 | na | 215 | 220 | 204 | 65.9 | 140 | 285 | 84.0 | 380 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 60 | na | 157 | 92.5 | 103 | 161 | 37.1 | 299 | 14.0 | 821 | na | na | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 4 | na | 0.13 | 0.03 | 0.04 | 0.20 | na | na | 0.01 | 0.43 | na | na | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 4 | na | 0.002 | 0.002 | na | 0.003 | na | na | 0 | 0.006 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 4 | na | 2.00 | 2.05 | 1.97 | 0.39 | na | na | 1.50 | 2.40 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 1.00 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 60 | 8.33 | 0.63 | 0.50 | 0.53 | 0.42 | 0.30 | 0.96 | 0.20 | 2.30 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 10 | 40.0 | 2.00 | 1.50 | 1.70 | 1.26 | 1.00 | 3.95 | 1.00 | 4.00 | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 6 | 33.3 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 4 | na | 47.3 | 47.5 | 47.0 | 5.68 | na | na | 41.0 | 53.0 | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 9 | na | 70.0 | 60.0 | 67.1 | 22.4 | 50.0 | 105 | 50.0 | 110 | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 5 | na | 66.0 | 60.0 | 62.6 | 24.1 | na | na | 40.0 | 100 | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 41 | 87.8 | 2.00 | 2.00 | 1.89 | 0.71 | na | na | 1.00 | 3.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 60 | 86.7 | 1.00 | 1.00 | 1.00 | 0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 65 | 83.1 | 1.27 | 1.00 | 1.21 | 0.47 | 1.00 | 2.00 | 1.00 | 2.00 | 1.54 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 37 | 83.8 | 1.50 | 1.00 | 1.35 | 0.84 | 1.00 | 2.95 | 1.00 | 3.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 36 | 25.0 | 3.93 | 3.00 | 2.91 | 4.36 | 1.20 | 4.80 | 1.00 | 22.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 41 | 24.4 | 1.81 | 2.00 | 1.65 | 0.79 | 1.00 | 3.00 | 1.00 | 4.00 | 4.60 | 1.00 | 27.6 |
| COPPER TOTAL | CU T | UG/L AS CU | 61 | 4.92 | 6.62 | 6.00 | 5.76 | 3.90 | 3.00 | 11.2 | 2.00 | 23.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 61 | na | 4920 | 2800 | 3120 | 6350 | 1300 | 8580 | 410 | 38000 | na | na | 8000 |
| IRON DISS. | FE D | UG/L AS FE | 65 | 13.8 | 71.4 | 10.5 | 14.8 | 242 | 5.00 | 34.5 | 3.00 | 1400 | 6.89 | 10 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 41 | 78.0 | 1.33 | 1.00 | 1.26 | 0.50 | 1.00 | 2.00 | 1.00 | 2.00 | 2.13 | 1.00 | 15.9 |
| LEAD TOTAL | PB T | UG/L AS PB | 60 | 11.7 | 11.4 | 7.00 | 7.57 | 13.5 | 3.00 | 21.0 | 2.00 | 75.0 | 5.00 | 5.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 65 | 1.54 | 31.0 | 21.0 | 22.3 | 26.1 | 9.00 | 60.3 | 4.00 | 130 | 10 | 10 | 50.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 61 | na | 171 | 120 | 136 | 148 | 80.0 | 264 | 30.0 | 850 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 4 | 75.0 | 0.50 | 0.50 | 0.50 | na | na | 0.50 | 0.50 | 0.10 | 0.10 | 0.10 | 0.01 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 4 | 75.0 | 10 | 10 | 10 | na | na | na | 10 | 10 | 10 | 10 | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 40 | 47.5 | 1.57 | 2.00 | 1.49 | 0.51 | 1.00 | 2.00 | 1.00 | 2.00 | 2.89 | 1.00 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 37 | 2.70 | 4.14 | 3.00 | 3.32 | 3.06 | 1.55 | 6.00 | 1.00 | 17.0 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 4 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | 0.41 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 4 | 5.00 | 4.50 | 4.86 | 1.41 | na | na | 4.00 | 7.00 | na | na | 6.00 | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 41 | 17.1 | 13.6 | 7.00 | 8.79 | 23.5 | 4.25 | 15.8 | 3.00 | 140 | 3.00 | 3.00 | 246 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 61 | 3.28 | 51.7 | 30.0 | 39.1 | 49.1 | 20.0 | 80.0 | 10 | 240 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 6 | 100 | na | na | na | na | na | na | na | na | 0.50 | 0.50 | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 6 | 100 | na | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.005 |
| SUSP SED | SSED | MG/L | 81 | na | 1230 | 257 | 368 | 2500 | 101 | 2060 | 36.0 | 11500 | na | na | na |
| SUSP-SIEVE | SIEV | % | 47 | na | 69.0 | 71.0 | 66.7 | 16.6 | 49.7 | 83.8 | 33.0 | 98.0 | na | na | na |

Table A7. Univariate statistics for water-quality data collected for station 5530, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|---------------------|---------------------|-------|---------|--------|---------|--------|------------|-------|------|------|------|--------|-----------|------|-------|
| | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard | | |
| DISCHARGE | CFS | CFS | 72 | na | 93.7 | 90.0 | 88.2 | 33.8 | 56.0 | 127 | 44.0 | 217 | na | na | na |
| SPECIFIC COND. | COND US/CM @ 25C | | 79 | na | 794 | 836 | 779 | 146 | 619 | 897 | 335 | 1340 | na | na | na |
| SPECIFIC COND. | COND MICROSIEMENS/C | | 62 | na | 759 | 794 | 744 | 145 | 589 | 859 | 335 | 1360 | na | na | na |
| PH, WH, FIELD | PH STANDARD UNITS | | 65 | na | 7.77 | 7.80 | 7.77 | 0.15 | 7.64 | 7.90 | 7.30 | 8.00 | na | na | na |
| WATER TEMP. | TEMP DEGREES | | 78 | na | 14.5 | 13.5 | 13.2 | 5.36 | 9.00 | 20.6 | 0.50 | 24.0 | na | na | na |
| OXYGEN DISS. | DO MG/L | | 65 | na | 7.68 | 7.80 | 7.58 | 1.23 | 6.39 | 8.80 | 3.90 | 11.3 | na | na | 5.00 |
| OXYGEN DIS. % | %DO % OF SATURATION | | 60 | na | 94.0 | 93.0 | 93.8 | 7.25 | 87.2 | 101 | 75.0 | 118 | na | na | na |
| BOD 5-DAY | BOD5 MG/L | | 58 | na | 15.4 | 15.0 | 14.2 | 6.09 | 9.38 | 21.0 | 5.20 | 32.0 | na | na | na |
| COLIFORM FECAL | FCOL COLS./100 ML | | 58 | 6.90 | 2320 | 600 | 654 | 6510 | 143 | 2600 | 26.0 | 45000 | 39.5 | 36.5 | 2000 |
| FECAL STRPT | FSTRP COLS./100 ML | | 59 | na | 1970 | 510 | 741 | 4020 | 240 | 3100 | 60.0 | 23000 | na | na | na |
| CALCIUM DISS. | CA MG/L AS CA | | 47 | na | 50.0 | 52.0 | 49.6 | 6.34 | 43.0 | 55.0 | 29.0 | 62.0 | na | na | na |
| MAGNESIUM DISS | MG MG/L AS MG | | 47 | na | 15.3 | 15.0 | 14.9 | 3.26 | 12.0 | 18.8 | 6.30 | 23.0 | na | na | na |
| ALKALINITY | ALK MG/L AS CACO3 | | 40 | na | 102 | 100 | 100 | 18.7 | 83.3 | 122 | 64.0 | 152 | na | na | na |
| SULFATE DISS. | SO4 MG/L AS SO4 | | 40 | na | 159 | 165 | 154 | 36.8 | 112 | 190 | 58.0 | 230 | na | na | 330 |
| CHLORIDE DISS. | CL MG/L AS CL | | 37 | na | 43.5 | 40.0 | 38.3 | 33.5 | 25.0 | 51.0 | 15.0 | 230 | na | na | 250 |
| FLUORIDE DISS. | F MG/L AS F | | 29 | na | 1.80 | 1.70 | 1.77 | 0.32 | 1.50 | 2.25 | 1.30 | 2.60 | na | na | 2.00 |
| HARDNESS TOTAL | HARD MG/L AS CAO3 | | 47 | na | 188 | 190 | 186 | 28.4 | 152 | 220 | 98.0 | 240 | na | na | na |
| RESIDUE TOTAL | RES MG/L | | 60 | na | 98.7 | 57.5 | 62.8 | 136 | 29.8 | 139 | 5.00 | 920 | na | na | na |
| NITROGEN AMM | TNH3 MG/L AS N | | 5 | na | 8.72 | 9.80 | 8.44 | 2.17 | na | na | 4.90 | 10 | na | na | na |
| UN-IONIZED AMM NH3- | MG/L AS NH3 | | 4 | na | 0.14 | 0.14 | 0.13 | 0.05 | na | na | 0.08 | 0.19 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 MG/L AS N | | 5 | na | 2.01 | 2.20 | 1.85 | 0.82 | na | na | 0.93 | 2.80 | na | na | 10 |
| NITROGEN, NO2 | NIT MG/L AS N | | 1 | na | 0.02 | 0.02 | 0.02 | na | na | na | 0.02 | 0.02 | na | na | 1.00 |
| NITROGEN AMM+ | TNIT MG/L AS N | | 59 | na | 11.3 | 11.0 | 10.4 | 4.85 | 6.50 | 14.0 | 3.20 | 37.0 | na | na | na |
| PHOSPHORUS O | OPO4 MG/L AS P | | 1 | na | 2.90 | 2.90 | 2.90 | na | na | na | 2.90 | 2.90 | na | na | na |
| ARSENIC DISS. | AS D UG/L AS AS | | 10 | 30.0 | 1.43 | 1.00 | 1.35 | 0.54 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T UG/L AS AS | | 6 | 33.3 | 1.25 | 1.00 | 1.19 | 0.50 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA D UG/L AS BA | | 4 | na | 44.5 | 37.5 | 42.1 | 18.2 | na | na | 32.0 | 71.0 | na | na | na |
| BARIUM TOTAL | BA T UG/L AS BA | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D UG/L AS B | | 8 | na | 154 | 140 | 150 | 35.8 | 114 | 207 | 100 | 210 | na | na | 750 |
| BORON TOTAL | B T UG/L AS B | | 5 | na | 158 | 150 | 154 | 40.9 | na | na | 110 | 220 | na | na | na |
| CADMIUM DISS. | CD D UG/L AS CD | | 61 | 80.3 | 1.25 | 1.00 | 1.19 | 0.45 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T UG/L AS CD | | 56 | 91.1 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D UG/L AS CR | | 61 | 32.8 | 2.95 | 2.00 | 2.10 | 3.83 | 1.00 | 3.70 | 1.00 | 24.0 | 1.60 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 UG/L AS CR | | 57 | 86.0 | 1.63 | 1.00 | 1.33 | 1.41 | 1.00 | 3.95 | 1.00 | 5.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T UG/L AS CR | | 56 | 16.1 | 5.15 | 4.00 | 3.77 | 5.02 | 2.00 | 8.80 | 1.00 | 29.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D UG/L AS CU | | 61 | 8.20 | 5.43 | 5.00 | 5.00 | 2.24 | 3.00 | 7.00 | 2.00 | 11.0 | 8.20 | 10 | 23.2 |
| COPPER TOTAL | CU T UG/L AS CU | | 57 | 1.75 | 10.8 | 10 | 9.93 | 4.56 | 7.00 | 15.5 | 3.00 | 29.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T UG/L AS FE | | 57 | na | 2480 | 1500 | 1770 | 2500 | 859 | 3900 | 360 | 12000 | na | na | 8000 |
| IRON DISS. | FE D UG/L AS FE | | 41 | na | 46.4 | 45.0 | 43.6 | 16.9 | 28.6 | 64.9 | 20.0 | 100 | na | na | 300 |
| LEAD DISS. | PB D UG/L AS PB | | 61 | 68.9 | 1.63 | 1.00 | 1.42 | 1.01 | 1.00 | 3.00 | 1.00 | 4.00 | 3.38 | 1.00 | 11.9 |
| LEAD TOTAL | PB T UG/L AS PB | | 56 | 8.93 | 9.80 | 6.00 | 7.01 | 9.00 | 3.00 | 20.2 | 2.00 | 39.0 | 5.00 | 5.00 | na |
| MANGANESE DISS | MN D UG/L AS MN | | 40 | na | 68.1 | 69.5 | 62.4 | 24.4 | 45.2 | 93.9 | 11.0 | 120 | na | na | 50.0 |
| MANGANESE TOT | MD T UG/L AS MN | | 36 | na | 146 | 125 | 136 | 64.0 | 100 | 205 | 70.0 | 360 | na | na | na |
| MERCURY DISS. | HG D UG/L AS HG | | 4 | 50.0 | 0.25 | 0.25 | 0.25 | 0.07 | na | na | 0.20 | 0.30 | 0.10 | 0.10 | 0.10 |
| MERCURY, TOT | HG T UG/L AS HG | | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D UG/L AS MO | | 4 | 75.0 | 20.0 | 20.0 | 20.0 | na | na | na | 20.0 | 20.0 | 10 | 10 | na |
| MOLYBDENUM TOT | MO T UG/L AS MO | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D UG/L AS NI | | 60 | 10 | 4.20 | 4.00 | 3.52 | 3.03 | 2.00 | 6.00 | 1.00 | 20.0 | 5.50 | 5.50 | 100 |
| NICKEL TOTAL | NI T UG/L AS NI | | 57 | na | 7.04 | 6.00 | 6.14 | 3.92 | 4.00 | 12.0 | 2.00 | 17.0 | na | na | na |
| SILVER DISS. | AG D UG/L AS AG | | 4 | 100 | na | na | na | na | na | na | na | na | 1.00 | 1.00 | 0.29 |
| SILVER TOTAL | AG T UG/L AS AG | | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D UG/L AS SE | | 25 | na | 5.36 | 5.00 | 5.15 | 1.55 | 4.00 | 7.10 | 3.00 | 9.00 | na | na | 6.00 |
| SELENIUM TOTAL | SE T UG/L AS SE | | 18 | na | 5.00 | 5.00 | 4.84 | 1.28 | 3.85 | 6.15 | 3.00 | 7.00 | na | na | na |
| ZINC DISS. | ZN D UG/L AS ZN | | 61 | na | 47.5 | 35.0 | 38.7 | 34.4 | 21.0 | 80.0 | 5.20 | 160 | na | na | 207 |
| ZINC TOTAL | ZN T UG/L AS ZN | | 57 | na | 77.4 | 60.0 | 66.9 | 48.7 | 40.0 | 110 | 30.0 | 280 | na | na | na |
| SULFIDE TOTAL | H2S MG/L AS S | | 5 | 80.0 | 1.00 | 1.00 | 1.00 | na | na | 1.00 | 1.00 | 0.50 | 0.50 | 0.50 | 0.002 |
| CYANIDE TOTAL | CYN MG/L AS CN | | 6 | 83.3 | 0.01 | 0.01 | 0.01 | na | na | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.005 |
| SUSP SED | SSED MG/L | | 1 | na | 805 | 805 | 805 | na | na | 805 | 805 | na | na | na | na |
| SUSP-SIEVE | SIEV % | | 1 | na | 83.0 | 83.0 | 83.0 | na | na | 83.0 | 83.0 | na | na | na | na |

Table A8. Univariate statistics for water-quality data collected for station 5533, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 36 | na | 96.0 | 86.5 | 85.7 | 47.3 | 55.1 | 125 | 9.80 | 300 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 35 | na | 807 | 824 | 797 | 124 | 670 | 884 | 441 | 1200 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 36 | na | 775 | 803 | 765 | 125 | 642 | 846 | 444 | 1210 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 34 | na | 7.92 | 7.90 | 7.92 | 0.10 | 7.80 | 8.00 | 7.70 | 8.20 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 36 | na | 15.4 | 14.8 | 14.4 | 5.48 | 9.55 | 22.5 | 5.00 | 25.0 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 36 | na | 7.49 | 7.65 | 7.43 | 0.99 | 6.20 | 8.50 | 5.80 | 9.30 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 35 | na | 92.4 | 92.0 | 92.3 | 3.70 | 87.4 | 96.6 | 85.0 | 100 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 35 | na | 16.3 | 16.0 | 14.5 | 7.20 | 8.96 | 23.6 | 2.40 | 36.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 34 | na | 1140 | 445 | 429 | 2270 | 100 | 1580 | 27.0 | 10000 | na | na | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 35 | na | 1860 | 420 | 622 | 4240 | 220 | 3100 | 80.0 | 22000 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 36 | na | 52.8 | 54.0 | 52.4 | 5.92 | 46.7 | 57.5 | 32.0 | 64.0 | na | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 36 | na | 16.2 | 17.0 | 15.9 | 2.59 | 13.0 | 18.0 | 8.40 | 22.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 36 | na | 99.3 | 97.5 | 98.3 | 14.7 | 84.6 | 111 | 68.0 | 135 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 36 | na | 166 | 170 | 164 | 29.8 | 130 | 200 | 83.0 | 230 | na | na | 330 |
| CHLORIDE DISS. | CL | MG/L AS CL | 33 | na | 44.3 | 40.0 | 39.6 | 31.5 | 28.1 | 50.7 | 17.0 | 210 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 25 | na | 1.76 | 1.70 | 1.74 | 0.27 | 1.50 | 2.11 | 1.10 | 2.30 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 36 | na | 198 | 200 | 196 | 25.1 | 176 | 220 | 110 | 240 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 36 | na | 95.0 | 65.5 | 72.2 | 109 | 43.1 | 119 | 29.0 | 646 | na | na | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| UN-IONIZED AMM | -NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 1.00 |
| NITROGEN AMM+ | TNT | MG/L AS N | 36 | na | 9.95 | 9.75 | 9.01 | 3.88 | 6.07 | 14.0 | 0.90 | 20.0 | na | na | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 36 | 88.9 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 36 | 94.4 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 36 | 61.1 | 1.71 | 1.50 | 1.54 | 0.82 | 1.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.36 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 36 | 88.9 | 1.75 | 1.50 | 1.57 | 0.96 | na | na | 1.00 | 3.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 35 | 17.1 | 3.90 | 3.00 | 3.02 | 4.19 | 2.00 | 5.50 | 1.00 | 24.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 36 | na | 4.67 | 4.00 | 4.37 | 1.72 | 3.00 | 6.45 | 2.00 | 10 | na | na | 23.2 |
| COPPER TOTAL | CU T | UG/L AS CU | 36 | 5.56 | 9.62 | 8.50 | 8.95 | 4.55 | 7.00 | 12.0 | 5.00 | 31.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 36 | na | 2520 | 1650 | 1830 | 2930 | 862 | 3680 | 610 | 17000 | na | na | 8000 |
| IRON DISS. | FE D | UG/L AS FE | 36 | na | 38.1 | 33.0 | 35.7 | 14.3 | 24.0 | 53.5 | 18.0 | 80.0 | na | na | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 36 | 61.1 | 4.64 | 1.00 | 1.53 | 12.8 | 1.00 | 2.00 | 1.00 | 49.0 | 1.00 | 1.00 | 11.9 |
| LEAD TOTAL | PB T | UG/L AS PB | 35 | 2.86 | 7.53 | 4.50 | 5.22 | 12.3 | 3.00 | 9.75 | 2.00 | 75.0 | 1.00 | 1.00 | na |
| MANGANESE DISS. | MN D | UG/L AS MN | 36 | na | 64.8 | 62.5 | 59.2 | 25.2 | 34.7 | 93.5 | 19.0 | 120 | na | na | 50.0 |
| MANGANESE TOT | MD T | UG/L AS MN | 36 | na | 138 | 120 | 130 | 63.3 | 95.5 | 185 | 80.0 | 440 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NID | UG/L AS NI | 36 | na | 3.31 | 3.00 | 3.07 | 1.39 | 2.00 | 5.00 | 2.00 | 8.00 | na | na | 100 |
| NICKEL TOTAL | NIT | UG/L AS NI | 36 | 2.78 | 5.66 | 5.00 | 5.02 | 3.01 | 3.00 | 7.60 | 1.00 | 16.0 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.29 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | 6.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZND | UG/L AS ZN | 36 | na | 28.6 | 27.0 | 27.0 | 9.76 | 20.0 | 39.5 | 13.0 | 53.0 | na | na | 207 |
| ZINC TOTAL | ZNT | UG/L AS ZN | 36 | na | 52.8 | 50.0 | 48.1 | 29.6 | 30.0 | 70.0 | 20.0 | 200 | na | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A9. Univariate statistics for water-quality data collected for station 5905, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean; Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second; CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

Table A10. Univariate statistics for water-quality data collected for station 6300, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|-------|-------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 155 | na | 111 | 74.5 | 67.0 | 129 | 24.9 | 184 | 0.72 | 1020 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 129 | na | 1070 | 1100 | 1040 | 208 | 863 | 1260 | 480 | 1570 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 9 | na | 1060 | 1070 | 1050 | 114 | 891 | 1180 | 885 | 1180 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 12 | na | 8.22 | 8.26 | 8.22 | 0.19 | 8.17 | 8.40 | 7.65 | 8.40 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 134 | na | 16.1 | 18.0 | na | 8.43 | 6.00 | 25.0 | 0 | 32.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 12 | na | 7.57 | 7.35 | 7.39 | 1.73 | 5.40 | 9.85 | 5.30 | 10.7 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 8 | na | 95.4 | 96.0 | 95.4 | 0.92 | 94.0 | 96.0 | 94.0 | 96.0 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 7 | na | 8.16 | 5.20 | 5.42 | 9.13 | 1.92 | 24.2 | 1.90 | 28.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 8 | na | 478 | 225 | 234 | 610 | 40.0 | 1510 | 40.0 | 1800 | na | na | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 8 | na | 492 | 215 | 260 | 777 | 90.1 | 1690 | 47.0 | 2400 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 12 | na | 86.1 | 82.0 | 85.1 | 13.4 | 69.9 | 101 | 68.0 | 110 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 12 | na | 26.5 | 25.0 | 26.2 | 4.01 | 22.9 | 31.2 | 21.0 | 34.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 12 | na | 172 | 161 | 170 | 26.6 | 141 | 208 | 140 | 214 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 12 | na | 302 | 290 | 299 | 45.1 | 250 | 361 | 240 | 380 | na | na | 330 |
| CHLORIDE DISS. | CL | MG/L AS CL | 12 | na | 50.6 | 49.5 | 48.7 | 16.1 | 35.8 | 59.9 | 31.0 | 96.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 12 | na | 1.91 | 1.85 | 1.89 | 0.26 | 1.69 | 2.21 | 1.50 | 2.40 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 12 | na | 326 | 305 | 322 | 50.4 | 270 | 382 | 260 | 420 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 8 | na | 217 | 185 | 174 | 148 | 74.6 | 433 | 70.0 | 445 | na | na | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 4 | 25.0 | 1.19 | 0.03 | 0.15 | 2.00 | na | na | 0.03 | 3.50 | 0.01 | 0.01 | na |
| UN-IONIZED AMM. | NH3- | MG/L AS NH3 | 3 | na | 0.02 | 0.004 | 0.007 | 0.03 | na | na | 0.002 | 0.05 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 4 | na | 2.65 | 2.70 | 2.34 | 1.39 | na | na | 1.10 | 4.10 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 1.00 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 8 | na | 1.45 | 1.10 | 1.19 | 1.04 | 0.54 | 3.18 | 0.40 | 3.70 | na | na | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 4 | 25.0 | 4.00 | 4.00 | 4.00 | 0 | na | na | 4.00 | 4.00 | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 4 | na | 43.3 | 43.5 | 42.5 | 8.96 | na | na | 33.0 | 53.0 | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 3 | na | 190 | 180 | 188 | 36.1 | na | na | 160 | 230 | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 12 | 91.7 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 8 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | na | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 12 | 100 | na | na | na | na | na | na | na | 2.33 | 1.00 | 50.0 | na |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 8 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 11.0 | na |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 8 | na | 4.53 | 3.00 | 3.57 | 3.21 | 1.35 | 9.43 | 1.00 | 10.2 | na | na | na |
| COPPER DISS. | CU D | UG/L AS CU | 12 | 33.3 | 2.50 | 2.50 | 2.45 | 0.54 | 2.00 | 3.00 | 2.00 | 3.00 | 10 | 10 | 36.0 |
| COPPER TOTAL | CU T | UG/L AS CU | 8 | na | 10 | 9.50 | 9.06 | 4.34 | 4.35 | 15.0 | 4.00 | 15.0 | na | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 8 | na | 6410 | 5550 | 5210 | 4220 | 2070 | 12700 | 2000 | 13000 | na | na | 8000 |
| IRON DISS. | FE D | UG/L AS FE | 12 | 8.33 | 16.8 | 14.0 | 14.5 | 10.3 | 7.80 | 32.6 | 7.00 | 39.0 | 3.00 | 3.00 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 12 | 100 | na | na | na | na | na | na | na | 4.00 | 1.00 | 24.7 | na |
| LEAD TOTAL | PB T | UG/L AS PB | 8 | na | 15.0 | 12.0 | 12.8 | 9.93 | 7.00 | 31.5 | 7.00 | 36.0 | na | na | na |
| MANGANESE DISS. | MN D | UG/L AS MN | 12 | na | 19.8 | 13.5 | 14.7 | 17.0 | 4.95 | 50.4 | 4.00 | 57.0 | na | na | 50.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 8 | na | 225 | 205 | 195 | 124 | 90.0 | 405 | 90.0 | 440 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 4 | 75.0 | 0.20 | 0.20 | 0.20 | na | na | 0.20 | 0.20 | 0.10 | 0.10 | 0.10 | 0.01 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 4 | 75.0 | 10 | 10 | 10 | na | na | na | 10 | 10 | 10 | 10 | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 12 | 33.3 | 3.13 | 3.00 | 3.02 | 0.83 | 2.00 | 4.00 | 2.00 | 4.00 | 10 | 10 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 8 | na | 7.75 | 6.50 | 7.34 | 2.76 | 5.00 | 11.0 | 5.00 | 11.0 | na | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 4 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 0.71 | na |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 4 | 5.00 | 5.00 | 5.00 | 0 | na | na | 5.00 | 5.00 | na | na | 6.0 | na |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 12 | 8.33 | 12.5 | 14.0 | 11.4 | 4.87 | 5.80 | 18.2 | 5.00 | 19.0 | 3.00 | 3.00 | 320 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 8 | na | 55.0 | 55.0 | 48.2 | 28.8 | 23.5 | 96.5 | 20.0 | 100 | na | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | 0.002 | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | 0.005 | na |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A11. Univariate statistics for water-quality data collected for station 6500, October 1987 through September 1992

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | | CENSOREDS | | |
|---------------------|-------------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|------|-----------|----------|--|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard | |
| DISCHARGE | CFS | CFS | 82 | na | 90.3 | 79.5 | 70.4 | 60.9 | 28.2 | 140 | 8.50 | 325 | na | na | na | |
| SPECIFIC COND. | COND | US/CM @ 25C | 82 | na | 1320 | 1320 | 1300 | 200 | 1120 | 1510 | 756 | 1780 | na | na | na | |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 83 | na | 1300 | 1300 | 1290 | 195 | 1110 | 1520 | 751 | 1710 | na | na | na | |
| PH, WH, FIELD | PH | STANDARD UNITS | 80 | na | 8.32 | 8.30 | 8.32 | 0.16 | 8.20 | 8.50 | 7.80 | 8.70 | na | na | na | |
| WATER TEMP. | TEMP | DEGREES | 81 | na | 15.8 | 16.0 | na | 9.45 | 4.00 | 26.7 | 0 | 32.0 | na | na | na | |
| OXYGEN DISS. | DO | MG/L | 81 | na | 8.46 | 8.10 | 8.25 | 1.97 | 6.40 | 10.8 | 5.50 | 13.7 | na | na | 5.00 | |
| OXYGEN DIS. % | %DO | % OF SATURATION | 80 | na | 98.6 | 97.0 | 98.4 | 7.42 | 93.0 | 105 | 79.0 | 132 | na | na | na | |
| BOD 5-DAY | BOD5 | MG/L | 58 | 1.72 | 6.45 | 3.90 | 3.98 | 6.88 | 1.30 | 13.6 | 0.50 | 34.0 | 0.50 | 0.50 | na | |
| COLIFORM FECAL | FCOL | COLS./100 ML | 78 | 3.85 | 637 | 160 | 152 | 1720 | 31.2 | 932 | 3.00 | 13000 | 9.67 | 5.00 | 2000 | |
| FECAL STRPT | FSTRP | COLS./100 ML | 77 | 1.30 | 1430 | 395 | 466 | 2880 | 140 | 2060 | 17.0 | 15000 | 44.0 | 44.0 | na | |
| CALCIUM DISS. | CA | MG/L AS CA | 23 | na | 96.7 | 96.0 | 95.9 | 12.8 | 83.2 | 110 | 73.0 | 120 | na | na | na | |
| MAGNESIUM DISS | MG | MG/L AS MG | 23 | na | 35.6 | 33.0 | 34.7 | 8.22 | 28.6 | 46.4 | 22.0 | 54.0 | na | na | na | |
| ALKALINITY | ALK | MG/L AS CACO3 | 23 | na | 185 | 192 | 184 | 24.0 | 156 | 212 | 146 | 223 | na | na | na | |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 23 | na | 383 | 380 | 376 | 77.2 | 310 | 478 | 270 | 550 | na | na | 490 | |
| CHLORIDE DISS. | CL | MG/L AS CL | 23 | na | 50.4 | 52.0 | 49.8 | 7.88 | 40.6 | 59.0 | 34.0 | 62.0 | na | na | 250 | |
| FLUORIDE DISS. | F | MG/L AS F | 9 | na | 1.89 | 1.90 | 1.88 | 0.14 | 1.70 | 2.05 | 1.60 | 2.10 | na | na | 2.00 | |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 23 | na | 389 | 380 | 384 | 61.9 | 326 | 454 | 270 | 510 | na | na | na | |
| RESIDUE TOTAL | RES | MG/L | 59 | na | 519 | 168 | 155 | 1370 | 29.0 | 690 | 7.00 | 8950 | na | na | na | |
| NITROGEN AMM | TNH3 | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| UN-IONIZED AMM NH3- | MG/L AS NH3 | 0 | na | na | na | na | na | na | na | na | na | na | na | na | 0.10 | |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 1 | na | 4.70 | 4.70 | 4.70 | na | na | na | 4.70 | 4.70 | na | na | 10 | |
| NITROGEN, NO2 | NIT | MG/L AS N | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 | |
| NITROGEN AMM+ | TNIT | MG/L AS N | 60 | 1.67 | 1.36 | 1.10 | 1.06 | 0.96 | 0.50 | 2.40 | 0.20 | 3.90 | 2.10 | 2.10 | na | |
| PHOSPHORUS O | OPO4 | MG/L AS P | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| ARSENIC DISS. | AS D | UG/L AS AS | 1 | na | 4.00 | 4.00 | 4.00 | na | na | na | 4.00 | 4.00 | na | na | 50.0 | |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 | |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| BORON DISS. | B D | UG/L AS B | 1 | na | 220 | 220 | 220 | na | na | na | 220 | 220 | na | na | 750 | |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| CADMIUM DISS. | CD D | UG/L AS CD | 23 | 60.9 | 0.24 | 0.20 | 0.20 | 0.16 | 0.10 | 0.50 | 0.10 | 0.50 | 0.16 | 0.10 | 5.00 | |
| CADMIUM TOTAL | CD T | UG/L AS CD | 21 | 81.0 | 1.50 | 1.00 | 1.32 | 1.00 | na | na | 1.00 | 3.00 | 1.00 | 1.00 | na | |
| CHROMIUM DISS. | CR D | UG/L AS CR | 23 | 87.0 | 1.33 | 1.00 | 1.26 | 0.58 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | 50.0 | |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 0 | na | na | na | na | na | na | na | na | na | na | na | 11.0 | |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 21 | 14.3 | 8.39 | 6.50 | 6.83 | 5.14 | 3.85 | 16.3 | 1.00 | 18.0 | 1.00 | 1.00 | na | |
| COPPER DISS. | CU D | UG/L AS CU | 23 | na | 2.35 | 2.00 | 2.19 | 0.94 | 2.00 | 3.40 | 1.00 | 5.00 | na | na | 44.0 | |
| COPPER TOTAL | CU T | UG/L AS CU | 20 | na | 15.6 | 10.5 | 10.5 | 20.9 | 4.15 | 23.3 | 3.00 | 100 | na | na | na | |
| IRON TOTAL | FE T | UG/L AS FE | 20 | na | 8980 | 8950 | 5550 | 6540 | 964 | 18000 | 230 | 20000 | na | na | 5100 | |
| IRON DISS. | FE D | UG/L AS FE | 22 | 13.6 | 11.7 | 8.00 | 8.99 | 10.3 | 4.00 | 19.0 | 4.00 | 39.0 | 3.00 | 3.00 | 300 | |
| LEAD DISS. | PB D | UG/L AS PB | 23 | 78.3 | 0.66 | 0.70 | 0.65 | 0.11 | na | 0.50 | 0.80 | 0.75 | 0.50 | 0.50 | 34.4 | |
| LEAD TOTAL | PB T | UG/L AS PB | 20 | na | 20.0 | 14.0 | 10.8 | 31.2 | 2.30 | 19.0 | 2.00 | 140 | na | na | na | |
| MANGANESE DISS | MN D | UG/L AS MN | 22 | 4.55 | 6.24 | 3.00 | 4.15 | 9.84 | 2.00 | 8.10 | 2.00 | 48.0 | 1.00 | 1.00 | 50.0 | |
| MANGANESE TOT | MN T | UG/L AS MN | 21 | na | 359 | 310 | 246 | 402 | 62.0 | 460 | 40.0 | 2000 | na | na | na | |
| MERCURY DISS. | HG D | UG/L AS HG | 1 | na | 0.50 | 0.50 | 0.50 | na | na | na | 0.50 | 0.50 | na | na | 0.10 | |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 | |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 1 | na | 8.00 | 8.00 | 8.00 | na | na | na | 8.00 | 8.00 | na | na | na | |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| NICKEL DISS. | NI D | UG/L AS NI | 22 | na | 3.23 | 3.00 | 3.13 | 0.81 | 2.00 | 4.00 | 2.00 | 5.00 | na | na | 100 | |
| NICKEL TOTAL | NI T | UG/L AS NI | 18 | na | 14.3 | 11.5 | 10.3 | 16.7 | 4.00 | 19.3 | 3.00 | 78.0 | na | na | na | |
| SILVER DISS. | AG D | UG/L AS AG | 21 | 95.2 | 1.00 | 1.00 | 1.00 | na | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 1.06 | |
| SILVER TOTAL | AG T | UG/L AS AG | 22 | 90.9 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | na | |
| SELENIUM DISS. | SE D | UG/L AS SE | 19 | na | 21.3 | 19.0 | 17.9 | 12.8 | 10 | 33.0 | 5.00 | 53.0 | na | na | 20.0 | |
| SELENIUM TOTAL | SE T | UG/L AS SE | 13 | na | 25.5 | 22.0 | 23.2 | 12.2 | 16.0 | 41.0 | 11.0 | 56.0 | na | na | na | |
| ZINC DISS. | ZN D | UG/L AS ZN | 23 | na | 8.00 | 8.00 | 6.82 | 4.68 | 3.00 | 12.8 | 3.00 | 22.0 | na | na | 390 | |
| ZINC TOTAL | ZN T | UG/L AS ZN | 21 | 4.76 | 85.5 | 75.0 | 66.5 | 84.4 | 31.5 | 109 | 20.0 | 420 | 10 | 10 | na | |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | na | |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 | |
| SUSP SED | SSED | MG/L | 22 | na | 632 | 545 | 393 | 793 | 108 | 925 | 45.0 | 3930 | na | na | na | |
| SUSP-SIEVE | SIEV | % | 22 | na | 64.5 | 62.5 | 62.4 | 15.8 | 49.1 | 84.1 | 27.5 | 90.0 | na | na | na | |

Table A12. Univariate statistics for water-quality data collected for station 3700, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | DETECTIONS | | | | | | | CENSOREDS | | | |
|----------------|-------|-----------------|---------|---------|------------|--------|--------|--------|-------|-------|------|-----------|------|--------|----------|
| | | | | % < MRL | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 142 | na | 39.6 | 15.0 | 18.5 | 74.6 | 7.21 | 64.8 | 2.00 | 518 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 118 | na | 298 | 293 | 280 | 99.4 | 179 | 407 | 129 | 565 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 59 | na | 306 | 301 | 291 | 92.4 | 187 | 417 | 138 | 458 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 58 | na | 8.14 | 8.20 | 8.13 | 0.24 | 7.80 | 8.40 | 7.60 | 8.50 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 122 | na | 7.20 | 7.25 | na | 4.80 | 1.50 | 13.0 | 0 | 17.5 | na | na | 20.0 |
| OXYGEN DISS. | DO | MG/L | 58 | na | 9.74 | 9.85 | 9.65 | 1.27 | 8.10 | 11.2 | 7.70 | 12.2 | na | na | 7.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 57 | na | 97.8 | 97.0 | 97.7 | 3.38 | 95.0 | 101 | 91.0 | 109 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | 3.45 | 0.61 | 0.55 | 0.53 | 0.38 | 0.30 | 0.90 | 0.20 | 2.30 | 0.30 | 0.30 | na |
| CALIFORN FECAL | FCOL | COLS./100 ML | 54 | na | 350 | 135 | 161 | 556 | 50.0 | 668 | 8.00 | 3500 | na | na | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 56 | na | 415 | 180 | 214 | 682 | 55.8 | 735 | 26.0 | 4700 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 31.8 | 31.0 | 30.2 | 9.93 | 19.0 | 43.0 | 15.0 | 50.0 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 59 | na | 6.35 | 6.20 | 5.95 | 2.15 | 3.69 | 8.70 | 2.70 | 10 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 104 | 105 | 96.7 | 37.0 | 56.2 | 149 | 39.0 | 166 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 58 | na | 14.5 | 14.6 | 14.1 | 3.32 | 11.0 | 18.0 | 7.20 | 20.0 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 58 | na | 16.6 | 16.0 | 15.3 | 6.32 | 9.25 | 24.0 | 6.30 | 33.7 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 58 | na | 2.66 | 2.70 | 2.64 | 0.25 | 2.50 | 2.90 | 1.60 | 3.10 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 106 | 100 | 99.9 | 33.8 | 64.0 | 140 | 49.0 | 170 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | 3.39 | 27.1 | 12.0 | 10.7 | 43.2 | 2.00 | 42.2 | 1.00 | 212 | 1.00 | 1.00 | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 55 | 60.0 | 0.02 | 0.02 | 0.02 | 0.008 | 0.02 | 0.03 | 0.01 | 0.04 | 0.01 | 0.01 | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 22 | na | 0.0006 | 0.001 | na | 0.0006 | 0 | 0.001 | 0 | 0.002 | na | na | 0.02 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 55 | na | 0.83 | 0.86 | 0.77 | 0.27 | 0.50 | 1.10 | 0.12 | 1.30 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 55 | 81.8 | 0.01 | 0.01 | 0.01 | 0.005 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.05 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | 76.3 | 0.31 | 0.21 | 0.28 | 0.15 | 0.20 | 0.45 | 0.20 | 0.70 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 55 | 80.0 | 0.01 | 0.01 | 0.01 | 0.005 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 1 | na | 85.7 | 85.7 | 85.7 | na | na | 85.7 | 85.7 | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 1 | na | 45.8 | 45.8 | 45.8 | na | na | 45.8 | 45.8 | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 0.99 | 1.00 | 5.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | na | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 98.3 | 3.00 | 3.00 | 3.00 | na | na | 3.00 | 3.00 | 1.00 | 1.00 | 50.0 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 59 | 96.6 | 1.00 | 1.00 | 1.00 | 0 | na | 1.00 | 1.00 | 1.00 | 1.00 | 11.0 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 59 | 86.4 | 1.43 | 1.20 | 1.36 | 0.46 | 1.00 | 2.07 | 1.00 | 2.10 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 79.7 | 1.18 | 1.00 | 1.13 | 0.44 | 1.00 | 1.46 | 0.89 | 2.50 | 1.00 | 1.00 | 15.8 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | 42.4 | 1.81 | 1.95 | 1.63 | 0.89 | 1.00 | 2.95 | 1.00 | 4.00 | 1.00 | 1.00 | na |
| IRON TOTAL | FE T | UG/L AS FE | 59 | na | 925 | 440 | 541 | 1180 | 180 | 1500 | 130 | 5900 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 59 | 5.08 | 40.9 | 37.5 | 31.7 | 30.9 | 12.5 | 60.0 | 6.52 | 189 | 10 | 10 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 96.6 | 1.45 | 1.45 | 1.33 | 0.79 | na | 0.89 | 2.00 | 1.00 | 1.00 | 1.00 | 6.27 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 50.8 | 3.72 | 2.00 | 2.81 | 3.17 | 1.10 | 8.00 | 1.00 | 12.0 | 1.00 | 1.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 59 | 1.69 | 30.2 | 29.1 | 28.2 | 10.6 | 17.0 | 41.5 | 9.00 | 53.0 | 10 | 10 | 50.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 59 | na | 86.2 | 60.0 | 70.4 | 68.3 | 40.0 | 120 | 30.0 | 350 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 1 | na | 2.48 | 2.48 | 2.48 | na | na | 2.48 | 2.48 | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 59 | 93.2 | 1.32 | 1.15 | 1.27 | 0.47 | na | 1.00 | 2.00 | 1.00 | 1.00 | 100 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 59 | 64.4 | 1.68 | 1.00 | 1.40 | 1.39 | 1.00 | 2.70 | 1.00 | 7.00 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 1 | 100 | na | na | na | na | na | na | na | 0.20 | 0.20 | 0.13 | 0.13 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | 5.00 | 5.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 59 | 52.5 | 4.79 | 5.00 | 4.64 | 1.20 | 3.15 | 6.00 | 3.00 | 7.00 | 4.35 | 3.00 | 141 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 59 | 61.0 | 21.3 | 20.0 | 19.0 | 10.6 | 10 | 30.0 | 10 | 50.0 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 51 | na | 383 | 31.0 | 45.1 | 1400 | 9.96 | 315 | 2.90 | 8020 | na | na | na |
| SUSP-SIEVE | SIEV | % | 1 | na | 60.0 | 60.0 | 60.0 | na | na | 60.0 | 60.0 | na | na | na | na |

Table A13. Univariate statistics for water-quality data collected for station 3747, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean; Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second; CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

Table A14. Univariate statistics for water-quality data collected for station 3780, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 118 | na | 14.4 | 5.75 | 7.87 | 20.9 | 2.70 | 29.0 | 1.40 | 158 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 115 | na | 279 | 302 | 267 | 76.1 | 182 | 353 | 112 | 405 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 59 | na | 287 | 305 | 275 | 77.6 | 177 | 357 | 133 | 415 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 58 | na | 8.21 | 8.20 | 8.20 | 0.31 | 7.89 | 8.50 | 7.50 | 9.00 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 117 | na | 10.7 | 10.5 | na | 7.11 | 2.00 | 19.2 | 0 | 26.0 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 56 | na | 9.09 | 8.85 | 8.99 | 1.39 | 7.66 | 10.8 | 6.70 | 11.8 | na | na | 6.00 |
| OXYGEN DIS. % | DO | % OF SATURATION | 56 | na | 102 | 100 | 102 | 7.41 | 95.6 | 111 | 92.0 | 125 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 59 | 1.69 | 1.31 | 1.20 | 1.21 | 0.54 | 0.88 | 1.80 | 0.20 | 3.60 | 1.20 | 1.20 | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 56 | na | 43.7 | 32.5 | 22.0 | 54.9 | 5.00 | 80.9 | 1.00 | 340 | na | na | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 59 | 1.69 | 44.1 | 28.0 | 26.1 | 53.1 | 8.85 | 84.3 | 3.00 | 350 | 1.00 | 1.00 | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 25.7 | 27.0 | 25.2 | 4.92 | 19.1 | 30.0 | 14.4 | 34.0 | na | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 59 | na | 4.23 | 4.50 | 4.11 | 0.94 | 2.94 | 5.20 | 2.15 | 5.80 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 78.5 | 82.0 | 76.2 | 17.5 | 56.0 | 97.0 | 35.0 | 108 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 22.2 | 24.0 | 20.7 | 7.71 | 12.0 | 30.0 | 9.57 | 37.0 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 59 | na | 20.3 | 21.4 | 18.3 | 8.01 | 9.34 | 29.0 | 5.42 | 34.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 59 | na | 1.44 | 1.40 | 1.43 | 0.15 | 1.30 | 1.60 | 1.10 | 1.70 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 81.8 | 86.0 | 80.0 | 16.2 | 60.0 | 96.0 | 45.0 | 110 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | 5.08 | 28.8 | 11.0 | 12.9 | 43.9 | 5.00 | 65.2 | 1.00 | 187 | 1.00 | 1.00 | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 56 | 26.8 | 0.15 | 0.04 | 0.07 | 0.26 | 0.02 | 0.28 | 0.02 | 1.20 | 0.01 | 0.01 | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 40 | na | 0.005 | 0.002 | na | 0.02 | 0.001 | 0.005 | 0 | 0.10 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 56 | 10.7 | 0.69 | 0.44 | 0.42 | 0.66 | 0.10 | 1.34 | 0.06 | 3.20 | 0.05 | 0.05 | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 46.4 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.04 | 0.01 | 0.13 | 0.01 | 0.01 | 0.50 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | na | 0.58 | 0.50 | 0.51 | 0.34 | 0.34 | 0.80 | 0.20 | 1.70 | na | na | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 56 | na | 0.73 | 0.70 | 0.56 | 0.44 | 0.23 | 1.20 | 0.04 | 2.10 | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 3.75 | na |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | na | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 96.6 | 3.30 | 3.30 | 3.22 | 0.99 | na | 2.60 | 4.00 | 1.00 | 1.00 | 50.0 | na |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 59 | 94.9 | 1.33 | 1.00 | 1.26 | 0.58 | na | 1.00 | 2.00 | 1.00 | 1.00 | 11.0 | na |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 58 | 94.8 | 1.83 | 2.00 | 1.82 | 0.29 | na | 1.50 | 2.00 | 1.00 | 1.00 | na | na |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 18.6 | 1.91 | 2.00 | 1.71 | 0.93 | 1.00 | 3.00 | 1.00 | 5.00 | 1.00 | 1.00 | 11.4 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | 6.78 | 2.49 | 2.00 | 2.12 | 2.08 | 1.00 | 3.84 | 1.00 | 16.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE D | UG/L AS FE | 59 | na | 783 | 530 | 613 | 722 | 330 | 1300 | 259 | 3700 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 55 | na | 90.7 | 94.0 | 80.3 | 40.9 | 40.0 | 126 | 13.0 | 220 | na | na | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 96.6 | 3.00 | 3.00 | 2.24 | 2.83 | na | 1.00 | 5.00 | 1.00 | 1.00 | 1.00 | 3.67 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 69.5 | 2.09 | 1.80 | 1.74 | 1.41 | 1.00 | 4.15 | 1.00 | 5.00 | 1.00 | 1.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 59 | na | 43.7 | 42.0 | 41.7 | 13.2 | 30.0 | 56.0 | 23.0 | 76.0 | na | na | 71.0 |
| MANGANESE TOT | MN T | UG/L AS MN | 59 | na | 86.2 | 80.0 | 76.8 | 46.7 | 50.0 | 120 | 20.0 | 300 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NID | UG/L AS NI | 59 | 39.0 | 1.72 | 2.00 | 1.60 | 0.65 | 1.00 | 2.00 | 1.00 | 3.20 | 1.00 | 1.00 | 92.7 |
| NICKEL TOTAL | NIT | UG/L AS NI | 59 | 16.9 | 2.08 | 2.00 | 1.94 | 0.72 | 1.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.07 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZND | UG/L AS ZN | 59 | 39.0 | 10.2 | 10 | 9.50 | 3.77 | 6.44 | 13.5 | 4.00 | 20.0 | 4.52 | 3.00 | 102 |
| ZINC TOTAL | ZNT | UG/L AS ZN | 59 | 52.5 | 16.3 | 17.5 | 15.1 | 6.69 | 10 | 20.0 | 10 | 30.0 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A15. Univariate statistics for water-quality data collected for station 4000, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO₃ is for nitrate)

Table A16. Univariate statistics for water-quality data collected for station 4905, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 59 | na | 34.9 | 22.0 | 25.1 | 44.8 | 14.0 | 47.0 | 6.10 | 305 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 58 | na | 643 | 679 | 626 | 138 | 449 | 766 | 254 | 901 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 59 | na | 649 | 683 | 632 | 138 | 457 | 776 | 257 | 931 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 58 | na | 8.37 | 8.40 | 8.36 | 0.23 | 8.20 | 8.60 | 7.50 | 8.60 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 59 | na | 14.0 | 15.0 | na | 9.46 | 1.00 | 25.0 | 0 | 30.0 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 57 | na | 8.45 | 7.80 | 8.25 | 1.88 | 6.57 | 11.3 | 5.80 | 12.6 | na | na | 6.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 57 | na | 99.4 | 98.0 | 99.3 | 5.03 | 96.0 | 103 | 89.0 | 125 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 59 | 1.69 | 1.06 | 0.80 | 0.77 | 0.98 | 0.40 | 1.63 | 0.10 | 5.50 | 1.10 | 1.10 | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 55 | na | 220 | 140 | 123 | 275 | 34.0 | 300 | 8.00 | 1350 | na | na | 200 |
| FECAL STRPT | FSTRP | COLS./100 ML | 58 | na | 264 | 195 | 178 | 313 | 95.5 | 400 | 17.0 | 1800 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 74.7 | 80.0 | 72.1 | 17.8 | 48.1 | 90.0 | 27.0 | 110 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 59 | na | 13.5 | 14.0 | 12.9 | 3.72 | 8.10 | 17.0 | 4.60 | 23.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 140 | 149 | 136 | 28.7 | 99.0 | 161 | 56.0 | 197 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 141 | 150 | 133 | 43.0 | 83.0 | 180 | 38.0 | 240 | na | na | 250 |
| CHLORIDE DISS. | CL | MG/L AS CL | 59 | na | 25.9 | 26.0 | 24.8 | 7.52 | 18.0 | 30.0 | 11.0 | 54.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 59 | na | 1.29 | 1.30 | 1.28 | 0.18 | 1.20 | 1.50 | 0.50 | 1.62 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 241 | 260 | 232 | 60.0 | 150 | 290 | 86.0 | 370 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 58 | 1.72 | 190 | 128 | 130 | 190 | 42.1 | 334 | 15.0 | 1070 | 1.00 | 1.00 | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 56 | 41.1 | 0.07 | 0.02 | 0.03 | 0.15 | 0.02 | 0.08 | 0.01 | 0.83 | 0.01 | 0.01 | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 32 | na | 0.003 | 0.002 | na | 0.007 | 0 | 0.004 | 0 | 0.04 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 56 | na | 3.15 | 3.30 | 2.94 | 1.02 | 1.67 | 4.10 | 0.72 | 4.80 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 30.4 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | 0.07 | 0.01 | 0.01 | 0.50 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | 8.47 | 0.51 | 0.40 | 0.44 | 0.29 | 0.30 | 0.79 | 0.20 | 1.50 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 56 | 1.79 | 0.08 | 0.08 | 0.07 | 0.04 | 0.04 | 0.11 | 0.02 | 0.31 | 0.01 | 0.01 | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 98.3 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 93.2 | 1.63 | 1.25 | 1.47 | 0.93 | na | na | 1.00 | 3.00 | 1.00 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 58 | 94.8 | 1.33 | 1.00 | 1.26 | 0.58 | na | na | 1.00 | 2.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 58 | 25.9 | 2.92 | 2.10 | 2.41 | 2.25 | 1.40 | 5.16 | 1.00 | 12.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 25.4 | 1.39 | 1.00 | 1.25 | 0.96 | 1.00 | 2.00 | 1.00 | 6.80 | 1.00 | 1.00 | 29.4 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | na | 5.46 | 4.00 | 4.47 | 4.47 | 2.80 | 8.00 | 2.00 | 25.0 | na | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 59 | na | 4030 | 2700 | 2790 | 4120 | 1300 | 6080 | 470 | 20000 | na | na | 1000 |
| IRON DISS. | FE D | UG/L AS FE | 58 | 58.6 | 8.27 | 5.00 | 6.69 | 6.35 | 4.00 | 16.0 | 3.00 | 28.0 | 4.85 | 3.00 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 98.3 | 3.00 | 3.00 | 3.00 | na | na | 3.00 | 3.00 | 1.00 | 1.00 | 1.00 | 17.6 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 5.08 | 6.05 | 4.00 | 4.20 | 7.08 | 2.00 | 9.45 | 1.00 | 42.0 | 1.00 | 1.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 59 | 16.9 | 3.57 | 3.00 | 2.93 | 2.36 | 1.13 | 6.00 | 1.00 | 10 | 7.30 | 10 | 71.0 |
| MANGANESE TOT | MD T | UG/L AS MN | 59 | 1.69 | 117 | 90.0 | 85.3 | 107 | 30.0 | 176 | 10 | 590 | 10 | 10 | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | 0.10 | 0.01 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NID | UG/L AS NI | 59 | 39.0 | 1.49 | 1.20 | 1.40 | 0.55 | 1.00 | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NIT | UG/L AS NI | 58 | na | 4.12 | 3.00 | 3.40 | 3.20 | 2.00 | 6.06 | 1.00 | 18.0 | na | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.47 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | 5.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZND | UG/L AS ZN | 59 | 69.5 | 5.56 | 5.00 | 5.07 | 2.74 | 3.00 | 7.72 | 3.00 | 14.0 | 4.02 | 3.00 | 261 |
| ZINC TOTAL | ZNT | UG/L AS ZN | 59 | 16.9 | 31.4 | 20.0 | 24.3 | 29.2 | 10 | 50.0 | 10 | 160 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A17. Univariate statistics for water-quality data collected for station 5500, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEGENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | % < MRL | | DETECTIONS | | | | | | | CENSOREDS | | | |
|----------------|-------|-----------------|------------|---------|--------|------------|--------|-------|-------|-------|------|-------|-----------|--------|----------|------|
| | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | | Mean | Median | Standard | |
| DISCHARGE | CFS | CFS | 193 | na | 101 | 43.0 | 52.5 | 185 | 23.0 | 163 | 4.00 | 1800 | na | na | na | |
| SPECIFIC COND. | COND | US/CM @ 25C | 163 | na | 592 | 600 | 562 | 176 | 374 | 756 | 222 | 1010 | na | na | na | |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 59 | na | 587 | 607 | 559 | 168 | 372 | 751 | 237 | 974 | na | na | na | |
| PH, WH, FIELD | PH | STANDARD UNITS | 59 | na | 8.18 | 8.20 | 8.18 | 0.19 | 8.00 | 8.40 | 7.60 | 8.40 | na | na | na | |
| WATER TEMP. | TEMP | DEGREES | 170 | na | 11.8 | 12.0 | na | 7.42 | 2.50 | 20.5 | 0 | 28.5 | na | na | na | |
| OXYGEN DISS. | DO | MG/L | 59 | na | 9.32 | 9.30 | 9.20 | 1.49 | 7.50 | 11.2 | 6.40 | 11.9 | na | na | 5.00 | |
| OXYGEN DIS. % | %DO | % OF SATURATION | 59 | na | 99.8 | 99.0 | 99.7 | 5.28 | 95.0 | 104 | 91.0 | 125 | na | na | na | |
| BOD 5-DAY | BOD5 | MG/L | 58 | na | 0.99 | 0.80 | 0.80 | 0.74 | 0.40 | 1.43 | 0.10 | 4.00 | na | na | na | |
| COLIFORM FECAL | FCOL | COLS./100 ML | 53 | na | 286 | 150 | 150 | 290 | 36.1 | 599 | 11.0 | 1100 | na | na | 2000 | |
| FECAL STRPT | FSTRP | COLS./100 ML | 57 | na | 462 | 280 | 267 | 551 | 77.0 | 819 | 35.0 | 3300 | na | na | na | |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 61.6 | 64.0 | 58.5 | 18.1 | 38.3 | 81.0 | 24.0 | 100 | na | na | na | |
| MAGNESIUM DISS | MG | MG/L AS MG | 59 | na | 13.8 | 15.0 | 12.9 | 4.80 | 7.78 | 18.0 | 4.00 | 25.0 | na | na | na | |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 125 | 134 | 120 | 33.2 | 77.1 | 157 | 55.0 | 191 | na | na | na | |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 128 | 130 | 116 | 49.7 | 61.5 | 180 | 32.0 | 271 | na | na | 330 | |
| CHLORIDE DISS. | CL | MG/L AS CL | 59 | na | 22.4 | 24.0 | 21.2 | 6.53 | 14.0 | 28.0 | 8.40 | 35.0 | na | na | 250 | |
| FLUORIDE DISS. | F | MG/L AS F | 59 | na | 2.01 | 2.00 | 1.98 | 0.35 | 1.70 | 2.37 | 1.20 | 3.10 | na | na | 2.00 | |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 211 | 220 | 200 | 63.9 | 130 | 270 | 76.0 | 350 | na | na | na | |
| RESIDUE TOTAL | RES | MG/L | 59 | na | 117 | 84.0 | 86.8 | 110 | 38.0 | 171 | 22.0 | 640 | na | na | na | |
| NITROGEN AMM | TNH3 | MG/L AS N | 55 | 30.9 | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.09 | 0.01 | 0.14 | 0.01 | 0.01 | na | |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 38 | na | 0.001 | 0.001 | na | 0.001 | 0 | 0.002 | 0 | 0.006 | na | na | 0.10 | |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 55 | na | 2.20 | 2.45 | 2.02 | 0.82 | 1.17 | 3.00 | 0.59 | 3.70 | na | na | 10 | |
| NITROGEN, NO2 | NIT | MG/L AS N | 55 | 38.2 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.03 | 0.01 | 0.06 | 0.01 | 0.01 | 1.00 | |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | 22.0 | 0.37 | 0.30 | 0.33 | 0.22 | 0.20 | 0.50 | 0.20 | 1.20 | 0.20 | 0.20 | na | |
| PHOSPHORUS O | OPO4 | MG/L AS P | 55 | 3.64 | 0.05 | 0.05 | 0.04 | 0.02 | 0.03 | 0.07 | 0.02 | 0.08 | 0.01 | 0.01 | na | |
| ARSENIC DISS. | AS | D | UG/L AS AS | 10 | 80.0 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 50.0 | |
| ARSENIC TOTAL | AS | T | UG/L AS AS | 9 | 22.2 | 2.14 | 2.00 | 2.03 | 0.69 | 1.20 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA | D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| BARIUM TOTAL | BA | T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| BORON DISS. | B | D | UG/L AS B | 10 | na | 57.1 | 65.0 | 52.0 | 22.0 | 26.5 | 80.0 | 20.0 | 80.0 | na | 750 | |
| BORON TOTAL | B | T | UG/L AS B | 10 | na | 63.5 | 70.0 | 60.6 | 19.2 | 38.3 | 83.5 | 35.0 | 90.0 | na | na | |
| CADMIUM DISS. | CD | D | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 5.00 | |
| CADMIUM TOTAL | CD | T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | na | |
| CHROMIUM DISS. | CR | D | UG/L AS CR | 59 | 98.3 | 1.00 | 1.00 | 1.00 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 50.0 | |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 59 | 96.6 | 2.00 | 2.00 | 2.00 | 0 | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 11.0 | |
| CHROMIUM TOTAL | CR | T | UG/L AS CR | 58 | 39.7 | 2.12 | 1.80 | 1.84 | 1.29 | 1.04 | 3.76 | 1.00 | 6.10 | 1.00 | 1.00 | na |
| COPPER DISS. | CU | D | UG/L AS CU | 59 | 47.5 | 1.25 | 1.00 | 1.19 | 0.43 | 1.00 | 2.00 | 1.00 | 2.10 | 1.00 | 1.00 | 27.6 |
| COPPER TOTAL | CU | T | UG/L AS CU | 59 | 3.39 | 3.66 | 3.00 | 3.19 | 2.14 | 2.00 | 5.58 | 1.00 | 11.0 | 1.00 | 1.00 | na |
| IRON TOTAL | FE | T | UG/L AS FE | 59 | na | 2640 | 2000 | 2010 | 2300 | 940 | 4600 | 510 | 12000 | na | na | 8000 |
| IRON DISS. | FE | D | UG/L AS FE | 59 | 28.8 | 16.2 | 7.00 | 8.83 | 32.3 | 5.00 | 17.8 | 3.00 | 160 | 5.47 | 3.00 | 300 |
| LEAD DISS. | PB | D | UG/L AS PB | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 15.9 | |
| LEAD TOTAL | PB | T | UG/L AS PB | 59 | na | 5.93 | 3.60 | 3.94 | 7.39 | 2.00 | 11.0 | 1.00 | 48.0 | na | na | na |
| MANGANESE DISS | MN | D | UG/L AS MN | 59 | 3.39 | 22.6 | 21.0 | 19.3 | 12.9 | 9.70 | 33.3 | 6.00 | 70.0 | 10 | 50.0 | |
| MANGANESE TOT | MN | T | UG/L AS MN | 59 | na | 108 | 90.0 | 94.2 | 65.7 | 60.0 | 170 | 30.0 | 410 | na | na | na |
| MERCURY DISS. | HG | D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | 0.10 | |
| MERCURY, TOT | HG | T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | 0.01 | |
| MOLYBDENUM DIS | MO | D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| MOLYBDENUM TOT | MO | T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| NICKEL DISS. | NI | D | UG/L AS NI | 59 | 50.8 | 1.12 | 1.00 | 1.09 | 0.31 | 1.00 | 1.20 | 1.00 | 2.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NI | T | UG/L AS NI | 59 | 5.08 | 2.89 | 3.00 | 2.59 | 1.47 | 2.00 | 4.00 | 1.00 | 9.00 | 1.00 | 1.00 | na |
| SILVER DISS. | AG | D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | 0.41 | |
| SILVER TOTAL | AG | T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| SELENIUM DISS. | SE | D | UG/L AS SE | 28 | na | 4.28 | 4.12 | 3.76 | 1.96 | 1.98 | 6.72 | 1.00 | 7.00 | na | 6.00 | |
| SELENIUM TOTAL | SE | T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | |
| ZINC DISS. | ZN | D | UG/L AS ZN | 59 | 50.8 | 5.88 | 5.00 | 5.43 | 2.46 | 3.37 | 9.52 | 3.00 | 12.0 | 4.40 | 3.00 | 246 |
| ZINC TOTAL | ZN | T | UG/L AS ZN | 59 | 10.2 | 24.9 | 20.0 | 21.2 | 15.8 | 10 | 39.7 | 10 | 90.0 | 10 | 10 | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 10 | 90.0 | 0.80 | 0.80 | 0.80 | na | na | na | 0.80 | 0.80 | 0.50 | 0.50 | 0.002 | |
| CYANIDE TOTAL | CYN | MG/L AS CN | 10 | 100 | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.005 | | |
| SUSP SED | SSED | MG/L | 49 | na | 663 | 149 | 199 | 1760 | 63.5 | 630 | 44.0 | 10200 | na | na | na | |
| SUSP-SIEVE | SIEV | % | 1 | na | 46.0 | 46.0 | 46.0 | na | na | na | 46.0 | 46.0 | na | na | na | |

Table A18. Univariate statistics for water-quality data collected for station 5530, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean; Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum; Max, maximum; na, not applicable; CFS, cubic feet per second; CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|-------|------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 59 | na | 135 | 97.0 | 112 | 135 | 75.0 | 190 | 54.0 | 1000 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 58 | na | 719 | 767 | 703 | 136 | 562 | 824 | 301 | 893 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 58 | na | 716 | 755 | 702 | 127 | 555 | 831 | 341 | 897 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 59 | na | 7.91 | 7.90 | 7.91 | 0.15 | 7.80 | 8.00 | 7.50 | 8.20 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 59 | na | 14.9 | 14.5 | 14.2 | 4.61 | 9.50 | 21.0 | 7.50 | 23.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 58 | na | 7.71 | 7.80 | 7.67 | 0.83 | 6.50 | 8.60 | 6.10 | 9.20 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 57 | na | 94.2 | 94.0 | 94.0 | 5.13 | 89.0 | 99.0 | 84.0 | 114 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 56 | na | 10.7 | 11.0 | 9.01 | 5.65 | 4.43 | 17.0 | 1.50 | 29.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 56 | na | 451 | 190 | 198 | 695 | 48.1 | 868 | 13.0 | 3300 | na | na | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 56 | na | 395 | 265 | 251 | 519 | 92.4 | 613 | 48.0 | 3300 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 49.9 | 50.9 | 49.2 | 8.29 | 41.4 | 59.0 | 27.0 | 67.0 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 59 | na | 15.1 | 16.0 | 14.8 | 3.01 | 12.0 | 18.0 | 6.30 | 20.4 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 98.1 | 96.0 | 96.7 | 15.8 | 82.0 | 115 | 56.0 | 130 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 152 | 160 | 148 | 32.4 | 118 | 180 | 54.0 | 200 | na | na | 330 |
| CHLORIDE DISS. | CL | MG/L AS CL | 59 | na | 36.2 | 38.0 | 34.6 | 9.33 | 25.0 | 44.0 | 12.0 | 53.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 59 | na | 1.80 | 1.80 | 1.78 | 0.27 | 1.50 | 2.10 | 1.30 | 2.42 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 187 | 190 | 183 | 32.9 | 160 | 220 | 93.0 | 240 | na | na | na |
| RESIDUE TOTAL | RBS | MG/L | 59 | na | 65.4 | 46.0 | 49.4 | 67.2 | 24.0 | 100 | 15.0 | 446 | na | na | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 56 | 1.79 | 4.93 | 5.30 | 2.90 | 3.60 | 0.72 | 9.66 | 0.02 | 11.0 | 0.01 | 0.01 | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 55 | na | 0.11 | 0.08 | 0.06 | 0.10 | 0.01 | 0.21 | 0.001 | 0.43 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 56 | na | 2.63 | 2.50 | 2.43 | 0.98 | 1.67 | 3.90 | 0.71 | 4.60 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 1.79 | 0.18 | 0.15 | 0.14 | 0.21 | 0.08 | 0.22 | 0.02 | 1.60 | 0.01 | 0.01 | 1.00 |
| NITROGEN AMM+ | TNIT | MG/L AS N | 59 | na | 6.79 | 7.00 | 5.00 | 4.39 | 1.68 | 12.0 | 0.50 | 16.0 | na | na | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 56 | na | 1.07 | 0.83 | 0.53 | 0.94 | 0.07 | 2.29 | 0.03 | 2.80 | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 10 | 60.0 | 1.00 | 1.00 | 1.00 | 0 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 9 | 22.2 | 2.00 | 2.00 | 1.85 | 0.81 | 1.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 10 | na | 124 | 145 | 109 | 52.2 | 43.0 | 167 | 30.0 | 180 | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 10 | na | 122 | 135 | 111 | 48.1 | 53.0 | 170 | 40.0 | 170 | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 98.3 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 79.7 | 1.50 | 1.20 | 1.40 | 0.66 | 1.10 | 2.62 | 1.00 | 3.00 | 1.00 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 59 | 91.5 | 1.80 | 2.00 | 1.64 | 0.84 | na | 1.00 | 3.00 | 1.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 59 | 39.0 | 2.10 | 2.00 | 1.95 | 0.82 | 1.20 | 3.00 | 1.00 | 4.70 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 8.47 | 3.23 | 3.00 | 2.81 | 1.66 | 1.78 | 5.00 | 1.00 | 8.00 | 1.00 | 1.00 | 23.2 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | na | 6.20 | 6.00 | 5.57 | 2.88 | 3.00 | 9.00 | 2.00 | 14.0 | na | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 59 | na | 1460 | 860 | 1050 | 1550 | 533 | 2200 | 280 | 9000 | na | na | 8000 |
| IRON DISS. | FE D | UG/L AS FE | 59 | na | 52.9 | 37.0 | 36.7 | 97.6 | 20.0 | 65.0 | 7.97 | 770 | na | na | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 91.5 | 1.40 | 1.00 | 1.25 | 0.89 | na | na | 1.00 | 3.00 | 1.00 | 1.00 | 11.9 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | 3.39 | 4.76 | 3.00 | 3.32 | 5.63 | 2.00 | 7.15 | 1.00 | 33.0 | 1.00 | 1.00 | na |
| MANGANESE DISS | MN D | UG/L AS MN | 59 | na | 57.5 | 60.0 | 52.9 | 20.4 | 32.0 | 74.0 | 13.0 | 110 | na | na | 50.0 |
| MANGANESE TOT | MD T | UG/L AS MN | 59 | na | 109 | 100 | 103 | 46.7 | 80.0 | 140 | 40.0 | 350 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 59 | 8.47 | 2.65 | 2.40 | 2.37 | 1.37 | 1.40 | 3.00 | 1.00 | 9.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 59 | na | 3.77 | 4.00 | 3.51 | 1.54 | 2.70 | 5.00 | 1.30 | 10 | na | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.29 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 28 | na | 3.54 | 3.55 | 3.33 | 1.22 | 2.46 | 4.46 | 1.00 | 7.00 | na | na | 6.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 59 | 3.39 | 24.6 | 23.0 | 22.5 | 9.46 | 14.4 | 34.6 | 5.36 | 50.0 | 3.00 | 3.00 | 207 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 59 | na | 37.8 | 35.0 | 35.0 | 14.2 | 25.0 | 50.0 | 10 | 80.0 | na | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 10 | 100 | na | na | na | na | na | na | na | na | 0.95 | 0.50 | 0.002 |
| CYANIDE TOTAL | CYN | MG/L AS CN | 10 | 100 | na | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.005 |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A19. Univariate statistics for water-quality data collected for station 5533, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO₃ is for nitrate)

Table A20. Univariate statistics for water-quality data collected for station 5905, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|----------------|-------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|-------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 58 | na | 138 | 102 | 103 | 142 | 46.3 | 211 | 24.0 | 845 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 59 | na | 941 | 990 | 922 | 171 | 69.1 | 1070 | 494 | 1230 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 59 | na | 926 | 971 | 909 | 165 | 694 | 1050 | 498 | 1230 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 58 | na | 7.96 | 8.00 | 7.96 | 0.12 | 7.89 | 8.10 | 7.60 | 8.20 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 59 | na | 10.9 | 10 | na | 6.31 | 4.00 | 17.0 | 0 | 23.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 59 | na | 7.98 | 7.90 | 7.88 | 1.26 | 6.40 | 9.60 | 5.90 | 10.8 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 59 | na | 87.0 | 86.0 | 86.6 | 7.80 | 79.0 | 96.0 | 73.0 | 105 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 58 | na | 11.6 | 6.65 | 8.34 | 9.76 | 3.93 | 25.0 | 1.00 | 34.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 53 | 1.89 | 491 | 230 | 256 | 561 | 62.8 | 1010 | 9.00 | 2400 | 300 | 300 | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 55 | na | 431 | 240 | 231 | 542 | 72.2 | 866 | 18.0 | 2400 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 59 | na | 70.4 | 72.0 | 68.9 | 13.6 | 53.3 | 83.0 | 37.0 | 100 | na | na | na |
| MAGNESIUM DISS | MG | MG/L AS MG | 59 | na | 22.8 | 23.0 | 22.2 | 4.66 | 17.6 | 27.0 | 11.0 | 33.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 59 | na | 141 | 141 | 138 | 24.2 | 112 | 161 | 82.0 | 191 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 59 | na | 240 | 240 | 234 | 53.3 | 170 | 290 | 110 | 380 | na | na | 330 |
| CHLORIDE DISS. | CL | MG/L AS CL | 59 | na | 44.4 | 47.0 | 43.0 | 9.71 | 34.0 | 52.0 | 16.0 | 59.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 59 | na | 1.67 | 1.70 | 1.65 | 0.26 | 1.40 | 1.90 | 0.80 | 2.25 | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 59 | na | 270 | 280 | 264 | 52.3 | 210 | 320 | 140 | 380 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 59 | 150 | 79.0 | 82.3 | 224 | 29.0 | 236 | 14.0 | 1340 | na | na | na | na |
| NITROGEN AMM | TNH3 | MG/L AS N | 56 | 3.57 | 1.55 | 0.55 | 0.52 | 1.85 | 0.08 | 3.90 | 0.02 | 6.00 | 0.01 | 0.01 | na |
| UN-IONIZED AMM | NH3- | MG/L AS NH3 | 53 | na | 0.02 | 0.008 | na | 0.02 | 0.002 | 0.04 | 0 | 0.09 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 56 | 1.79 | 4.65 | 4.80 | 4.38 | 1.44 | 2.77 | 6.16 | 1.30 | 7.50 | 0.05 | 0.05 | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 1.79 | 0.12 | 0.09 | 0.09 | 0.08 | 0.05 | 0.23 | 0.01 | 0.34 | 0.01 | 0.01 | 1.00 |
| NITROGEN AMM+ | TNT | MG/L AS N | 59 | 1.69 | 2.49 | 1.25 | 1.74 | 2.12 | 0.72 | 5.42 | 0.40 | 8.00 | 0.20 | 0.20 | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 56 | 1.79 | 0.87 | 0.71 | 0.66 | 0.60 | 0.27 | 1.56 | 0.08 | 2.30 | 0.01 | 0.01 | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 10 | 20.0 | 1.50 | 1.41 | 0.54 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.00 | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 9 | 11.1 | 2.71 | 2.32 | 2.44 | 1.28 | 1.35 | 4.65 | 1.00 | 5.00 | 1.00 | 1.00 | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 10 | na | 165 | 190 | 151 | 61.5 | 73.0 | 224 | 60.0 | 230 | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 9 | na | 157 | 180 | 145 | 58.4 | 80.0 | 220 | 70.0 | 230 | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 59 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 59 | 96.6 | 1.90 | 1.90 | 1.90 | 0.14 | na | 1.80 | 2.00 | 1.00 | 1.00 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 58 | 96.6 | 3.50 | 3.50 | 3.46 | 0.71 | na | 3.00 | 4.00 | 1.00 | 1.00 | 1.00 | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 58 | 24.1 | 2.68 | 1.95 | 2.13 | 2.52 | 1.17 | 4.93 | 1.00 | 15.0 | 1.00 | 1.00 | na |
| COPPER DISS. | CU D | UG/L AS CU | 59 | 1.69 | 2.56 | 2.00 | 2.36 | 1.45 | 2.00 | 3.00 | 1.00 | 12.1 | 1.00 | 1.00 | 31.9 |
| COPPER TOTAL | CU T | UG/L AS CU | 59 | na | 7.25 | 6.00 | 6.29 | 4.62 | 4.00 | 11.0 | 2.00 | 28.0 | na | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 59 | na | 4060 | 1800 | 2170 | 7120 | 930 | 4860 | 530 | 45000 | na | na | 8000 |
| IRON DISS. | FE D | UG/L AS FE | 59 | 6.78 | 23.9 | 20.0 | 18.8 | 16.7 | 7.92 | 38.0 | 3.60 | 99.0 | 8.25 | 10 | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 59 | 98.3 | 1.00 | 1.00 | 1.00 | na | na | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 20.2 |
| LEAD TOTAL | PB T | UG/L AS PB | 59 | na | 6.97 | 4.00 | 4.43 | 8.76 | 2.00 | 12.0 | 1.00 | 50.0 | na | na | na |
| MANGANESE DISS | MN D | UG/L AS MN | 59 | na | 58.1 | 60.0 | 41.5 | 39.8 | 12.0 | 110 | 4.25 | 150 | na | na | 50.0 |
| MANGANESE TOT | MD T | UG/L AS MN | 59 | na | 174 | 150 | 148 | 123 | 90.0 | 220 | 46.0 | 809 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DIS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 59 | 1.69 | 3.08 | 3.00 | 2.94 | 0.88 | 2.00 | 4.00 | 1.00 | 5.00 | 1.00 | 1.00 | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 58 | na | 5.75 | 5.00 | 5.26 | 3.19 | 4.00 | 7.00 | 3.00 | 22.0 | na | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.56 |
| SILVER TOTAL | AG T | UG/L AS AG | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 29 | 3.45 | 4.50 | 4.19 | 4.37 | 1.13 | 3.10 | 5.65 | 3.00 | 8.00 | 1.00 | 1.00 | 6.00 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 59 | 6.78 | 15.9 | 16.0 | 14.6 | 6.27 | 9.69 | 22.9 | 4.00 | 30.0 | 4.75 | 3.00 | 284 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 59 | na | 41.5 | 33.0 | 35.8 | 28.8 | 20.0 | 50.0 | 10 | 200 | na | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 10 | 90.0 | 0.80 | 0.80 | 0.80 | na | na | 0.80 | 0.80 | 0.50 | 0.50 | 0.002 | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 10 | 100 | na | na | na | na | na | na | na | 0.01 | 0.01 | 0.005 | na |
| SUSP SED | SSED | MG/L | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| SUSP-SIEVE | SIEV | % | 0 | na | na | na | na | na | na | na | na | na | na | na | na |

Table A21. Univariate statistics for water-quality data collected for station 6300, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter, MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO₃ is for nitrate)

Table A22. Univariate statistics for water-quality data collected for station 6500, October 1992 through September 1997

Note: DETECTIONS refers to analyses with results greater than detection limits; CENSOREDS refers to analyses with results less than method reporting limits; Abrv, abbreviations used on figures; Samples, number of samples collected; % < MRL, percent of samples collected less than method reporting limit; G mean, geometric mean, Stddev, standard deviation; 15.0% 15th percentile; 85.0%, 85th percentile; Min, minimum, Max, maximum; na, not applicable; CFS, cubic feet per second, CONDF, specific conductance measured in field; CONDL, specific conductance measured in lab; US/CM, microsiemens per centimeter; MICROSIEMENS/C, microsiemens per centimeter; WH, whole water; MG/L, milligram per liter; COLS, colonies; ML, milliliter; DISS, dissolved; D, Dissolved, TOT, total; T, total; AMM, ammonia; HEX, hexavalent; Standard, Colorado Department of Public Health and Environment chronic in-stream standard (standard listed for NO23 is for nitrate)

| Variable | Abrv | Units | Samples | | % < MRL | | DETECTIONS | | | | | | CENSOREDS | | |
|-----------------|----------|-----------------|---------|------|---------|--------|------------|--------|-------|-------|------|------|-----------|--------|----------|
| | | | | | Mean | Median | G mean | Stddev | 15.0% | 85.0% | Min | Max | Mean | Median | Standard |
| DISCHARGE | CFS | CFS | 63 | na | 177 | 122 | 113 | 266 | 41.2 | 262 | 11.0 | 2040 | na | na | na |
| SPECIFIC COND. | COND | US/CM @ 25C | 63 | na | 1210 | 1220 | 1180 | 256 | 957 | 1470 | 591 | 2030 | na | na | na |
| SPECIFIC COND. | COND | MICROSIEMENS/C | 61 | na | 1220 | 1200 | 1190 | 253 | 960 | 1490 | 656 | 2040 | na | na | na |
| PH, WH, FIELD | PH | STANDARD UNITS | 61 | na | 8.31 | 8.40 | 8.31 | 0.13 | 8.20 | 8.40 | 7.90 | 8.50 | na | na | na |
| WATER TEMP. | TEMP | DEGREES | 63 | na | 14.4 | 14.5 | na | 8.23 | 4.80 | 24.4 | 0 | 30.5 | na | na | na |
| OXYGEN DISS. | DO | MG/L | 61 | na | 8.62 | 8.40 | 8.49 | 1.55 | 6.73 | 10.4 | 6.10 | 11.6 | na | na | 5.00 |
| OXYGEN DIS. % | %DO | % OF SATURATION | 61 | na | 98.7 | 98.0 | 98.6 | 4.11 | 95.0 | 103 | 90.0 | 115 | na | na | na |
| BOD 5-DAY | BOD5 | MG/L | 59 | na | 3.85 | 2.40 | na | 4.27 | 0.80 | 7.10 | 0 | 22.0 | na | na | na |
| COLIFORM FECAL | FCOL | COLS./100 ML | 56 | na | 370 | 135 | 144 | 564 | 28.1 | 836 | 10 | 2800 | na | na | 2000 |
| FECAL STRPT | FSTRP | COLS./100 ML | 58 | na | 518 | 160 | 195 | 810 | 47.2 | 1240 | 10 | 3200 | na | na | na |
| CALCIUM DISS. | CA | MG/L AS CA | 3 | na | 100 | 100 | 100 | 9.50 | na | na | 91.0 | 110 | na | na | na |
| MAGNESIUM DISS. | MG | MG/L AS MG | 3 | na | 36.7 | 37.0 | 36.5 | 4.51 | na | na | 32.0 | 41.0 | na | na | na |
| ALKALINITY | ALK | MG/L AS CACO3 | 4 | na | 196 | 196 | 195 | 21.2 | na | na | 173 | 220 | na | na | na |
| SULFATE DISS. | SO4 | MG/L AS SO4 | 3 | na | 380 | 370 | 377 | 55.7 | na | na | 330 | 440 | na | na | 490 |
| CHLORIDE DISS. | CL | MG/L AS CL | 3 | na | 58.0 | 56.0 | 57.9 | 4.36 | na | na | 55.0 | 63.0 | na | na | 250 |
| FLUORIDE DISS. | F | MG/L AS F | 0 | na | na | na | na | na | na | na | na | na | na | na | 2.00 |
| HARDNESS TOTAL | HARD | MG/L AS CAO3 | 3 | na | 400 | 400 | 399 | 40.0 | na | na | 360 | 440 | na | na | na |
| RESIDUE TOTAL | RES | MG/L | 58 | 1.72 | 333 | 194 | 186 | 481 | 71.0 | 436 | 6.00 | 2410 | 1.00 | 1.00 | na |
| NITROGEN AMM. | TNH3 | MG/L AS N | 57 | 26.3 | 0.15 | 0.03 | 0.05 | 0.31 | 0.02 | 0.24 | 0.02 | 1.50 | 0.01 | 0.01 | na |
| UN-IONIZED AMM. | AMM-NH3- | MG/L AS NH3- | 41 | na | 0.004 | 0.003 | na | 0.007 | 0.001 | 0.006 | 0 | 0.04 | na | na | 0.10 |
| NO2 + NO3 DISS | NO23 | MG/L AS N | 58 | na | 5.10 | 5.20 | 4.82 | 1.58 | 3.01 | 7.02 | 2.00 | 7.50 | na | na | 10 |
| NITROGEN, NO2 | NIT | MG/L AS N | 56 | 46.4 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.05 | 0.01 | 0.09 | 0.01 | 0.01 | 5.00 |
| NITROGEN AMM+. | TNT | MG/L AS N | 59 | na | 1.05 | 0.80 | 0.80 | 0.94 | 0.40 | 1.60 | 0.20 | 4.60 | na | na | na |
| PHOSPHORUS O | OPO4 | MG/L AS P | 56 | na | 0.52 | 0.40 | 0.42 | 0.35 | 0.25 | 0.95 | 0.11 | 1.50 | na | na | na |
| ARSENIC DISS. | AS D | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| ARSENIC TOTAL | AS T | UG/L AS AS | 0 | na | na | na | na | na | na | na | na | na | na | na | 50.0 |
| BARIUM DISS. | BA D | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BARIUM TOTAL | BA T | UG/L AS BA | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| BORON DISS. | B D | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | 750 |
| BORON TOTAL | B T | UG/L AS B | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CADMIUM DISS. | CD D | UG/L AS CD | 3 | 66.7 | 0.10 | 0.10 | 0.10 | na | na | na | 0.10 | 0.10 | 0.10 | 0.10 | 5.00 |
| CADMIUM TOTAL | CD T | UG/L AS CD | 3 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | na |
| CHROMIUM DISS. | CR D | UG/L AS CR | 3 | 66.7 | 2.00 | 2.00 | 2.00 | na | na | na | 2.00 | 2.00 | 1.00 | 1.00 | 50.0 |
| CHROMIUM HEX. | CR6 | UG/L AS CR | 0 | na | na | na | na | na | na | na | na | na | na | na | 11.0 |
| CHROMIUM TOTAL | CR T | UG/L AS CR | 3 | na | 6.33 | 3.00 | 4.38 | 6.66 | na | na | 2.00 | 14.0 | na | na | na |
| COPPER DISS. | CU D | UG/L AS CU | 3 | na | 2.33 | 2.00 | 2.29 | 0.58 | na | na | 2.00 | 3.00 | na | na | 44.0 |
| COPPER TOTAL | CU T | UG/L AS CU | 3 | na | 8.33 | 8.00 | 8.32 | 0.58 | na | na | 8.00 | 9.00 | na | na | na |
| IRON TOTAL | FE T | UG/L AS FE | 3 | na | 4500 | 4700 | 4340 | 1410 | na | na | 3000 | 5800 | na | na | 5100 |
| IRON DISS. | FE D | UG/L AS FE | 3 | na | 11.3 | 13.0 | 10.8 | 3.79 | na | na | 7.00 | 14.0 | na | na | 300 |
| LEAD DISS. | PB D | UG/L AS PB | 3 | 66.7 | 0.80 | 0.80 | 0.80 | na | na | na | 0.80 | 0.80 | 0.50 | 0.50 | 34.4 |
| LEAD TOTAL | PB T | UG/L AS PB | 3 | na | 11.3 | 8.00 | 9.86 | 7.57 | na | na | 6.00 | 20.0 | na | na | na |
| MANGANESE DISS. | MN D | UG/L AS MN | 3 | na | 5.00 | 5.00 | 4.72 | 2.00 | na | na | 3.00 | 7.00 | na | na | 50.0 |
| MANGANESE TOT | MD T | UG/L AS MN | 3 | na | 200 | 200 | 197 | 40.0 | na | na | 160 | 240 | na | na | na |
| MERCURY DISS. | HG D | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.10 |
| MERCURY, TOT | HG T | UG/L AS HG | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.01 |
| MOLYBDENUM DISS | MO D | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| MOLYBDENUM TOT | MO T | UG/L AS MO | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| NICKEL DISS. | NI D | UG/L AS NI | 3 | na | 2.67 | 3.00 | 2.62 | 0.58 | na | na | 2.00 | 3.00 | na | na | 100 |
| NICKEL TOTAL | NI T | UG/L AS NI | 3 | na | 6.33 | 7.00 | 6.26 | 1.15 | na | na | 5.00 | 7.00 | na | na | na |
| SILVER DISS. | AG D | UG/L AS AG | 3 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | 1.06 |
| SILVER TOTAL | AG T | UG/L AS AG | 3 | 100 | na | na | na | na | na | na | na | 1.00 | 1.00 | 1.00 | na |
| SELENIUM DISS. | SE D | UG/L AS SE | 31 | 3.23 | 16.5 | 14.5 | 15.0 | 7.64 | 8.94 | 26.0 | 6.00 | 38.0 | 1.00 | 1.00 | 20.0 |
| SELENIUM TOTAL | SE T | UG/L AS SE | 3 | na | 23.7 | 21.0 | 23.1 | 6.43 | na | na | 19.0 | 31.0 | na | na | na |
| ZINC DISS. | ZN D | UG/L AS ZN | 3 | na | 8.67 | 9.00 | 8.41 | 2.52 | na | na | 6.00 | 11.0 | na | na | 390 |
| ZINC TOTAL | ZN T | UG/L AS ZN | 3 | na | 30.0 | 40.0 | 25.2 | 17.3 | na | na | 10 | 40.0 | na | na | na |
| SULFIDE TOTAL | H2S | MG/L AS S | 0 | na | na | na | na | na | na | na | na | na | na | na | na |
| CYANIDE TOTAL | CYN | MG/L AS CN | 0 | na | na | na | na | na | na | na | na | na | na | na | 0.005 |
| SUSP SED | SSED | MG/L | 3 | na | 352 | 365 | 343 | 91.7 | na | na | 254 | 436 | na | na | na |
| SUSP-SIEVE | SIEV | % | 3 | na | 43.9 | 54.3 | 36.8 | 25.8 | na | na | 14.6 | 62.9 | na | na | na |