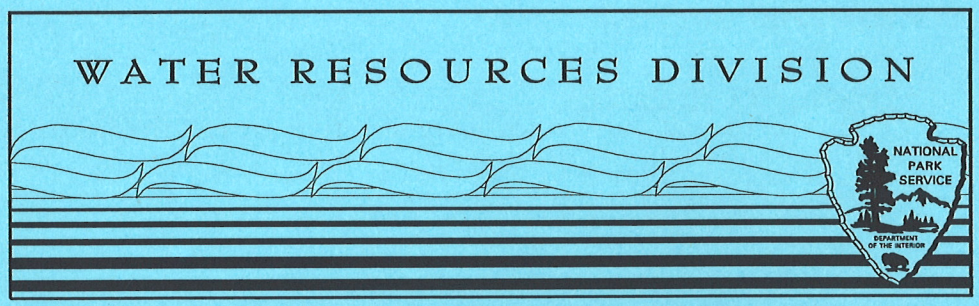
WATER QUALITY DATA ANALYSIS AND INTERPRETATION FOR SPRING MONITORING SITES SOUTHEAST UTAH GROUP

Barry A. Long and Rebecca A. Smith

Technical Report NPS/NRWRD/NRTR-96/77



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Barry A. Long[1] and Rebecca A. Smith[2]

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August, 1996

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EXECUTIVE SUMMARY

The Southeast Utah Group (Canyonlands and Arches National Parks and Natural Bridges National Monument) has been monitoring water quality at spring sites since 1983. Water quality monitoring in springs and the Colorado River began in response to the proposed siting of a nuclear waste repository adjacent to the parks. In 1987, a formalized monitoring program was instituted at 45 spring sites. The Utah Department of Environmental Quality analyzed the water samples collected by park staff after 1990. In recent years, other land uses posing potential threats to water resources prompted needed changes in the monitoring program. In 1992, the Southeast Utah Group revised the spring monitoring program and wrote a monitoring plan. This report presents an assessment of existing water quality data by the Water Resources Division, and includes data results, recommendations on technical aspects of the monitoring program, and corrected/consolidated versions of the park and Utah database files.

In general, median values of most water quality parameters appear to be within normal levels for small springs in the Colorado Plateau; however, wide ranges (minimums and maximums) were measured possibly due to ambient conditions and/or sampling errors. Values of pH below 5.0 and above 10.0 standard units are suspect. Alkalinity values of 17 milligrams per liter (mg/L) are suspect. Sulfate values above 1,000 mg/L in the Utah data are suspect. Nitrate and nitrate plus nitrite values above 2.0 mg/L in both the park and Utah data are suspect. In general, no sites had median pH values less than 6.5 or greater than 9.0 standard units, no sites had median alkalinity values less than 100 mg/L, only one site had a median sulfate value greater than 250 mg/L (SVW1), only two sites had median nitrate or nitrate plus nitrite values greater than 1.0 mg/L (LS1, SVW1), and only one site had a median ammonia value greater than 1.0 mg/L (SVW1). Park data tended to be higher than Utah data for hardness and chloride, and lower for sulfate at most sites. Park copper, iron, and manganese data were significantly different than state metals data at many sites, but park metals data are suspect.

The water quality standards analysis identifies 433 potential violations of Utah water quality standards in the Southeast Utah Group spring database. Data values for dissolved oxygen, pH, nitrate, phosphorus, filtrable residue, copper, iron, lead, silver, zinc, turbidity, fecal coliform, and total coliform appear to exceed Utah water quality standards at several spring sites. The large number of values exceeding or potentially exceeding standards may warrant concern about specific parameters; however, quality control factors raised concerns regarding the accuracy of both the park and Utah data sets.

The Southeast Utah Group's long-term spring monitoring program provides useful information to park managers on contemporary water quality issues, and the monitoring plan and databases provide a good framework for long-term decision making. Future monitoring using improved techniques, and periodic reevaluation of parameters and monitoring sites, is recommended. In addition, the assistance provided by the State of Utah for laboratory analysis of water samples and management of water quality data greatly benefits the park program, and should be continued if possible.

INTRODUCTION

The Southeast Utah Group (Canyonlands and Arches National Parks and Natural Bridges National Monument) has an extensive water quality monitoring program that has been on-going at different levels since 1983. A considerable amount of time and money goes into this monitoring, and the Southeast Utah Group is committed to upgrading the program to address the present needs of the Group parks. In 1992, the Southeast Utah Group requested assistance from the Water Resources Division (WRD) to review the monitoring program. WRD staff visited the parks and met with park staff. Discussions were held regarding the history and current status of the program, and alternatives for future monitoring. Specific topics discussed included: water quality issues; assessment of existing data; data management; monitoring protocols; site and parameter selection; and a monitoring plan. WRD staff recommended that the monitoring program be revised, and a documented monitoring plan be written to focus the scope and design of future monitoring. The Southeast Utah Group water quality monitoring plan was approved in 1994 (National Park Service 1994). WRD consented to provide an assessment of existing water quality data, and assist the subject parks with technical aspects of the monitoring program. This report presents the results of the data assessment, and the accompanying database and analysis files provide a foundation for management of future data.

BACKGROUND

Study Area Description

The Southeast Utah Group is located on the Colorado Plateau in southeast Utah near Moab (Figure 1). The Southeast Utah Group contains three National Park Service units; Canyonlands National Park, Arches National Park, and Natural Bridges National Monument. This sparsely populated area was settled by native peoples and Mormon immigrants, and experienced development during the uranium mining boom. Today, Moab is the gateway to a variety of recreational activities on the plateau and in canyons carved by the Green and Colorado River systems.

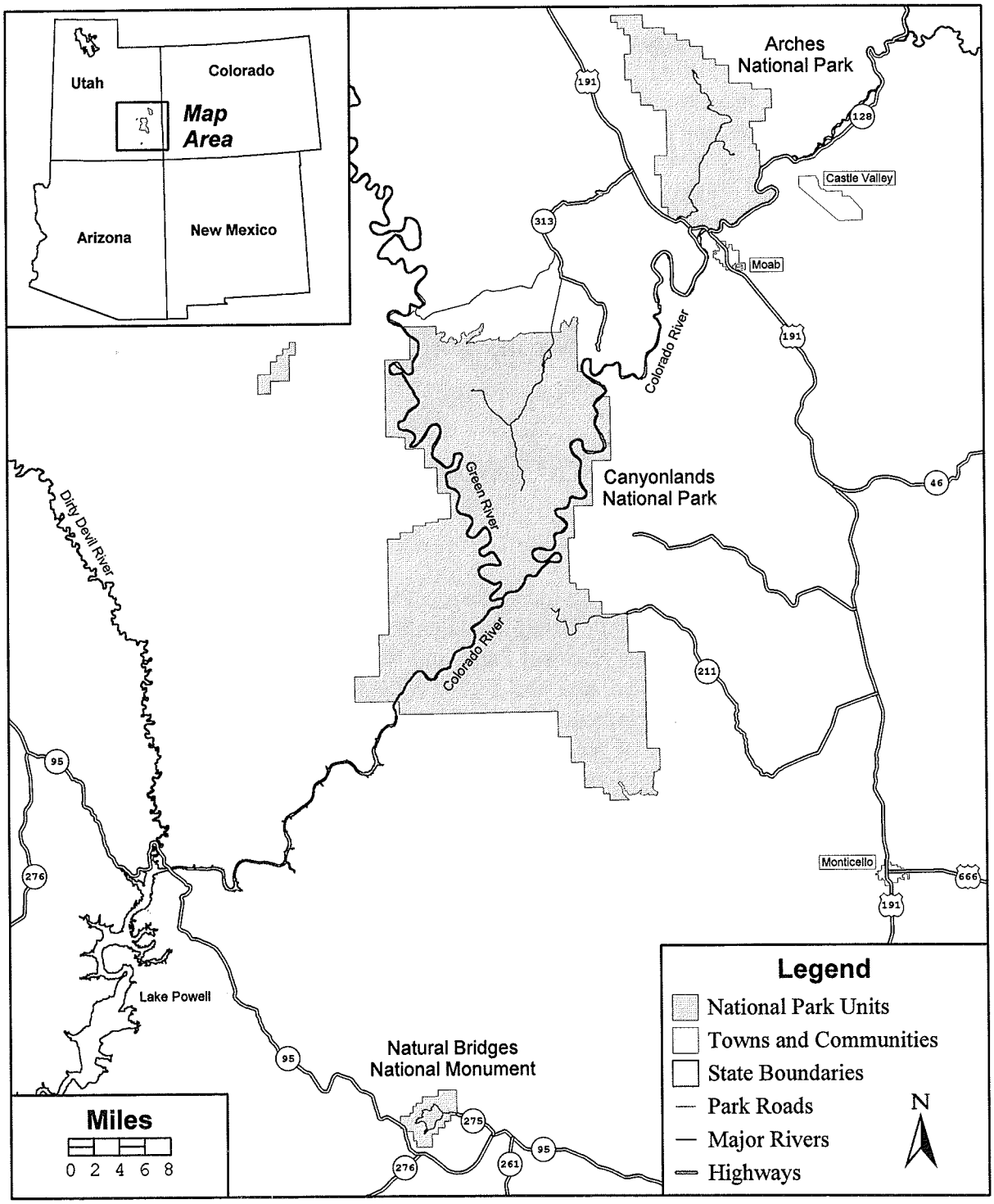
Previous Water Quality Studies

Water quality monitoring in the Southeast Utah Group parks was sporadic and incomplete prior to 1983. Springs in the Southeast Group parks were studied by Sumsion and Bolke (1972), Huntoon (1977), and Richter (1980) for possible domestic water supplies. A study by Connor and Kepner (1983) focused on evaluating water quality, aquatic biota, and vegetation around springs in Arches and Canyonlands National Parks. This study, and a subsequent study by the Ecosystem Research Institute (1984), provided the most comprehensive water resource data to date. These findings, and the emergence of other issues, prompted the parks to initiate future monitoring.

Southeast Utah Group

Canyonlands, Arches, & Natural Bridges

Figure 1



A formal program of water quality monitoring in springs and the Colorado River began in response to the proposed siting of a nuclear waste repository adjacent to the parks. The initial objectives of the water monitoring program were to: establish a baseline database on different springs and streams in the three park units; detect potential changes; and identify specific areas of concern. In addition, work was done in conjunction with the state of Utah to monitor uranium and heavy metals in the Green and Colorado Rivers. River water quality monitoring continues today; however, river monitoring will not be addressed in this report. River data files are included with the spring data files as a courtesy because they were edited and reformatted at the same time.

Routine water quality monitoring of springs in the parks began in 1983. More than 50 different spring sites have been monitored at some point during the program. In 1987, a formalized monitoring program was instituted at 45 spring sites (Figures 2, 3, 4). The Utah Department of Environmental Quality analyzed the water samples collected by park staff after the fall of 1990. In recent years, the inactivity of the nuclear waste dump site and the activity of other land uses posing potential threats to water resources (e.g., livestock grazing, oil and gas exploration, recreational use, residential development) prompted the Southeast Utah Group to consider revising their current monitoring program.

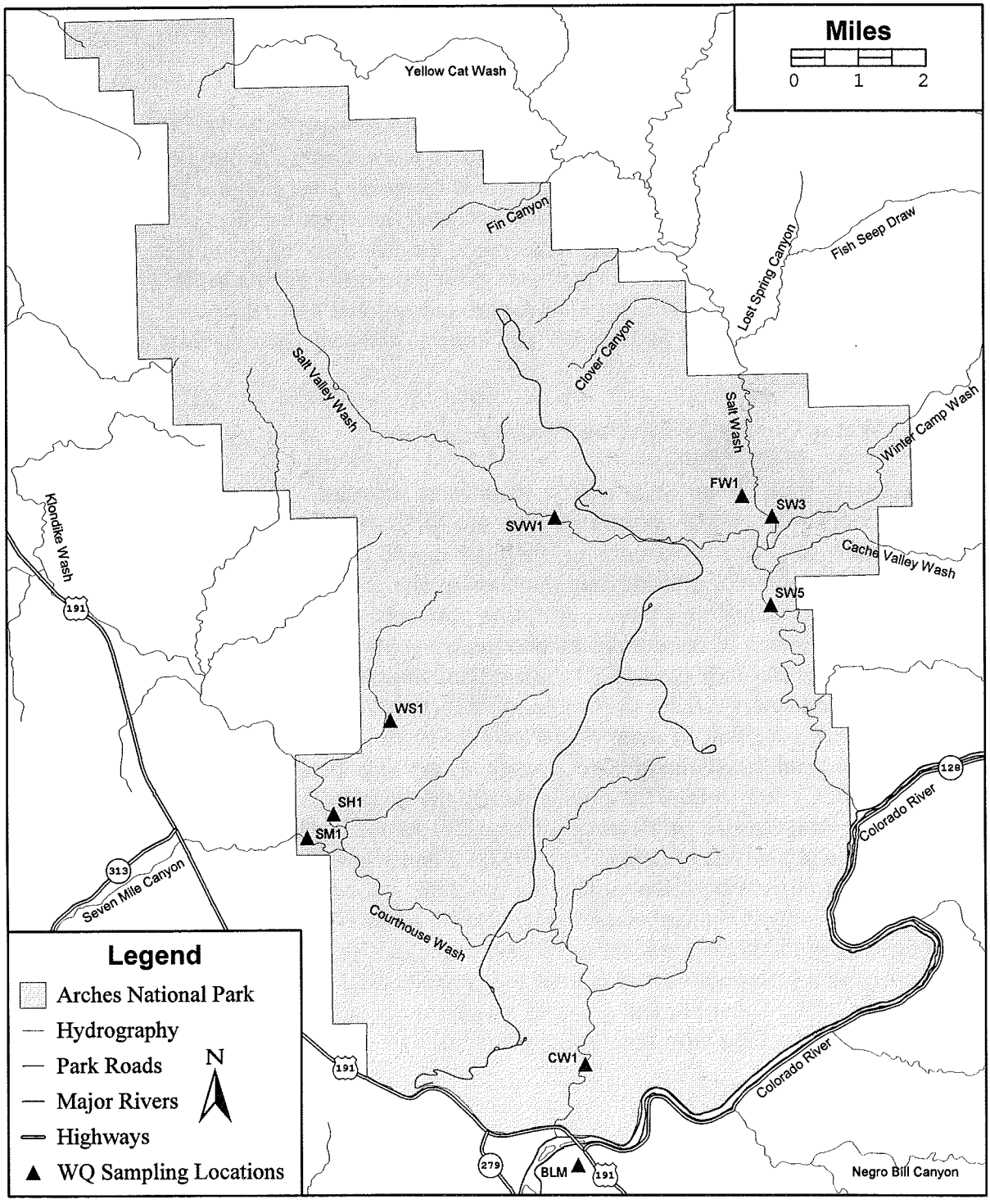
Present Water Quality Monitoring Program

The Southeast Utah Group water quality monitoring program was revised in 1992. During a meeting at park headquarters, park and WRD staff reviewed aspects of approximately ten years of monitoring information, and made recommendations regarding the analysis of existing data, monitoring site selection, monitoring frequency, parameter selection, instrumentation, sampling protocols, and future data management. Several modifications of the current monitoring program were proposed for the new monitoring plan, and they included: 1) discontinue sampling at all 45 spring sites on an annual basis and select a reduced number of sites (ten) that represent areas of heavy use or development potential; 2) sample selected sites more frequently (at least quarterly) to determine seasonal variations in water quality; 3) develop quality assurance and quality control (QA/QC) protocols in the plan to ensure the integrity of the data; and, 4) utilize the National Park Service park-based water quality database management system for management and analysis of data (Long 1992). The review in 1992 prompted park staff to reassess the objectives of the monitoring program, and refocus the direction of monitoring to address contemporary needs. The Southeast Utah Group water quality monitoring plan (National Park Service 1994) stemmed from this discussion. The monitoring plan incorporates new monitoring components, and documents past and current monitoring activities, and provides a framework and justification for continuation of the long-term monitoring program.

Arches National Park

Spring Water Quality Sampling Sites

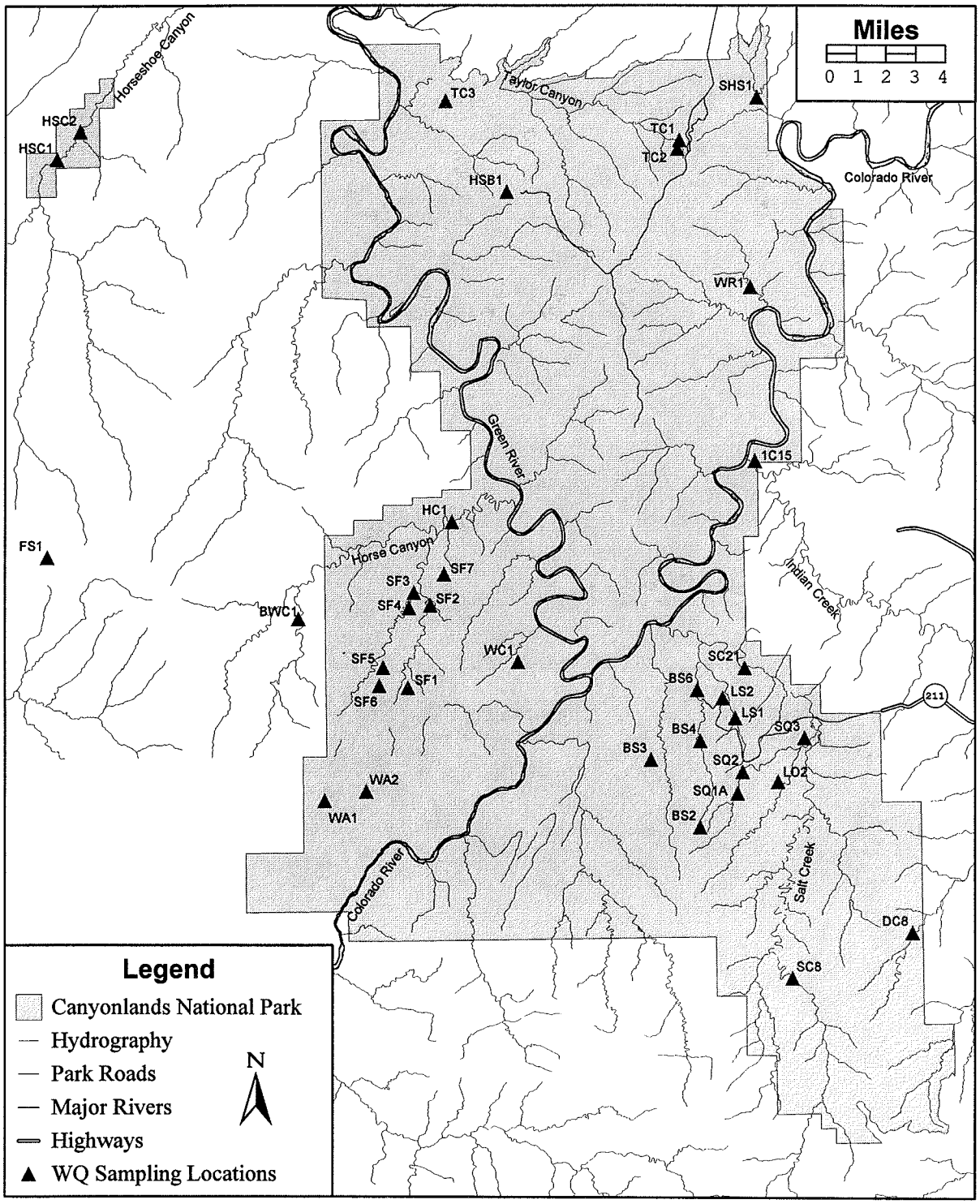
Figure 2



Canyonlands National Park

Spring Water Quality Sampling Sites

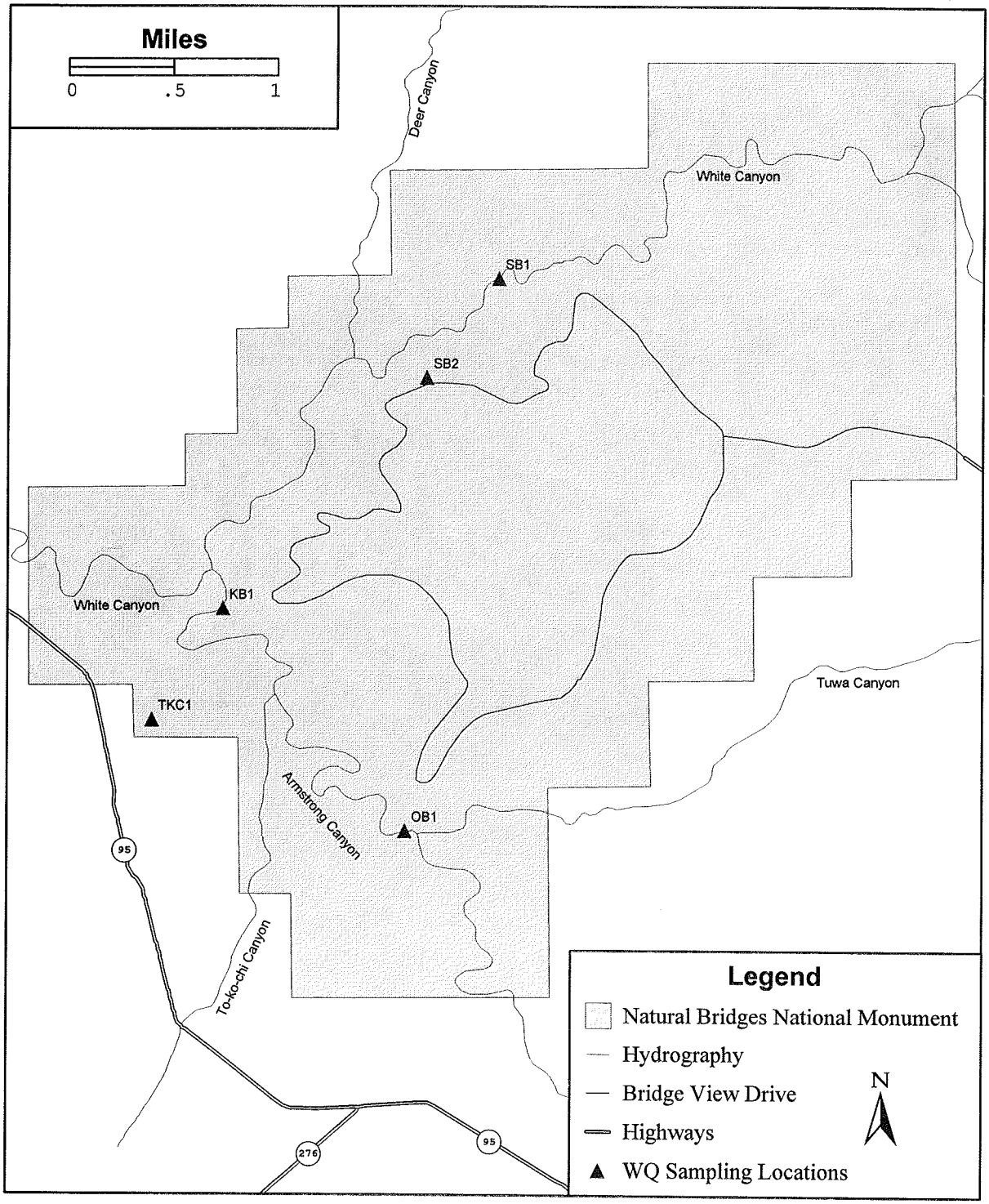
Figure 3



Natural Bridges National Monument

Spring Water Quality Sampling Sites

Figure 4



METHODOLOGY

Field Sampling

Between 1983 and 1990, park staff measured physical parameters in the field with hand-held instrumentation, and analyzed water samples in the field and/or office with chemical test kits. The parameters measured included: flow (or discharge), water temperature, pH, specific conductance, dissolved oxygen, nitrate, phosphate, sulfate, hardness, alkalinity, chloride, copper, iron, manganese, turbidity, total coliform, and fecal coliform. Beginning in the fall of 1990, park staff measured field parameters at each site and collected water samples for laboratory analysis by the state of Utah. Park staff were advised to maintain water quality equipment in good condition, and to use proper instrument calibration procedures. If chemical test kits are used, the chemicals used in the tests should be fresh (less than two years old).

Sample Handling

Since 1990, water samples were collected in plastic bottles provided by the state; however, many water samples were stored for up to a week at room temperature prior to transportation to the state laboratory. Bacteria water samples were kept chilled, if possible, and analyzed within 24 hours. During this period, sample "holding times" were exceeded for several parameters being analyzed. In 1992, WRD staff questioned these procedures and discussed the need for improvements with park and Utah personnel. In response to these concerns, improved sample quality control procedures are being implemented with regard to sample handling and preservation. However, sampling logistics continue to cause "holding time" problems for certain parameters in water samples collected at remote sites in the summer.

Laboratory Analysis

Water samples were sent to the Utah Department of Environmental Quality from 1990 to the present. These samples were analyzed using standardized methods approved by the U.S. Environmental Protection Agency (American Public Health Association 1989). If sample holding times were exceeded, this was noted by the state laboratory. The state of Utah has a policy of accepting results of bacteria analyses that were analyzed within 24 hours (Hultquist, pers. com. 1994). The U.S. Environmental Protection Agency recommends that bacteria water samples should be held no longer than six hours between collection and initiation of analyses (U.S. Environmental Protection Agency 1978, 40 CFR Part 136.3). The state laboratory detection limits are listed in Appendix E.

Data Management

Water quality data collected at spring and river sites were received in digital format from both the Southeast Utah Group and Utah Department of Environmental Quality. Multiple data files were converted into DBASE files when necessary and were merged

into two separate files, one containing the spring data and the other containing the river data. Several other changes were made to the data and these are described below. Descriptions of text, graphic, program, and database files which were used in the report are included in Appendix B. Detailed file structures for all database files are contained in Appendix C. All park data were uploaded into the Environmental Protection Agency's national Storage and Retrieval (STORET) water quality database.

Spring Data Archive File (SARCHIV4.DBF) - Site identification codes and Environmental Protection Agency STORET numbers were added to all records when they were missing. Capitalization, spelling, abbreviations, site identification codes, field names, and field widths were standardized and corrected when necessary. Numeric codes in the source type and sample type fields were replaced with words. An agency field was added to indicate whether the analysis had been performed by park or the state personnel. Manganese, total copper, total barium, and total iron park data were converted from milligrams per liter (mg/L) to micrograms per liter (µg/L). Specific conductance data from the park were converted from millimhos per centimeter (mmhos/cm) to micromhos per centimeter (µmhos/cm). Incorrect data were corrected after discussions with park and state personnel. Empty parameter fields were deleted. The water depth field was also deleted because it contained minimal and inaccurate data. One-character columns were added after each parameter to accept STORET remark codes. Concentrations reported as less than a certain value (too small to measure), were replaced with the detection limit and a K in the one-character comment field to the right of the parameter (e.g. <3.0 to 3.0 K). Numeric values in the original park files below the detection limits for the analysis were replaced with the detection limit and K as well. Missing data or values of -1 were replaced with -9s. After missing data were changed to -9s, the parameter fields were changed from character to numeric fields. This file was sorted by site identification code and date.

Spring Data Analysis File (S_ANALY3.DBF) - This file is a subset of SARCHIV4.DBF and thus includes all the changes that were made to SARCHIV4.DBF. In addition, field names were shortened to eight characters, descriptive fields were deleted, and values that were below detection were replaced with ½ the detection limit.

River Data Archive File (RARCHIV4.DBF) - Although the river data were not analyzed for this report, changes were made to the file to organize the data in the same format as the spring data archive file. Site identification codes and STORET numbers were added, fields and codes were standardized and corrected, an agency field was added, and parameter units were converted. Empty parameter fields, the water depth field, and duplicate records were deleted. One-character columns were added after each parameter to accept STORET remark codes. Concentrations reported as below detection were replaced with the detection limit and the letter K. Missing data were replaced with -9s, and the parameter fields were changed from character to numeric fields. This file was also sorted by STORET code and date.

After these data were corrected and formatted, period of record summary statistics were computed for each parameter at each site using the statistical program SAS. Summary

statistics tables are included in Appendix F. Differences were noted between the park and state data for total alkalinity, total hardness, total chloride, total sulfate, total copper, total iron, and total manganese. Summary statistics were computed on each of these parameters by agency, and non-parametric statistical tests were employed to determine if there were significant differences between the results obtained by the park and state (Appendix G). The NPAR1WAY procedure in SAS was used, which included: Analysis of Variance, Wilcoxon scores (rank sums), Median scores, Van der Waerden scores, Savage scores (exponential), Kolmogorov-Smirnov, Cramer-von Mises, and Kuiper tests.

Box-and-whiskers plots (Appendix H) were constructed for each parameter by spring type in SigmaPlot, Version 1.02a. A minimum of three data points were necessary to compute the 25th and 75th percentiles and thus construct a box. Five points were necessary to compute the 10th percentile and six points to compute the 90th percentile. If SigmaPlot was unable to compute a percentile point, that set of points was not drawn. The following parameters were not plotted due to a lack of sufficient data points: salinity, carbonate, hydroxide, total nitrite, dissolved nitrite, orthophosphate, and all the metals.

Data from all sites were compared with Utah water quality standards (State of Utah 1994). Water quality tables are included in Appendix I for the use designations and classifications that apply to springs and streams in the Southeast Utah Group. A water quality standards analysis review is contained in Appendix J.

RESULTS

Summary Statistics

Field Measurements - Spring pH values ranged from a maximum of 10.8 standard units at SB1 to a minimum of 2.4 standard units at FW1. Median pH values (measured two or more times) ranged from 8.6 standard units at IC15 to 6.6 standard units at TKC1. Most pH values were between 7 and 8 standard units, indicating neutral or slightly basic conditions. Conductivity values ranged from a maximum of 7,430 µmhos/cm at WR1 to a minimum of 101 µmhos/cm at HC1, SF2, and SQ3. Median conductivity values ranged from 4,200 µmhos/cm at SC21 to 166 µmhos/cm at SM1. Median conductivities were above 500 µmhos/cm in most springs, indicating high mineralized conditions. Dissolved oxygen concentrations ranged from a maximum of 45 mg/L at BS2 to a minimum of 0.1 mg/L at SM1 and SW3. These extremes are suspect values. Median dissolved oxygen concentrations ranged from 9.8 mg/L at SW3 to 2.4 mg/L at SF7. Only three springs (DC8, SF7, and TC3) had median dissolved oxygen concentrations below 5.5 mg/L. These low values may be due to low flow velocities, high water temperatures, and/or biological activity. Water temperatures ranged from a maximum of 35 °C at WS1 to a minimum of less than 1 °C at several sites, primarily a function of season. Measurements of spring flow generally were less than a cubic foot per second; however, insufficient data exist to accurately quantify spring discharges.

Measurements of alkalinity, nitrate, phosphate, hardness, chloride, sulfate, copper, iron, and manganese also were made in the field. Alkalinity values ranged from a maximum of 787 mg/L at SC21 to below detection (17 mg/L) at several sites. Median alkalinity values ranged from 590 mg/L at SC21 to 94 mg/L at BS2. Nitrate concentrations ranged from a maximum of 6 mg/L at FS1 to below detection (0.1 mg/L) at most sites. Only two sites (FS1 and TC2) had median nitrate concentrations above detection limits. Phosphate concentrations ranged from a maximum of 25 mg/L at KB1 to below detection (0.1 mg/L) at several sites. Median phosphate values ranged from 3.5 mg/L at BS3 to below detection. Hardness values ranged from a maximum of 2,804 mg/L at SVW1 to a minimum of 22 mg/L at SHS1. Median hardness values ranged from 2,471 mg/L at SVW1 to 89 mg/L at BS2. Chloride concentrations ranged from a maximum of 3,818 mg/L at WR1 to below detection (1 mg/L) at several sites. Chloride values above 3,000 mg/L were measured at SC21, SW3, and WR1. Median chloride concentrations ranged from 1,970 mg/L at SW5 to 23 mg/L at SH1 and WA2. Sulfate concentrations ranged from a maximum of 1,254 mg/L at SVW1 to below detection (5 mg/L) at several sites. Median sulfate concentrations ranged from 641 mg/L at SVW1 to 8 mg/L at BS2. Total copper concentrations ranged from a maximum of 3,600 µg/L at TC2 to below detection (100 µg/L) at most sites. Nine sites had median copper concentrations above detection limits. The highest median copper value computed from two or more samples was 1,700 µg/L at BWC1. Total iron concentrations ranged from a maximum of 13,120 µg/L at SVW1 to below detection (100 µg/L) at most sites. Eleven sites had median iron concentrations above detection limits. The highest median iron value computed from two or more samples was 6,685 µg/L at SVW1. Total manganese concentrations ranged from a maximum of 17,200 µg/L at SVW1 to below detection (100 µg/L) at most sites. Median manganese concentrations ranged from 12,600 µg/L at SVW1 to below detection.

Laboratory Analyses - Conductivity values ranged from a maximum of 7,350 µmhos/cm at SC21 to a minimum of 12 µmhos/cm at SM1. Median conductivity values ranged from 6,000 µmhos/cm at SC21 to 190 µmhos/cm at TC2. Alkalinity values ranged from a maximum of 867 mg/L SC21 to a minimum of 56 mg/L at SQ2. Median alkalinity values ranged from 780 mg/L at SC21 to 87 mg/L at TC2. Nitrate plus nitrite concentrations ranged from a maximum of 2.45 mg/L at LS1 to below detection (0.02 mg/L) at several sites. Median nitrate plus nitrite concentrations ranged from 2.03 mg/L at LS1 to below detection. Total Kjeldahl nitrogen concentrations ranged from a maximum of 3.6 mg/L at SVW1 to below detection (0.1 mg/L) at several sites. Median Kjeldahl nitrogen concentrations ranged from 2.29 mg/L at SVW1 to below detection. Seven sites had median Kjeldahl nitrogen levels above 0.5 mg/L. Only one site (SVW1) had a median ammonia concentration greater than the laboratory detection limit of 0.05 mg/L. Total phosphorus concentrations ranged from a maximum of 0.73 mg/L at SQ3 to below detection (0.01 mg/L) at several sites. Median total phosphorus concentrations ranged from 0.38 mg/L at SVW1 to below detection. Hardness values ranged from a maximum of 2,244 mg/L at SVW1 to a minimum of 51 mg/L at BS4. Median hardness values ranged from 2,239 mg/L at SVW1 to 94 mg/L at TC2. Chloride concentrations ranged from a maximum of 1,432 mg/L at SW5 to below detection (1 mg/L) at BS4, BS6, FW1, SH1, and WA2. Median chloride concentrations

ranged from 1,298 mg/L at SW5 to 1.8 mg/L at WA2. Sulfate concentrations ranged from a maximum of 2,300 mg/L at SVW1 to a minimum of 5 mg/l at BS2. Median sulfate concentrations ranged from 2,250 mg/L at SVW1 to 11 mg/L at TC2. Total filtrable residue (total dissolved solids) ranged from a maximum of 5,530 mg/L at SC21 to a minimum of 68 mg/L at BS4.

Several total metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, selenium, silver, and zinc) were analyzed in the state laboratory. Most of these results were reported as values below laboratory detection limits. One arsenic concentration from SVW1 (15 µg/L) exceeded the laboratory detection limit of 5 µg/L. Barium concentrations ranged from a maximum of 880 µg/L at HSC2 to a minimum of 10 µg/L at SF4. Median barium concentrations ranged from 480 µg/L at DC8 to 50 µg/L at HC1 and WA2. One chromium concentration from SVW1 (15 µg/L) exceeded the laboratory detection limit of 5 µg/L. Two copper concentrations from SVW1 (31 and 90 µg/L) exceeded the laboratory detection limit of 20 µg/L. Iron concentrations ranged from a maximum of 10,000 µg/L at SVW1 to below detection (20 µg/L) at several sites. Median iron concentrations ranged from a maximum of 5,800 µg/L at SVW1 to below detection. One lead concentration from SVW1 (60 µg/L) exceeded the laboratory detection limit of 5 µg/L. Manganese concentrations ranged from a maximum of 4,200 µg/L at SVW1 to below detection (5 µg/L) at several sites. Median manganese concentrations ranged from a maximum of 2,515 µg/L at SVW1 to below detection. No concentrations of cadmium, mercury, selenium, and silver exceeded the laboratory detection limits of 1 µg/L, 0.2 µg/L, 5 µg/L and 2 µg/L, respectively. Lastly, one zinc concentration at SVW1 (190 µg/L) exceeded the laboratory detection limit of 20 µg/L. It appears that all high metals values came from a single water sample collected at SVW1 on 4/24/91.

Turbidity values ranged from a maximum of 1,000 NTU SVW1 to a minimum of 0.17 NTU at SW5. Median turbidity values ranged from 550 NTU at SVW1 to 0.44 at TC2. Total non-filtrable residue (total suspended solids) concentrations ranged from a maximum of 6,060 mg/L at SVW1 to below detection (3 mg/L) at several sites. Total and fecal coliform ranged from a maximum of 8,950 and 10,000 colony forming units per 100 milliliters (cfu/100 mL), at BS3 and WS1 respectively, to a minimum of zero.

Comparison of Park and State Data

Using the NPAR1WAY procedure in SAS, all of the non-parametric tests identified no significant differences between park and state alkalinity data at the 0.05 probability level. However, these tests identified significant differences between park and state data for hardness, chloride, sulfate, copper, iron, and manganese. Park hardness data were significantly different than state hardness data in all tests. Mean hardness values in the park and state data sets were 349 mg/L and 317 mg/L, respectively. Park chloride data were significantly higher than state chloride data in all tests (mean 260 versus 103 mg/L). Park sulfate data were significantly lower than state sulfate data in the Savage scores test, but not in the other tests (mean 73 versus 141 mg/L). Park total copper data were significantly higher than state copper data in all tests (mean 176 versus 10 µg/L).

Park total iron data were significantly lower than state iron data in three of the tests (mean 201 versus 328 µg/L). Park total manganese data were significantly higher than state manganese data in all tests (mean 340 versus 151 µg/L). Based on these results, it appears that data analyzed by the park are significantly different than data analyzed by the state laboratory for like parameters.

Water Quality Standards Analysis

Four hundred and thirty-three data values exceeded Utah water quality standards (Appendix I). However, 127 of the 433 data values reported to exceed standards were for total not dissolved metals. A computer program was used to flag values that exceeded water quality standards. The results of the standards analysis is included in Appendix J. Data values used in this analysis are from instantaneous measurements and water samples.

Dissolved oxygen concentrations fell below the Utah standard of 5.5 mg/L for protection of domestic purposes and secondary contact recreation 124 times at 40 spring sites. Values of pH were lower than the Utah standard of 6.5 standard units for protection of all use classifications 102 times at 35 spring sites. Values of pH were higher than the Utah standard of 9.0 ten times at nine spring sites. Dissolved and total phosphorus values exceeded the Utah standard of 0.05 mg/L for protection of secondary contact recreation and warm water aquatic life 14 times at nine spring sites. Nitrate values exceeded the Utah standard of 4 mg/L for protection of secondary contact recreation and warm water aquatic life one time. Total filtrable residue (total dissolved solids) values exceeded the Utah standard of 1,200 mg/L for protection of agricultural uses 15 times at six spring sites. Total copper values potentially exceeded the Utah standard of 18 µg/L for protection of warm water aquatic life 102 times at 41 spring sites. However, only two of these copper values (at SVW1) were analyzed by the state laboratory. Total iron values potentially exceeded the Utah standard of 1,000 µg/L for protection of warm water aquatic life 22 times at 14 spring sites. Seven of these iron values were analyzed by the state laboratory. Total lead, silver, and zinc values potentially exceeded Utah standards for protection of warm water aquatic life one time each. Turbidity values potentially exceeded the Utah standard of an increase of 10 NTU for protection of secondary contact recreation and warm water aquatic life 28 times at 17 spring sites. Fecal coliform values exceeded the Utah geometric mean standard of 200 cfu/100 mL for protection of secondary contact recreation ten times at eight spring sites. Total coliform values exceeded the Utah geometric mean standard of 5,000 cfu/100 mL for protection of domestic purposes and secondary contact recreation two times.

DISCUSSION AND RECOMMENDATIONS

Significance of Water Quality Indicators

Since the Southeast Utah Group water quality monitoring program was revised in 1992, improvements were made in several aspects of the program, including: monitoring

design and focus, parameter selection, monitoring protocols, and laboratory analyses. It was decided that the monitoring program should focus on ecosystem assessment (baseline inventory) and detecting change from internal (park facilities, visitor use) and external (development, oil and gas, livestock) threats. Potential impacts to park springs from recreation and visitor use have not been adequately quantified in the past. The parameter selection analysis in the Southeast Utah Group water quality monitoring plan clearly provides guidance to park staff in this area, and won't be reiterated here. However, it is important to reevaluate these recommendations on a periodic basis and determine whether they were implemented as intended. The WRD recommends that the Southeast Utah Group maintain a good working relationship with the State of Utah for laboratory analyses of water samples. In addition to water chemistry, it was proposed in the water quality monitoring plan that biological assessments (including sampling of macroinvertebrates) be performed at these spring sites. The WRD concurs with this approach for monitoring cumulative changes, and will provide assistance to park staff in evaluating biological methods.

Water Quality Standards Compliance

Water quality standards are defined as parameter criteria for specific designated uses. Technically, most states consider instantaneous values exceeding standards as water quality violations; however, median values provide better indicators of chronic water quality standards problems. The water quality standards analysis in Appendix J identifies 433 potential violations of Utah water quality standards in the Southeast Utah Group spring database. Data values for dissolved oxygen, pH, nitrate, phosphorus, filtrable residue, copper, iron, lead, silver, zinc, turbidity, fecal coliform, and total coliform appear to exceed Utah water quality standards at 46 of 49 park spring sites. The large number of values exceeding or potentially exceeding standards may be sufficient evidence to warrant concern about specific parameters. However, many of these data values are suspect due to limitations in equipment accuracy, measurement error, and natural conditions. Also, total metals values above dissolved metals standards technically may not be violations of Utah water quality standards. Although these data are good indicators of potential water quality problems, the older park data are inadequate for standards compliance determinations. The WRD recommends that the Southeast Utah Group conduct future monitoring of these parameters in the most accurate manner possible.

Water Quality Comparisons and Trends

Few water quality trends were distinguished because of distinct differences between the park and state data sets. No specific trend analyses were performed; however, box-and-whisker plots were used to illustrate differences among "spring types". The plots in Appendix H compare parameter data for eight spring types. They are: alcove seep; alcove spring; intermittent stream; perennial stream; plunge pool; plunge seep; wall spring; and wash spring. Some parameters, such as: pH, dissolved oxygen, and phosphorus were relatively consistent among spring types. This may be due to the nature of the parameter or the fact that the parameter was rarely detected. Other

parameters, such as water temperature, filtrable residue or ionic content, nitrogen, turbidity, and bacteria varied considerably among spring types. Factors such as: spring discharge, shading, geology, and human/animal use may be affecting water quality in these springs. Notice that alcove springs have lower water temperatures; intermittent, perennial and wall springs have higher ionic concentrations; and wash springs have higher nutrient and bacteria concentrations than other spring types.

Field Sampling and Laboratory Analysis Protocols

Water quality sampling in desert springs and streams presents many challenges to monitors. The intermittent, ephemeral character of these water bodies makes it difficult to obtain representative samples. In addition, the desert canyons restrict travel to hiking and summer temperatures pose problems for sample preservation. Apparently, one of the more difficult sampling problems was calculating spring flow or discharge. Many of the springs are essentially seeps.

As a first step, the recommendations made during the review in 1992, and identified in the Southeast Utah Group water quality monitoring plan, should be implemented. These recommendations included: revising monitoring sites, increasing sampling frequency, improving QA/QC protocols, and developing a data management system. Make sure that descriptions of these changes are included in the monitoring plan or other documentation. Ten years from now it should be clear to our successors what decisions were made and why they were important to the monitoring program.

Assuming that the above changes were made, the next step would be to investigate whether adjustments in measurement and sample handling techniques are needed. Based on discussions with park staff, it appears that there continues to be occasional sample "holding time" problems due to sampling logistics. Coolers that can be carried in backpacks are recommended. Often times filtering water samples helps to preserve their chemical character. Also, keep water samples chilled in a refrigerator at the office prior to sending them to the state laboratory. The water samples should be mailed or driven to the laboratory on ice in a cooler.

With regard to measurement techniques, make sure that all instruments are functioning properly. As stated in the Methodology section, calibrate each instrument before use and periodically service them to maintain their condition. Several publications are available that describe proper sampling protocols. One of the more convenient publications is the *Wildland water quality sampling and analysis* handbook by Stednick (1991). Also, the WRD will soon have available a series of Service-wide inventory and monitoring protocols field manuals for distribution to parks. The U.S. Geological Survey may be able to provide assistance to the park regarding discharge measurements in desert springs. Weirs, flumes, or volume catchment devices may be used to calculate discharge when the use of a current meter is prohibited because of shallow depths and slow velocities.

Data Management Protocols

It is important to standardize the site identification codes and consistently use them from year to year so that all the data gathered from a site are attributed to the correct site. Data in the park and state computer files should be checked at least once, preferably by a different person than the one who did the data entry. This is an important step in insuring the accuracy of the data set before any analyses are performed. When entering data into numeric fields, a substitute number such as -9 or -99, should be input for missing data to prevent blank records from being converted to zeros by DBASE III+. Also, it is helpful to sort or index the files by site identification code and date.

The WRD recommends that the Southeast Utah Group use the files attached to this report in-place of older files of the same data. New files that are created can be appended to the master file, but will need to have the same database structure as the master file (Appendix C) and have -9s substituted for missing values before they are appended. If the park intends to use the ASCII data files received from the state, then the files must be reformatted and imported into DBASE or another database program. All future park-generated water quality data should be uploaded into the Environmental Protection Agency's national database STORET. Identical data should be uploaded by only one agency, therefore, communication with the state is imperative. If the state continues to provide this service for the spring and river data, then the park should perform periodic checks to make sure that it is there.

Currently, the WRD is developing a park-based Water Quality Data Management System software program for use on personal computers which is designed to assist parks in managing their water quality data in standardized formats. This user-friendly program should be available to parks in 1996.

CONCLUSIONS

Prior to 1991, park staff measured physical parameters and analyzed selected chemical parameters using a portable spectrophotometer and Hach titration kits. In 1991, the State of Utah began analyzing water samples that were collected from each site. Results from samples analyzed by the park and Utah have differed significantly. Quality control factors related to available instrumentation, field analysis of samples, and sample handling and preservation have raised concerns by WRD regarding the accuracy of both the park and Utah data sets. Therefore, WRD cautions the Southeast Utah Group about utilizing the park data in cases involving litigation, or in models designed to assess potential impacts to sensitive water resources (e.g. emissions at the Bonanza Power Plant).

With regard to the water quality data results, median values of pH, alkalinity, sulfate and nitrogen appear to be within normal ranges for small springs in the Colorado Plateau. Keep in mind that sampling occurred primarily between April and September when spring flows were low and exchanges between ground and surface water were

minimal. Therefore, extreme water temperatures and biotic activity may have greatly influenced spring water chemistry. Due to ambient conditions and possible sampling errors, wide ranges of values (minimums and maximums) were measured. Values of pH below 5.0 and above 10.0 standard units are suspect. Alkalinity values of 17 mg/L (the park minimum detection limit) are suspect. Sulfate values above 1,000 mg/L in the Utah data are suspect. Nitrate and nitrate plus nitrite values above 2.0 mg/L in both the park and Utah data are suspect. In general, no sites had median pH values less than 6.5 or greater than 9.0 standard units, no sites had median alkalinity values less than 100 mg/L, only one site had a median sulfate value greater than 250 mg/L (SVW1), only two sites had median nitrate or nitrate plus nitrite values greater than 1.0 mg/L (LS1, SVW1), and only one site had a median ammonia value greater than 1.0 mg/L (SVW1). Park data tended to be higher than Utah data for hardness and chloride, and lower for sulfate at most sites. Park copper, iron, and manganese data were significantly different than state metals data at many sites, but park metals data are suspect.

The Southeast Utah Group is fortunate to have the support from management and staff to establish and maintain a long-term spring monitoring program. The spring monitoring program provides much useful information to park managers, and can adapt to changing water quality conditions, sampling and laboratory protocols, and land-use activities. The formal monitoring plan and documented data results provide a good framework that should assist long-term decision making. In addition, the assistance provided by the State of Utah for laboratory analysis of water samples and management of water quality data is an added bonus. This opportunity has allowed the Southeast Utah Group to form a partnership with another agency with similar interests. The current challenge is to ensure that the monitoring doesn't become a routine process that continues into the future without thoughtful direction and periodic reevaluation.

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APPENDICES

Appendix A

Site Identification Codes, Site Names, Spring Types, and NPS Units

The following table provides the site names, spring types, and NPS units corresponding to the spring site identification codes used in this report.

Site IDs, Site Names, Spring Types and Parks for the Southeast Utah Group Water Quality Data Set, 1983-1993			
SITE ID	**SITE NAME**	**SPRING TYPE**	**PARK**
BLM	Matrimony Spring	Wall Spring	
BS2	2.4 Mile Loop Pool	Plunge Seep	Canyonlands
BS3	Soda Spring	Unknown	Canyonlands
BS4	Big Spring Upper	Wash Spring	Canyonlands
BS6	Big Spring Lower	Plunge Seep	Canyonlands
BWC1	Big Water Canyon	Wash Spring	Glen Canyon
CW1	Courthouse Wash	Perennial Stream	Arches
DC8	Davis Canyon	Wash Spring	Canyonlands
FS1	French's Spring	Wash Spring	Glen Canyon
FW1	Freshwater Canyon	Wash Spring	Arches
HC1	Junction Spring	Wash Spring	Canyonlands
HSB1	Holeman Spring	Alcove Spring	Canyonlands
HSC1	Horseshoe Upper	Wash Spring	Canyonlands
HSC2	Horseshoe Lower	Wash Spring	Canyonlands
IC15	Indian Creek	Intermittent Stream	Canyonlands
KB1	Kachina Bridge Pool	Plunge Seep	Natural Bridges
LO2	Lost Canyon	Perennial Stream	Canyonlands
LS1	Little Spring Canyon	Wash Spring	Canyonlands
LS2	Little Spring	Intermittent Stream	Canyonlands
OB1	Owachomo Bridge	Plunge Pool	Natural Bridges
SB1	Sipapu Bridge	Intermittent Stream	Natural Bridges
SB2	Horsecollar Seep	Alcove Seep	Natural Bridges
SC21	Salt Creek Lower Jump	Intermittent Stream	Canyonlands
SC8	Salt Creek Upper Jump	Perennial Stream	Canyonlands

Site IDs, Site Names, Spring Types and Parks for the Southeast Utah Group Water Quality Data Set, 1983-1993			
SITE ID	**SITE NAME**	**SPRING TYPE**	**PARK**
SHS1	Shafer Spring	Wash Spring	Canyonlands
SF1	Plug Spring	Wash Spring	Canyonlands
SF2	Harvest Scene	Wash Spring	Canyonlands
SF3	Maze Overlook	Wash Spring	Canyonlands
SF4	Chocolate Drops	Wash Spring	Canyonlands
SF5	Gap Downstream	Wash Spring	Canyonlands
SF6	Gap Upper Spring	Wash Spring	Canyonlands
SF7	Lower South Fork	Wash Spring	Canyonlands
SH1	Sleepy Hollow	Alcove Spring	Arches
SM1	Seven Mile Canyon	Wash Spring	Arches
SQ1A	Squaw Canyon Upper	Intermittent Stream	Canyonlands
SQ2	Squaw Canyon Lower	Intermittent Stream	Canyonlands
SQ3	Cave Spring	Alcove Seep	Canyonlands
SVW1	Salt Valley Wash	Wash Spring	Arches
SW3	Salt Wash	Perennial Stream	Arches
SW5	Salt Spring	Wall Spring	Arches
TC1	The Neck Spring	Alcove Seep	Canyonlands
TC2	Cabin Spring	Alcove Spring	Canyonlands
TC3	Taylor Canyon Spigot	Spigot (drilled)	Canyonlands
TKC1	To-ko-chi Canyon	Wash Spring	Natural Bridges
WA1	Ernie's Country West	Alcove Seep	Canyonlands
WA2	Ernie's Country East	Alcove Seep	Canyonlands
WC1	Water Canyon	Wash Spring	Canyonlands
WR1	Lathrop Canyon	Wash Spring	Canyonlands
WS1	Willow Spring	Wash Spring	Arches

Appendix B

Computer Files Transmitted With

Data Analysis Report

The two computer disks accompanying this report include four compressed (ZIP) files containing digital copies of all the tables, figures, and other materials used to produce this report. To decompress these files, you must use the commonly available shareware program PKUNZIP. The command to type at the DOS prompt is:

PKUNZIP -E *COMPRESS.ZIP FILENAME.EXT*

where COMPRESS.ZIP is the name of one of the four compressed (ZIP) files listed below and FILENAME.EXT is the name of the file you wish to extract. If you want to decompress all of the files in COMPRESS.ZIP, simply omit the FILENAME.EXT. To simply obtain a listing of all the files compressed into a particular ZIP file, type the following:

PKUNZIP -V *COMPRESS.ZIP* | MORE

where COMPRESS.ZIP is the name of one of the four compressed ZIP files listed below. Once you see the file you wish to obtain, substitute this file name for FILENAME.EXT in the first command line to extract and decompress this particular file.

The following compressed (ZIP) files are included on the disks accompanying this report:

(1) SEUGDATA.ZIP

This compressed file contains two DBASE IV and five DBASE III+ files containing all raw data received from the park and state. The two archive files contain more than 128 fields which is the maximum that DBASE III+ can handle. Therefore, each of these files was broken into two files which were converted into DBASE III+. Detailed database structures for each of these files are found in Appendix B. In these files, missing data are represented by -9s. The files compressed into this file include:

(a) SARCHIV4.DBF - All raw data for each spring site for the period from August 1983 to October 1993. This is a DBASE IV file.

(b) RARCHIV4.DBF - All raw data for each river site for the period form February 1976 to October 1993. This is a DBASE IV file.

(c) S_ARC1_3.DBF - This file is a subset of the data contained in SARCHIV4.DBF and is in DBASE III+ format. This file contains the fields from site_id through f_coliform (see Appendix B).

(d) S_ARC2_3.DBF - This file is a subset of the data contained in SARCHIV4.DBF and is in DBASE III+ format. This file contains the metals data (see Appendix B).

(e) R_ARC1_3.DBF - This file is a subset of the data contained in RARCHIV4.DBF and is in DBASE III+ format. This file

contains the fields from site_id through f_coliform (see Appendix B).

(f) R_ARC2_3.DBF - This file is a subset of the data contained in RARCHIV4.DBF and is in DBASE III+ format. This file contains the metals data (see Appendix B).

(g) S_ANALY3.DBF - This file is a subset of the data contained in SARCHIV4.DBF, and was used to do the statistical analysis in SAS. Field names have been shortened to 8 characters, some fields unnecessary for the statistical analysis have been deleted, and values that were below the detection limits have been replaced with ½ the detection limit. This is a DBASE III+ file.

(2) SEUGBOX.ZIP

This compressed file contains all the box-and-whiskers plots which appear in the report. These files are in Windows Clipboard (CLP) format which can be imported and/or edited in most Windows-based word processors and graphics packages. The names of the files included in this compressed file have the prefix BOX followed by parameter abbreviations for the two parameters whose plots appear in the file. For example, BOXCLTKN.CLP is the file containing the box-and-whiskers plots for parameters total chloride and total Kjeldahl nitrogen.

(3) SEUGFIG.ZIP

This compressed file contains figures of the park and water quality monitoring sites in Windows Clipboard (CLP) format which can be imported and/or edited in most Windows-based word processors and graphics packages. The files included in this compressed file are SEUG.CLP, ARCH.CLP, CANY.CLP, and NABR.CLP.

(4) SEUGREPT.ZIP

This compressed file contains all narrative portions of this report in WordPerfect Version 5.1 text files. These files include:

(a) SEUGREP.WP - Report text.

(b) APPENDIX.WP - Appendices contained in this report.

(c) SUMSTAT.WP - Period-of-Record summary statistics tables.

(d) AGENCY.WP - Summary statistics & NPAR1WAY comparsions by agency.

(e) UTAHSTND.WP - Water quality standards analysis tables.

Appendix C

Water Quality Database File Structures

The following table provides the DBASE IV database field structure for all the spring water quality data. These data will allow parks or other interested parties to replicate the statistical analyses and graphics contained in this report; perform more sophisticated analyses; or to establish a baseline park water quality database. Values equalling -9 in the database represent missing data. S_ARC1_3.DBF, which is a subset of SARCHIV4.DBF in DBASE III+ format, contains the first 105 fields from site_id through f_coliform. S_ARC2_3.DBF, which is a subset of SARCHIV4.DBF in DBASE III+ format, contains the fields site_id, date, time, site_name, storet_no, park, district, source_typ, sample_typ, agency, and the last 47 fields from arsenic_t through zinc_d.

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
SITE_ID	Character	5		Identification code for sample location
DATE	Date	8		Date sample taken [mm/dd/yy]
TIME	Character	4		Time sample taken [hhmm]
SITE_NAME	Character	18		Name of sample location
STORET_NO	Character	6		STORET number of sample location
PARK	Character	5		NPS unit containing sample location
DISTRICT	Character	5		NPS district containing sample location
COUNTY	Character	3		County containing sample location
UTM	Character	12		Universal Transverse Mercator coordinates of sample location
ELEV	Character	5		Elevation of sample location in feet
OBSERVER	Character	22		Names of persons who did the sampling

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
SUBSTRATE1	Character	15		Type of substrate at sample location (rock, gravel, sand, silt, clay, other). Can select one to three types.
SUBSTRATE2	Character	12		
SUBSTRATE3	Character	13		
BANKTYPE1	Character	15		Type of material composing bank at sample location (rock, gravel, sand, silt, clay). Can select one or two types.
BANKTYPE2	Character	15		
RIPARIAN_T	Character	22		Riparian community types
RIPARIAN_S	Character	21		Riparian community species
SWIMMING	Character	1		Type of use occurring at the site at time of sampling. Select 0 or X answer.
DRINKING	Character	1		
STOCK	Character	1		
HUMAN	Character	1		
WILDLIFE	Character	1		
WEATHER	Character	20		Weather at time of sampling
AIR_TEMP	Character	9	00020	Temperature, air: °C
SOURCE_TYP	Character	14		Type of water body sampled (spring, seep, stream, river, pothole, other, flowing water, standing water, effluent, influent)
SAMPLE_TYP	Character	7		Type of sample taken (grab, no flow, field data only)
LAB_NO	Character	9		Number of the lab that did the analysis
AGENCY	Character	5		Agency that did the analysis, state or park

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
Q_CFS	Numeric	9/4	00061	Flow, instantaneous: cubic feet/second
Q_GPM	Numeric	9/3	00059	Flow, instantaneous: gallons/minute
H2O_TEMP	Numeric	9/2	00010	Temperature, water: °C
PH	Numeric	9/2	00400	pH, field: standard units
DO	Numeric	9/2	00300	Oxygen, dissolved: mg/l
EC	Numeric	9	00094	Specific conductance, field: µmhos/cm
SALINITY	Numeric	9/1	00480	Salinity at 25°C: parts per thousand (ppt)
ORP	Numeric	9/3	00090	Oxidation reduction potential (ORP): mV
EC_LAB	Numeric	9	00095	Specific conductance, lab: µmhos/cm
HARDNESS	Numeric	9/1	00900	Hardness, total (as $CaCO_3$): mg/l
TDS	Numeric	9	70300	Residue, total filtrable: mg/l (Total Dissolved Solids)
TSS	Numeric	9	00530	Residue, total nonfiltrable: mg/l (Total Suspended Solids)
TURBIDITY	Numeric	9/2	82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)
CALCIUM	Numeric	9	00915	Calcium, dissolved: mg/l
MAGNESIUM	Numeric	9/1	00925	Magnesium, dissolved: mg/l
SODIUM	Numeric	9/1	00930	Sodium, dissolved: mg/l
POTASSIUM	Numeric	9/1	00935	Potassium, dissolved: mg/l

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
ALKALINITY	Numeric	9/2	00410	Alkalinity, total (as $CaCO_3$): mg/l
HCO3	Numeric	9	00440	Bicarbonate (as HCO_3): mg/l
CO3	Numeric	9	00445	Carbonate (as CO_3): mg/l
CO2	Numeric	9	00405	Carbon dioxide: mg/l
HYDROXIDE	Numeric	9	71830	Hydroxide: mg/l
SULFATE	Numeric	9/2	00945	Sulfate, total: mg/l
CHLORIDE	Numeric	9/2	00940	Chloride, total: mg/l
TKN	Numeric	9/2	00625	Nitrogen, Kjeldahl, total: mg/l
NO2_NO3	Numeric	9/3	00630	Nitrate plus nitrite (as N), total: mg/l
NO2_NO3_D	Numeric	9/2	00631	Nitrate plus nitrite (as N), dissolved: mg/l
NITRATE	Numeric	9/2	00620	Nitrate (as N), total: mg/l
NITRATE_D	Numeric	9/2	00618	Nitrate (as N), dissolved: mg/l
NITRITE	Numeric	9/2	00615	Nitrite (as N), total: mg/l
NITRITE_D	Numeric	9/2	00613	Nitrite (as N), dissolved: mg/l
AMMONIA	Numeric	9/2	00610	Nitrogen ammonia, total (as N): mg/l
PHOSPHATE	Numeric	9/2	00655	Phosphate, poly (as PO_4): mg/l
ORTHO_P	Numeric	9/2	00660	Phosphate, ortho (as PO_4) mg/l
T_PHOS	Numeric	9/2	00665	Phosphorus (as P), total: mg/l

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
T_PHOS_D	Numeric	9/2	00666	Phosphorus (as P), dissolved: mg/l
T_COLIFORM	Numeric	9	31501	Total coliform, MF, Endo AGAR: cfu/100mls
F_COLIFORM	Numeric	9	31616	Fecal coliform: MF, M-FC BROTH, 0.45mm filter: cfu/100mls
ARSENIC_T	Numeric	9	01002	Arsenic, total: µg/l
ARSENIC_D	Numeric	9	01000	Arsenic, dissolved: µg/l
BARIUM_T	Numeric	9	01007	Barium, total: µg/l
BARIUM_D	Numeric	9	01005	Barium, dissolved: µg/l
CADMIUM_T	Numeric	9/1	01027	Cadmium, total: µg/l
CADMIUM_D	Numeric	9	01025	Cadmium, dissolved: µg/l
CHROMIUM_T	Numeric	9	01034	Chromium, total: µg/l
CHROMIUM_D	Numeric	9	01030	Chromium, dissolved: µg/l
COPPER_T	Numeric	9	01042	Copper, total: µg/l
COPPER_D	Numeric	9	01040	Copper, dissolved: µg/l
IRON_T	Numeric	9	01045	Iron, total: µg/l
IRON_D	Numeric	9	01046	Iron, dissolved: µg/l
LEAD_T	Numeric	9	01051	Lead, total: µg/l
LEAD_D	Numeric	9	01049	Lead, dissolved: µg/l
MANGANES_T	Numeric	9	01055	Manganese, total: µg/l
MANGANES_D	Numeric	9	01056	Manganese, dissolved: µg/l
MERCURY_T	Numeric	9/2	71900	Mercury, total: µg/l
MERCURY_D	Numeric	9/2	71890	Mercury, dissolved: µg/l
SELENIUM_T	Numeric	9	01147	Selenium, total: µg/l
SELENIUM_D	Numeric	9	01145	Selenium, dissolved: µg/l

SARCHIV4.DBF				
Field Name	**Field Type**	**Width/# Decimal places**	**Parameter STORET No.**	**Field Description**
SILVER_T	Numeric	9	01077	Silver, total: µg/l
SILVER_D	Numeric	9	01075	Silver, dissolved: µg/l
ZINC_T	Numeric	9	01092	Zinc, total: µg/l
ZINC_D	Numeric	9	01090	Zinc, dissolved: µg/l

One character columns follow each water quality parameter. These columns are for STORET codes if needed (Appendix D). Each of these columns is labeled with a one or two character field name ranging from A to BJ.

The following table provides the DBASE III+ database field structure for the data file used for the SAS analysis. These data will allow parks or other interested parties to replicate the statistical analyses and graphics contained in this report; perform more sophisticated analyses; or to establish a baseline park water quality database. Values equalling -9 in the database represent missing data.

S_ANALY3.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
SITE_ID	Character	5		Identification code for sample location
DATE	Date	8		Date sample taken [mm/dd/yy]
TIME	Character	4		Time sample taken [hhmm]
STORET_NO	Character	6		STORET number of sample location
AIR_TEMP	Character	9	00020	Temperature, air: °C
AGENCY	Character	5		Agency that did the analysis, state or park
Q_CFS	Numeric	9/4	00061	Flow, instantaneous: cubic feet/second
Q_GPM	Numeric	9/3	00059	Flow, instantaneous: gallons/minute
H2O_TEMP	Numeric	9/2	00010	Temperature, water: °C
PH	Numeric	9/2	00400	pH, field: standard units
DO	Numeric	9/2	00300	Oxygen, dissolved: mg/l
EC	Numeric	9	00094	Specific conductance, field: µmhos/cm
SALINITY	Numeric	9/1	00480	Salinity at 25°C: parts per thousand (ppt)
ORP	Numeric	9/3	00090	Oxidation reduction potential (ORP): mV
EC_LAB	Numeric	9	00095	Specific conductance, lab: µmhos/cm

S_ANALY3.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
HARDNESS	Numeric	9/1	00900	Hardness, total (as $CaCO_3$): mg/l
TDS	Numeric	9	70300	Residue, total filtrable: mg/l (Total Dissolved Solids)
TSS	Numeric	9/1	00530	Residue, total nonfiltrable: mg/l (Total Suspended Solids)
TURBID	Numeric	9/2	82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)
CALCIUM	Numeric	9	00915	Calcium, dissolved: mg/l
MAGNESUM	Numeric	9/1	00925	Magnesium, dissolved: mg/l
SODIUM	Numeric	9/1	00930	Sodium, dissolved: mg/l
POTASSUM	Numeric	9/1	00935	Potassium, dissolved: mg/l
ALKALIN	Numeric	9/2	00410	Alkalinity, total (as $CaCO_3$): mg/l
HCO3	Numeric	9	00440	Bicarbonate (as HCO_3): mg/l
CO3	Numeric	9	00445	Carbonate (as CO_3): mg/l
CO2	Numeric	9	00405	Carbon dioxide: mg/l
HYDROX	Numeric	9	71830	Hydroxide: mg/l
SULFATE	Numeric	9/2	00945	Sulfate, total: mg/l
CHLORIDE	Numeric	9/2	00940	Chloride, total: mg/l
TKN	Numeric	9/2	00625	Nitrogen, Kjeldahl, total: mg/l
NO2_NO3	Numeric	9/3	00630	Nitrate plus nitrite (as N), total: mg/l
NO2_NO3D	Numeric	9/3	00631	Nitrate plus nitrite (as N), dissolved: mg/l
NITRATE	Numeric	9/2	00620	Nitrate (as N), total: mg/l

S_ANALY3.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
NITRATED	Numeric	9/3	00618	Nitrate (as N), dissolved: mg/l
NITRITE	Numeric	9/3	00615	Nitrite (as N), total: mg/l
NITRITED	Numeric	9/3	00613	Nitrite (as N), dissolved: mg/l
AMMONIA	Numeric	9/3	00610	Nitrogen ammonia, total (as N): mg/l
PHOSPHAT	Numeric	9/2	00655	Phosphate, poly (as PO_4): mg/l
ORTHO_P	Numeric	9/2	00660	Phosphate, ortho (as PO_4) mg/l
T_PHOS	Numeric	9/3	00665	Phosphorus (as P), total: mg/l
T_PHOS_D	Numeric	9/3	00666	Phosphorus (as P), dissolved: mg/l
T_COLIF	Numeric	9	31501	Total coliform, MF, Endo AGAR: cfu/100mls
F_COLIF	Numeric	9	31616	Fecal coliform: MF, M-FC BROTH, 0.45mm filter: cfu/100mls
ARSENICT	Numeric	9/1	01002	Arsenic, total: µg/l
ARSENICD	Numeric	9/1	01000	Arsenic, dissolved: µg/l
BARIUM_T	Numeric	9	01007	Barium, total: µg/l
BARIUM_D	Numeric	9	01005	Barium, dissolved: µg/l
CADMIUMT	Numeric	9/1	01027	Cadmium, total: µg/l
CADMIUMD	Numeric	9/1	01025	Cadmium, dissolved: µg/l
CHROMT	Numeric	9	01034	Chromium, total: µg/l
CHROMD	Numeric	9	01030	Chromium, dissolved: µg/l
COPPER_T	Numeric	9	01042	Copper, total: µg/l

S_ANALY3.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
COPPER_D	Numeric	9	01040	Copper, dissolved: µg/l
IRON_T	Numeric	9	01045	Iron, total: µg/l
IRON_D	Numeric	9	01046	Iron, dissolved: µg/l
LEAD_T	Numeric	9/1	01051	Lead, total: µg/l
LEAD_D	Numeric	9/1	01049	Lead, dissolved: µg/l
MANGANT	Numeric	9/1	01055	Manganese, total: µg/l
MANGAND	Numeric	9	01056	Manganese, dissolved: µg/l
MERCURYT	Numeric	9/2	71900	Mercury, total: µg/l
MERCURYD	Numeric	9/2	71890	Mercury, dissolved: µg/l
SELENT	Numeric	9/1	01147	Selenium, total: µg/l
SELEND	Numeric	9/1	01145	Selenium, dissolved: µg/l
SILVER_T	Numeric	9/1	01077	Silver, total: µg/l
SILVER_D	Numeric	9	01075	Silver, dissolved: µg/l
ZINC_T	Numeric	9	01092	Zinc, total: µg/l
ZINC_D	Numeric	9	01090	Zinc, dissolved: µg/l

One character columns follow each water quality parameter. These columns are for STORET codes if needed (Appendix D). Each of these columns is labeled with a one or two character field name ranging from A to BG.

The following table provides the DBASE III+ database field structure for all the river water quality data. These data will allow parks or other interested parties to perform statistical analyses and graphics or to establish a baseline park water quality database. Values equalling -9 in the database represent missing data. R_ARC1_3.DBF, which is a subset of RARCHIV4.DBF in DBASE III+ format, contains the first 101 fields from site_id through f_coliform. R_ARC2_3.DBF, which is a subset of RARCHIV4.DBF in DBASE III+ format, contains the fields site_id, date, time, site_name, storet_no, park, district, source_typ, sample_typ, agency, and the last 47 fields from arsenic_t through zinc_d.

RARCHIV4.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
SITE_ID	Character	5		Identification code for sample location
DATE	Date	8		Date sample taken [mm/dd/yy]
TIME	Character	4		Time sample taken [hhmm]
SITE_NAME	Character	25		Name of sample location
STORET_NO	Character	9		STORET number of sample location
PARK	Character	5		NPS unit containing sample location
DISTRICT	Character	5		NPS district containing sample location
COUNTY	Character	3		County containing sample location
UTM	Character	12		Universal Transverse Mercator coordinates of sample location
ELEV	Character	5		Elevation of sample location in feet
OBSERVER	Character	22		Names of persons who did the sampling

RARCHIV4.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
SUBSTRATE1	Character	15		Type of substrate at sample location (rock, gravel, sand, silt, clay, other). Can select one to three types.
SUBSTRATE2	Character	12		
SUBSTRATE3	Character	13		
BANKTYPE1	Character	15		Type of material composing bank at sample location (rock, gravel, sand, silt, clay). Can select one or two types.
BANKTYPE2	Character	15		
RIPARIAN_T	Character	15		Riparian community types
RIPARIAN_S	Character	21		Riparian community species
SWIMMING	Character	1		Type of use occurring at the site at time of sampling. Select 0 or X answer.
DRINKING	Character	1		
STOCK	Character	1		
HUMAN	Character	1		
WILDLIFE	Character	1		
WEATHER	Character	20		Weather at time of sampling
SOURCE_TYP	Character	14		Type of water body sampled (spring, seep, stream, river, pothole, other, flowing water, standing water, effluent, influent)
SAMPLE_TYP	Character	15		Type of sample taken (grab, no flow, field data only)
LAB_NO	Character	9		Number of the lab that did the analysis
AIR_TEMP	Numeric	9/1	00020	Temperature, air: °C
AGENCY	Character	5		Agency that did the analysis, state or park
Q_CFS	Numeric	9	00061	Flow, instantaneous: cubic feet/second

RARCHIV4.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
Q_GPM	Numeric	9	00059	Flow, instantaneous: gallons/minute
H2O_TEMP	Numeric	9/1	00010	Temperature, water: °C
PH	Numeric	9/2	00400	pH, field: standard units
DO	Numeric	9/2	00300	Oxygen, dissolved: mg/l
EC	Numeric	9	00094	Specific conductance, field: µmhos/cm
SALINITY	Numeric	9/2	00480	Salinity at 25°C: parts per thousand (ppt)
ORP	Numeric	9/3	00090	Oxidation reduction potential (ORP): mV
EC_LAB	Numeric	9	00095	Specific conductance, lab: µmhos/cm
HARDNESS	Numeric	9/1	00900	Hardness, total (as $CaCO_3$): mg/l
TDS	Numeric	9	70300	Residue, total filtrable: mg/l (Total Dissolved Solids)
TSS	Numeric	9	00530	Residue, total nonfiltrable: mg/l (Total Suspended Solids)
TURBIDITY	Numeric	9/1	82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)
CALCIUM	Numeric	9	00915	Calcium, dissolved: mg/l
MAGNESIUM	Numeric	9	00925	Magnesium, dissolved: mg/l
SODIUM	Numeric	9	00930	Sodium, dissolved: mg/l
POTASSIUM	Numeric	9/1	00935	Potassium, dissolved: mg/l
ALKALINITY	Numeric	9	00410	Alkalinity, total (as $CaCO_3$): mg/l
HCO3	Numeric	9	00440	Bicarbonate (as HCO_3): mg/l
CO3	Numeric	9	00445	Carbonate (as CO_3): mg/l

RARCHIV4.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
CO2	Numeric	9	00405	Carbon dioxide: mg/l
HYDROXIDE	Numeric	9	71830	Hydroxide: mg/l
SULFATE	Numeric	9/2	00945	Sulfate, total: mg/l
CHLORIDE	Numeric	9/1	00940	Chloride, total: mg/l
TKN	Numeric	9/2	00625	Nitrogen, Kjeldahl, total: mg/l
NO2_NO3	Numeric	9/2	00630	Nitrate plus nitrite (as N), total: mg/l
NO2_NO3_D	Numeric	9/3	00631	Nitrate plus nitrite (as N), dissolved: mg/l
NITRATE	Numeric	9/2	00620	Nitrate (as N), total: mg/l
NITRITE	Numeric	9/2	00615	Nitrite (as N), total: mg/l
AMMONIA	Numeric	9/2	00610	Nitrogen ammonia, total (as N): mg/l
PHOSPHATE	Numeric	9/2	00655	Phosphate, poly (as PO_4): mg/l
ORTHO_P	Numeric	9/3	00660	Phosphate, ortho (as PO_4) mg/l
T_PHOS	Numeric	9/3	00665	Phosphorus (as P), total: mg/l
T_PHOS_D	Numeric	9/3	00666	Phosphorus (as P), dissolved: mg/l
T_COLIFORM	Numeric	9	31501	Total coliform, MF, Endo AGAR: cfu/100mls
F_COLIFORM	Numeric	9	31616	Fecal coliform: MF, M-FC BROTH, 0.45mm filter: cfu/100mls
ARSENIC_T	Numeric	9/1	01002	Arsenic, total: µg/l
ARSENIC_D	Numeric	9/1	01000	Arsenic, dissolved: µg/l

RARCHIV4.DBF				
Field Name	**Field Type**	**Width/ # Decimal places**	**Parameter STORET No.**	**Field Description**
BARIUM_T	Numeric	9	01007	Barium, total: µg/l
BARIUM_D	Numeric	9	01005	Barium, dissolved: µg/l
CADMIUM_T	Numeric	9	01027	Cadmium, total: µg/l
CADMIUM_D	Numeric	9	01025	Cadmium, dissolved: µg/l
CHROMIUM_T	Numeric	9	01034	Chromium, total: µg/l
CHROMIUM_D	Numeric	9	01030	Chromium, dissolved: µg/l
COPPER_T	Numeric	9	01042	Copper, total: µg/l
COPPER_D	Numeric	9	01040	Copper, dissolved: µg/l
IRON_T	Numeric	9	01045	Iron, total: µg/l
IRON_D	Numeric	9	01046	Iron, dissolved: µg/l
LEAD_T	Numeric	9	01051	Lead, total: µg/l
LEAD_D	Numeric	9	01049	Lead, dissolved: µg/l
MANGANES_T	Numeric	9	01055	Manganese, total: µg/l
MANGANES_D	Numeric	9/1	01056	Manganese, dissolved: µg/l
MERCURY_T	Numeric	9/1	71900	Mercury, total: µg/l
MERCURY_D	Numeric	9/1	71890	Mercury, dissolved: µg/l
SELENIUM_T	Numeric	9/1	01147	Selenium, total: µg/l
SELENIUM_D	Numeric	9/1	01145	Selenium, dissolved: µg/l
SILVER_T	Numeric	9	01077	Silver, total: µg/l
SILVER_D	Numeric	9	01075	Silver, dissolved: µg/l
ZINC_T	Numeric	9	01092	Zinc, total: µg/l
ZINC_D	Numeric	9	01090	Zinc, dissolved: µg/l

One character columns follow each water quality parameter. These columns are for STORET codes if needed (Appendix D). Each of these columns is labeled with a one or two character field name ranging from A to BH.

Appendix D

STORET Remark Codes

The following is a list of STORET remark codes. These codes are found in the DBASE files in the fields following each water quality parameter field and are named with one or two characters ranging from A to BJ.

STORET Remark Codes	
A	Value reported is the mean of two or more determinations
B	Results based upon colony counts outside the acceptable range
C	Value calculated
D	Indicates field measurement
E	Indicates extra samples taken at composite stations
F	In the case of species, F indicates female sex
G	Value reported is the maximum of two or more determinations
H	Value based on field kit determination; results may not be accurate
J	Estimated value; value not accurate
K	Actual value is known to be less than value given
L	Actual value is known to be greater than value given
M	Presence of material verified, negative value, or male sex
N	Presumptive evidence of presence of material
O	Sampled, but analysis lost or not performed
P	Too numerous to count
Q	Exceeded normal holding time
R	Significant rain in last 48 hours
S	Laboratory test
T	Value reported is less than criteria of detection
U	Indicates material was analyzed for but not detected, or undet. sex
V	Analyte was detected in sample and method blank
W	Value observed is less than lowest value reportable under "T" code
X	Value is quasi vertically-integrated sample
Y	Analysis of unpreserved sample
Z	Too many colonies were present; numeric value is filtration volume

Appendix E

Detection Limits for Laboratory Analyses

Detection Limits Used for Southeast Utah Group Spring Water Quality Data Set, 1983-1993			
PARAMETER	**DETECTION LIMIT**	**PARAMETER**	**DETECTION LIMIT**
Alkalinity, total	17 mg/L	Nitrate plus nitrite, dissolved	0.01 and 0.02 mg/L
Arsenic, dissolved	5 µg/L	Nitrate plus nitrite, total	0.01 and 0.02 mg/L
Arsenic, total	5 and 20 µg/L	Nitrite, dissolved	0.01 mg/L
Barium, dissolved	none below detection	Nitrite, total	0.01 mg/L
Barium, total	none below detection	Nitrogen ammonia, total	0.05 mg/L
Bicarbonate	none below detection	Nitrogen, Kjeldahl, total	0.1, 0.2 and 1 mg/L
Cadmium, dissolved	1 µg/L	Oxidation reduction potential	none below detection
Cadmium, total	1 µg/L	Oxygen, dissolved	none below detection
Calcium, dissolved	none below detection	pH	none below detection
Carbon dioxide	none below detection	Phosphate, ortho	none below detection
Carbonate	none below detection	Phosphate, poly	0.1 mg/L
Chloride, total	1 mg/L	Phosphorous, dissolved	0.01 and 0.05 mg/L
Chromium, dissolved	5 µg/L	Phosphorous, total	0.01, 0.02 and 0.05 mg/L
Chromium, total	5 µg/L	Potassium, dissolved	1 mg/L
Copper, dissolved	20 µg/L	Residue, total filtrable	none below detection
Copper, total	20 and 100 µg/L	Residue, total nonfiltrable	3 and 20 mg/L
Fecal Coliform	none below detection	Salinity	none below detection
Flow, instantaneous: cfs	0.1 and 1 cfs	Selenium, dissolved	1 and 2 µg/L
Flow, instantaneous: gpm	none below detection	Selenium, total	1 and 5 µg/L
Hardness, total	none below detection	Silver, dissolved	2 µg/L
Hydroxide	none below detection	Silver, total	2 and 5 µg/L
Iron, dissolved	20 and 30 µg/L	Sodium, dissolved	none below detection
Iron, total	20 and 100 µg/L	Specific conductance, field	none below detection
Lead, dissolved	3 µg/L	Specific conductance, lab	none below detection
Lead, total	5 µg/L	Sulfate, total	5 mg/L
Magnesium, dissolved	none below detection	Temperature, air	none below detection
Manganese, dissolved	10 µg/L	Temperature, water	none below detection
Manganese, total	5 and 100 µg/L	Total coliform	none below detection
Mercury, dissolved	0.2 µg/L	Turbidity	none below detection
Mercury, total	0.2 µg/L	Zinc, dissolved	30 µg/L
Nitrate, dissolved	0.01 mg/L	Zinc, total	20 µg/L
Nitrate, total	0.1 mg/L		

Appendix F

Period-of-Record Summary Statistics

MATRIMONY SPRING (BLM)

STORET No.: 599528 Spring Type: Wall Spring Period of Record: 1/10/91

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	1	13.8	.	13.8	13.8	13.8	13.8	13.8	13.8	13.8
00094	Specific conductance, field: μmhos/cm	1	272	.	272	272	272	272	272	272	272
00095	Specific conductance, lab: μmhos/cm	1	285	.	285	285	285	285	285	285	285
00300	Oxygen, dissolved: mg/l	1	8.6	.	8.6	8.6	8.6	8.6	8.6	8.6	8.6
00400	pH, field: standard units	1	7.7	.	7.7	7.7	7.7	7.7	7.7	7.7	7.7
00405	Carbon dioxide: mg/l	1	2	.	2	2	2	2	2	2	2
00410	Alkalinity, total (as CaCO3): mg/l	1	103	.	103	103	103	103	103	103	103
00440	Bicarbonate (as HCO3): mg/l	1	126	.	126	126	126	126	126	126	126
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.2	.	0.2	0.2	0.2	0.2	0.2	0.2	0.2
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	0.17	.	0.17	0.17	0.17	0.17	0.17	0.17	0.17
00665	Phosphorus (as P), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00900	Hardness, total (as CaCO3): mg/l	1	125.8	.	125.8	125.8	125.8	125.8	125.8	125.8	125.8
00915	Calcium, dissolved: mg/l	1	29	.	29	29	29	29	29	29	29
00925	Magnesium, dissolved: mg/l	1	13	.	13	13	13	13	13	13	13
00930	Sodium, dissolved: mg/l	1	12	.	12	12	12	12	12	12	12
00935	Potassium, dissolved: mg/l	1	2	.	2	2	2	2	2	2	2
00940	Chloride, total: mg/l	1	9	.	9	9	9	9	9	9	9
00945	Sulfate, total: mg/l	1	33	.	33	33	33	33	33	33	33
01002	Arsenic, total: μg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: μg/l	1	70	.	70	70	70	70	70	70	70
01027	Cadmium, total: μg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: μg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: μg/l	1	10	.	10	10	10	10	10	10	10
01045	Iron, total: μg/l	1	10	.	10	10	10	10	10	10	10
01051	Lead, total: μg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: μg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01077	Silver, total: μg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: μg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: μg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
70300	Residue, total filtrable: mg/l	1	168	.	168	168	168	168	168	168	168
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: μg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	0.2	.	0.2	0.2	0.2	0.2	0.2	0.2	0.2

2.4 MILE LOOP POOL (BS2)

STORET No.: 599502 Park: Canyonlands District: Needles Spring Type: Plunge Seep Period of Record: 5/22/86 - 4/24/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	13	15.5	2.8	12.7	12.9	15.3	17.6	19.8	12.6	20.1
00061	Flow, instaneous: cubic feet/second	1	0	.	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0.229	.	0.229	0.229	0.229	0.229	0.229	0.229	0.229
00094	Specific conductance, field: µmhos/cm	13	349.5	220	125	145	303	551	618	116	671
00095	Specific conductance, lab: µmhos/cm	5	426.6	184.7	185	287	473	581	607	185	607
00300	Oxygen, dissolved: mg/l	11	8.29	12.4	2.25	3	5.5	6.63	8.1	0.9	45.1
00400	pH, field: standard units	13	7.13	0.56	6.4	6.99	7.4	7.5	7.6	5.8	7.74
00405	Carbon dioxide: mg/l	5	5.4	2.3	2	5	5	7	8	2	8
00410	Alkalinity, total (as CaCO3): mg/l	13	155.5	93.2	80	85.5	136.8	239.4	275	8.5	307.8
00440	Bicarbonate (as HCO3): mg/l	5	237.8	98.5	107	173	247	326	336	107	336
00445	Carbonate (as CO3): mg/l	5	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	7.5	8.3	1.5	1.5	4.75	13.5	19	1.5	19
00610	Nitrogen ammonia, total (as N): mg/l	5	0.093	0.094	0.025	0.025	0.025	0.18	0.21	0.025	0.21
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.3	.	0.3	0.3	0.3	0.3	0.3	0.3	0.3
00620	Nitrate (as N), total: mg/l	6	0.12	0.11	0.05	0.05	0.05	0.2	0.3	0.05	0.3
00625	Nitrogen, Kjeldahl, total: mg/l	5	0.65	0.53	0.1	0.21	0.7	0.8	1.43	0.1	1.43
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.01	.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.04	0.03	0.01	0.01	0.05	0.07	0.07	0.01	0.07
00655	Phosphate, poly (as PO4): mg/l	7	0.99	0.97	0.25	0.3	0.5	2	2.7	0.25	2.7
00665	Phosphorus (as P), total: mg/l	5	0.019	0.011	0.005	0.01	0.02	0.03	0.03	0.005	0.03
00666	Phosphorus (as P), dissolved: mg/l	4	0.026	0.024	0.005	0.013	0.02	0.04	0.06	0.005	0.06
00900	Hardness, total (as CaCO3): mg/l	12	151.6	78.9	85.5	87.2	128.75	209.6	222.3	68.4	324.9
00915	Calcium, dissolved: mg/l	5	45.8	11.6	33	36	46	53	61	33	61
00925	Magnesium, dissolved: mg/l	5	13.1	8.7	2	5.5	17	20	21	2	21
00930	Sodium, dissolved: mg/l	5	19.4	15.9	2	3	25	31	36	2	36
00935	Potassium, dissolved: mg/l	5	2.76	0.97	1.6	2	2.9	3.3	4	1.6	4
00940	Chloride, total: mg/l	11	58.7	55.6	16.5	17.8	30.3	90.9	121.2	3.4	181.8
00945	Sulfate, total: mg/l	13	18.3	17.4	2.5	5	8	32.7	40	2.5	51.8
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	125	48	80	85	120	165	180	80	180
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	10	34	20.7	10	10	50	50	50	10	50
01045	Iron, total: µg/l	10	108	88.3	30	50	50	200	235	10	260
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	10	225.6	257.1	28	50	190	200	625	15	900
01077	Silver, total: µg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	14.2	8.5	10	10	10	18.5	27	10	27
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	7	29.3	31.7	0	0	25	50	80	0	80
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	9	17.3	0	0	0	11	50	0	50
70300	Residue, total filtrable: mg/l	5	273.2	125.6	108	174	332	350	402	108	402
71830	Hydroxide: mg/l	5	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	5	2.42	1.65	0.53	0.85	2.8	3.9	4	0.53	4

SODA SPRING (BS3)

STORET No.: 599507 Park: Canyonlands District: Needles Period of Record: 2/14/85 - 8/20/89

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	1	16.3	.	16.3	16.3	16.3	16.3	16.3	16.3	16.3
00094	Specific conductance, field: µmhos/cm	1	697	.	697	697	697	697	697	697	697
00400	pH, field: standard units	1	7.85	.	7.85	7.85	7.85	7.85	7.85	7.85	7.85
00410	Alkalinity, total (as CaCO3): mg/l	4	192.1	135.2	8.5	94.25	220	290	320	8.5	320
00620	Nitrate (as N), total: mg/l	2	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	4	3.48	1.72	1.4	2.2	3.5	4.75	5.5	1.4	5.5
00900	Hardness, total (as CaCO3): mg/l	3	209.6	108.8	88.9	88.9	240	300	300	88,9	300
00940	Chloride, total: mg/l	1	303	.	303	303	303	303	303	303	303
00945	Sulfate, total: mg/l	4	26.5	19	2.5	14.5	27.25	38.5	49	2.5	49
01042	Copper, total: µg/l	3	250	173.2	50	50	350	350	350	50	350
01045	Iron, total: µg/l	3	50	0	50	50	50	50	50	50	50
01055	Manganese, total: µg/l	2	1150	212.1	1000	1000	1150	1300	1300	1000	1300
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	4475	6328.6	0	0	4475	8950	8950	0	8950

BIG SPRING UPPER (BS4)

STORET No: 599509 Park: Canyonlands District: Needles Spring Type: Wash Spring Period of Record: 2/13/85 - 5/16/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	15	14.7	4.1	12.8	13.2	15.1	17.3	18.6	2.2	20.3
00059	Flow, instaneous: gallons/minute	1	0.93	.	0.93	0.93	0.93	0.93	0.93	0.93	0.93
00061	Flow, instaneous: cubic feet/second	1	0.002	.	0.002	0.002	0.002	0.002	0.002	0.002	0.002
00090	Oxidation reduction potential (ORP): mV	1	0.238	.	0.238	0.238	0.238	0.238	0.238	0.238	0.238
00094	Specific conductance, field: µmhos/cm	15	557.2	209.4	198	468	632	690	722	105	873
00095	Specific conductance, lab: µmhos/cm	4	390.5	261	103	214	363	567	733	103	733
00300	Oxygen, dissolved: mg/l	12	5.82	2.74	2.4	3.58	6.22	7.12	7.95	1.8	11.7
00400	pH, field: standard units	14	6.81	0.88	5.5	6.3	6.78	7.56	7.76	5.4	8.3
00405	Carbon dioxide: mg/l	4	4	2.2	1	2.5	4.5	5.5	6	1	6
00410	Alkalinity, total (as CaCO3): mg/l	15	231.4	96	50	166	260	290.7	324.9	8.5	342
00440	Bicarbonate (as HCO3): mg/l	4	192.2	100.9	61	129.5	200.5	255	307	61	307
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	8.3	6.7	4	4	5	16	16	4	16
00610	Nitrogen ammonia, total (as N): mg/l	4	0.034	0.018	0.025	0.025	0.025	0.043	0.06	0.025	0.06
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.44	.	0.44	0.44	0.44	0.44	0.44	0.44	0.44
00620	Nitrate (as N), total: mg/l	9	0.19	0.31	0.05	0.05	0.05	0.2	1	0.05	1
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.21	0.13	0.05	0.11	0.24	0.32	0.33	0.05	0.33
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.12	0.06	0.07	0.07	0.12	0.18	0.18	0.07	0.18
00655	Phosphate, poly (as PO4): mg/l	10	1.24	0.92	0.5	0.7	0.9	1.5	2.55	0.5	3.6
00665	Phosphorus (as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	241.5	102.6	50.7	175.7	268.3	300	359.1	41	376.2
00915	Calcium, dissolved: mg/l	4	45.8	19.6	18	33.5	50.5	58	64	18	64
00925	Magnesium, dissolved: mg/l	4	11.2	9.2	1.4	4.5	10.3	18	23	1.4	23
00930	Sodium, dissolved: mg/l	4	15.2	16.2	1	2.4	11.9	28	36	1	36
00935	Potassium, dissolved: mg/l	4	2.28	1.17	1	1.3	2.3	3.25	3.5	1	3.5
00940	Chloride, total: mg/l	10	76.8	83.1	1.5	7.6	64.4	121.2	197	0.5	272.7
00945	Sulfate, total: mg/l	15	36.9	16.2	9.7	29	45	50	51	6	55
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	92.5	35.9	40	70	105	115	120	40	120
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	58.5	60.8	10	10	50	50	150	10	220
01045	Iron, total: µg/l	13	57.7	44.4	40	50	50	50	60	10	200
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	80.4	80.8	11	50	50	68	200	2.5	250
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	9	80.1	167.2	0	0	0	50	500	0	500
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	8	14.7	0	0	0	12	40	0	40
70300	Residue, total filtrable: mg/l	4	223.5	130.3	68	138	220	309	386	68	386
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	5.18	2.37	2.8	3.15	5.2	7.2	7.5	2.8	7.5

BIG SPRING LOWER (BS6)

STORET No.: 599508 Park: Canyonlands District: Needles Spring Type: Plunge Seep Period of Record: 8/24/83 - 5/16/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	16.6	4.3	12.5	15	18.1	19.1	19.3	3	20.6
00059	Flow, instaneous: gallons/minute	4	10.48	19.897	0.062	0.301	0.77	20.66	40.32	0.062	40.32
00061	Flow, instaneous: cubic feet/second	4	0.023	0.044	0	0.001	0.002	0.046	0.09	0	0.09
00090	Oxidation reduction potential (ORP): mV	1	0.217	.	0.217	0.217	0.217	0.217	0.217	0.217	0.217
00094	Specific conductance, field: µmhos/cm	16	507.8	114.9	410	489	517	564	640	149	665
00095	Specific conductance, lab: µmhos/cm	4	416	164.5	170	327.5	489	504.5	516	170	516
00300	Oxygen, dissolved: mg/l	13	7.15	2.63	2.6	6.1	8.2	8.6	9.65	1.6	10.3
00400	pH, field: standard units	15	7.39	0.82	6.25	6.85	7.2	8.11	8.2	6.2	9.3
00405	Carbon dioxide: mg/l	4	4.2	2.2	2	2.5	4	6	7	2	7
00410	Alkalinity, total (as CaCO3): mg/l	16	215.1	99.8	74	190	228.7	241	260	8.5	484.8
00440	Bicarbonate (as HCO3): mg/l	4	228.5	93	91	176	263.5	281	296	91	296
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	32.3	41.4	6	6	11	80	80	6	80
00610	Nitrogen ammonia, total (as N): mg/l	4	0.069	0.088	0.025	0.025	0.025	0.113	0.2	0.025	0.2
00620	Nitrate (as N), total: mg/l	10	0.128	0.106	0.05	0.05	0.05	0.25	0.285	0.05	0.29
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.43	0.39	0.1	0.19	0.3	0.66	1	0.1	1
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.52	0.29	0.09	0.36	0.63	0.68	0.73	0.09	0.73
00655	Phosphate, poly (as PO4): mg/l	11	1.66	0.98	0.8	1	1.3	2.7	3.1	0.2	3.2
00665	Phosphorus (as P), total: mg/l	4	0.051	0.051	0.005	0.013	0.04	0.09	0.12	0.005	0.12
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	15	215.5	61.8	82.2	215.5	222.3	240	280	82.1	307.8
00915	Calcium, dissolved: mg/l	4	47.2	14.6	28	36	50.5	58.5	60	28	60
00925	Magnesium, dissolved: mg/l	4	13.5	7	3	9.5	16.5	17.5	18	3	18
00930	Sodium, dissolved: mg/l	4	22.4	13.6	2.8	13.4	27	31.5	33	2.8	33
00935	Potassium, dissolved: mg/l	4	3.08	0.44	2.5	2.75	3.15	3.4	3.5	2.5	3.5
00940	Chloride, total: mg/l	11	80.9	100.8	9.9	13.9	53	121.2	272.7	0.5	272.7
00945	Sulfate, total: mg/l	15	35.5	16.3	15.1	29	32.5	39	60	14	80
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	150	42.4	90	125	160	175	190	90	190
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	49.2	49.1	10	10	50	50	50	10	200
01045	Iron, total: µg/l	13	173.1	342.7	10	50	50	50	580	10	1200
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	93.8	74.5	6	50	50	150	200	6	200
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	8	105	140.6	0	0	20	225	350	0	350
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	7	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	4	258	94.3	120	198	293	318	326	120	326
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	20.6	38.94	0.4	0.8	1.5	40.4	79	0.4	79

BIG WATER CANYON (BWC1)

STORET No.: 599541 Park: Glen Canyon Spring Type: Wash Spring Period of Record: 9/30/84 - 10/26/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	9	12.4	2.7	7.7	11	12.9	14.8	15.6	7.7	15.6
00094	Specific conductance, field: µmhos/cm	8	1288.6	924	209	224.5	1663	2072.5	2180	209	2180
00095	Specific conductance, lab: µmhos/cm	1	2220	.	2220	2220	2220	2220	2220	2220	2220
00300	Oxygen, dissolved: mg/l	8	7.46	1.92	3.8	6.9	7.55	8.15	10.7	3.8	10.7
00400	pH, field: standard units	9	6.62	0.93	5.05	6.2	6.9	7.2	7.84	5.05	7.84
00405	Carbon dioxide: mg/l	1	6	.	6	6	6	6	6	6	6
00410	Alkalinity, total (as CaCO3): mg/l	11	178.1	89.8	8.5	160	205.2	240	262	8.5	272
00440	Bicarbonate (as HCO3): mg/l	1	320	.	320	320	320	320	320	320	320
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	34	.	34	34	34	34	34	34	34
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00615	Nitrite (as N), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00620	Nitrate (as N), total: mg/l	8	0.16	0.23	0.05	0.05	0.05	0.18	0.68	0.05	0.68
00625	Nitrogen, Kjeldahl, total: mg/l	1	1.1	.	1.1	1.1	1.1	1.1	1.1	1.1	1.1
00655	Phosphate, poly (as PO4): mg/l	9	1.79	3.51	0.05	0.4	0.5	1.1	11	0.05	11
00660	Phosphate, ortho (as PO4): mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00665	Phosphorus (as P), total: mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00900	Hardness, total (as CaCO3): mg/l	9	988.6	363.5	77	1008.9	1128.6	1149.9	1316.7	77	1316.7
00915	Calcium, dissolved: mg/l	1	230	.	230	230	230	230	230	230	230
00925	Magnesium, dissolved: mg/l	1	140	.	140	140	140	140	140	140	140
00930	Sodium, dissolved: mg/l	1	95	.	95	95	95	95	95	95	95
00935	Potassium, dissolved: mg/l	1	21	.	21	21	21	21	21	21	21
00940	Chloride, total: mg/l	5	80.6	26.2	46.7	68.2	75.75	98.5	113.63	46.7	113.63
00945	Sulfate, total: mg/l	8	377.5	419.6	48	92	116	728	1100	48	1100
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	1	60	.	60	60	60	60	60	60	60
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	10	1529	1025	30	1000	1675	2000	2850	10	3500
01045	Iron, total: µg/l	9	307.8	477.4	50	50	50	200	1470	50	1470
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	9	815.6	1554.9	50	120	180	680	4900	50	4900
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	4	10	20	0	0	0	20	40	0	40
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	3	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	1	1944	.	1944	1944	1944	1944	1944	1944	1944
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	18	.	18	18	18	18	18	18	18

COURTHOUSE WASH (CW1)

STORET No.: 599524 Park: Arches Spring Type: Perennial Stream Period of Record: 8/21/83 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	19	18.3	10.7	1.5	9.7	18.7	27.8	32.3	0.25	34.3
00061	Flow, instaneous: cubic feet/second	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
00090	Oxidation reduction potential (ORP): mV	1	0.114	.	0.114	0.114	0.114	0.114	0.114	0.114	0.114
00094	Specific conductance, field: µmhos/cm	19	822.1	116	628	782	832	896	943	546	1080
00095	Specific conductance, lab: µmhos/cm	6	853.8	99	716	813	843.5	895	1012	716	1012
00300	Oxygen, dissolved: mg/l	18	8.33	1.81	6.3	6.9	8.05	9.4	11.6	6.1	12.06
00400	pH, field: standard units	17	7.98	0.69	6.5	8	8.1	8.3	8.5	6	8.8
00405	Carbon dioxide: mg/l	6	2.8	1	1	3	3	3	4	1	4
00410	Alkalinity, total (as CaCO3): mg/l	20	159.3	58.5	68.6	136.8	175.5	200	208.6	8.5	227
00440	Bicarbonate (as HCO3): mg/l	6	242.8	20.9	220	230	236	258	277	220	277
00445	Carbonate (as CO3): mg/l	6	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	6	53.9	74	1.5	5	27.5	68	194	1.5	194
00610	Nitrogen ammonia, total (as N): mg/l	6	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	11	0.11	0.16	0.05	0.05	0.05	0.05	0.2	0.05	0.58
00625	Nitrogen, Kjeldahl, total: mg/l	6	0.23	0.2	0.05	0.05	0.2	0.43	0.47	0.05	0.47
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	6	0.04	0.05	0.005	0.005	0.03	0.06	0.13	0.005	0.13
00655	Phosphate, poly (as PO4): mg/l	11	1.57	1.28	0.4	0.75	1.1	2.75	2.8	0.3	4.5
00665	Phosphorus (as P), total: mg/l	6	0.047	0.063	0.005	0.005	0.025	0.05	0.17	0.005	0.17
00666	Phosphorus (as P), dissolved: mg/l	5	0.014	0.008	0.005	0.005	0.02	0.02	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	20	353	88.9	238.7	300	351.9	390.4	461.6	205	581.4
00915	Calcium, dissolved: mg/l	6	79.5	11.9	61	69	83.5	89	91	61	91
00925	Magnesium, dissolved: mg/l	6	36.7	4.4	28	37	38	39	40	28	40
00930	Sodium, dissolved: mg/l	6	52.7	16.2	41	42	47	55	84	41	84
00935	Potassium, dissolved: mg/l	6	5.05	0.44	4.3	5	5	5.5	5.5	4.3	5.5
00940	Chloride, total: mg/l	15	123.1	153.5	6.9	20.2	70.5	181.8	393.9	0.5	515.1
00945	Sulfate, total: mg/l	19	194.1	104.1	68	80	196	283	316	48	420
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	130	.	130	130	130	130	130	130	130
01007	Barium, total: µg/l	4	140	42.4	100	115	130	165	200	100	200
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01042	Copper, total: µg/l	14	43.6	28.7	10	10	50	50	50	10	120
01045	Iron, total: µg/l	15	90.7	97.1	50	50	50	70	230	30	390
01046	Iron, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01049	Lead, dissolved: µg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	16	199	165.1	27	50	185	390	400	15	500
01056	Manganese, dissolved: µg/l	1	5	.	5	5	5	5	5	5	5
01075	Silver, dissolved: µg/l	1	1	.	1	1	1	1	1	1	1
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	1	15	.	15	15	15	15	15	15	15
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10

COURTHOUSE WASH (CW1) Continued

STORET No.: 599524 Park: Arches Spring Type: Perennial Stream Period of Record: 8/21/83 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
01145	Selenium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	10	271.6	547.6	0	6	82.5	250	1040	0	1800
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	205.5	317.6	0	0	2	420	800	0	800
70300	Residue, total filtrable: mg/l	6	595.7	75.3	480	564	593	640	704	480	704
71830	Hydroxide: mg/l	6	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	6	28.75	36.57	0.4	4.1	15	42	96	0.4	96

DAVIS CANYON (DC8)

STORET No.: 599511 Park: Canyonlands District: Needles Spring Type: Wash Spring Period of Record: 8/22/83 - 5/18/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	17.3	5.6	10.7	14	18.4	21.3	23	4.5	26
00059	Flow, instaneous: gallons/minute	4	10.89	10.76	1.25	1.575	11.03	20.205	20.25	1.25	20.25
00061	Flow, instaneous: cubic feet/second	4	0.024	0.024	0.003	0.004	0.024	0.045	0.045	0.003	0.045
00090	Oxidation reduction potential (ORP): mV	1	0.276	.	0.276	0.276	0.276	0.276	0.276	0.276	0.276
00094	Specific conductance, field: µmhos/cm	14	787.3	87.6	695	713	769.5	847	920	674	927
00095	Specific conductance, lab: µmhos/cm	4	567.2	389.3	15	306	673.5	828.5	907	15	907
00300	Oxygen, dissolved: mg/l	12	3.95	2.29	1.3	2.19	3.9	5.38	6.4	0.7	8.7
00400	pH, field: standard units	13	6.72	1.02	5.4	6.4	7.1	7.5	7.7	4.2	7.89
00405	Carbon dioxide: mg/l	4	9.2	4.1	4	6.5	9.5	12	14	4	14
00410	Alkalinity, total (as CaCO3): mg/l	13	380.9	100.8	280	320	398	460	491	146	495.9
00440	Bicarbonate (as HCO3): mg/l	4	512	61.9	455	470.5	497	553.5	599	455	599
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	7.2	7.8	1.5	1.5	4	16	16	1.5	16
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00620	Nitrate (as N), total: mg/l	8	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.29	0.15	0.16	0.18	0.24	0.4	0.5	0.16	0.5
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.04	0.04	0.005	0.005	0.06	0.07	0.07	0.005	0.07
00655	Phosphate, poly (as PO4): mg/l	9	2.22	2.49	0.05	0.7	1.5	3	8	0.05	8
00665	Phosphorus (as P), total: mg/l	4	0.015	0.012	0.005	0.005	0.013	0.025	0.03	0.005	0.03
00666	Phosphorus (as P), dissolved: mg/l	4	0.009	0.008	0.005	0.005	0.005	0.013	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	13	448.5	126.3	340	378.5	420	478.8	513	326.1	820
00915	Calcium, dissolved: mg/l	4	59.2	13.3	40	50.5	64.5	68	68	40	68
00925	Magnesium, dissolved: mg/l	4	53.5	16.4	32	43.5	55	63.5	72	32	72
00930	Sodium, dissolved: mg/l	4	24.5	2.5	21	23	25	26	27	21	27
00935	Potassium, dissolved: mg/l	4	5.1	1.27	4	4.25	4.75	5.95	6.9	4	6.9
00940	Chloride, total: mg/l	8	68.4	53.5	16.5	23	49.2	117.4	151.5	16.5	151.5
00945	Sulfate, total: mg/l	13	24.8	12	8.9	19.39	23	37	40	7	41
01002	Arsenic, total: µg/l	4	4.4	3.8	2.5	2.5	2.5	6.25	10	2.5	10
01007	Barium, total: µg/l	4	480	162.1	330	340	480	620	630	330	630
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	12	93.3	114.8	10	10	50	130	300	10	320
01045	Iron, total: µg/l	11	486.4	284.9	200	300	410	810	850	50	900
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	10	314.4	323.8	32	50	240	500	800	14	1000
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	6	243	519.2	0	0	29	100	1300	0	1300
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	5	65.2	104.1	6	10	20	40	250	6	250
70300	Residue, total filtrable: mg/l	4	564.8	187.8	414	445	504	684.5	837	414	837
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	8.32	6.62	2	2.65	8.15	14	15	2	15

FRENCH'S SPRING (FS1)

STORET No.: 599547 Park: Glen Canyon Spring Type: Wash Spring Period of Record: 10/3/84 - 10/26/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	8	10.9	2.5	8	8.4	11.4	12.3	14.9	8	14.9
00059	Flow, instaneous: gallons/minute	1	9	.	9	9	9	9	9	9	9
00061	Flow, instaneous: cubic feet/second	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00090	Oxidation reduction potential (ORP): mV	1	0.291	.	0.291	0.291	0.291	0.291	0.291	0.291	0.291
00094	Specific conductance, field: µmhos/cm	8	424.4	45.2	362	404.5	416	436	520	362	520
00095	Specific conductance, lab: µmhos/cm	1	384	.	384	384	384	384	384	384	384
00300	Oxygen, dissolved: mg/l	8	7.56	2.96	2.8	6.72	7.2	8.12	13.6	2.8	13.6
00400	pH, field: standard units	8	7.1	1.6	5.6	5.9	6.83	7.6	10.5	5.6	10.5
00405	Carbon dioxide: mg/l	1	3	.	3	3	3	3	3	3	3
00410	Alkalinity, total (as CaCO3): mg/l	8	184.9	38.3	136.8	145.5	194	212	239.4	136.8	239.4
00440	Bicarbonate (as HCO3): mg/l	1	184	.	184	184	184	184	184	184	184
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.54	.	0.54	0.54	0.54	0.54	0.54	0.54	0.54
00620	Nitrate (as N), total: mg/l	7	1.03	2.18	0.05	0.05	0.2	0.5	5.96	0.05	5.96
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.05	.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	7	1.13	0.73	0.05	0.66	0.9	2	2	0.05	2
00665	Phosphorus (as P), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	8	207.5	19.9	178.1	194	205.2	221.6	240	178.1	240
00915	Calcium, dissolved: mg/l	1	45	.	45	45	45	45	45	45	45
00925	Magnesium, dissolved: mg/l	1	16	.	16	16	16	16	16	16	16
00930	Sodium, dissolved: mg/l	1	12	.	12	12	12	12	12	12	12
00935	Potassium, dissolved: mg/l	1	2	.	2	2	2	2	2	2	2
00940	Chloride, total: mg/l	7	65.9	45.5	0.5	14.1	83.3	106	121.2	0.5	121.2
00945	Sulfate, total: mg/l	9	24.9	10.6	2.5	26	26	32	37	2.5	37
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	1	60	.	60	60	60	60	60	60	60
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	9	94.4	88.6	10	50	50	110	280	10	280
01045	Iron, total: µg/l	8	45	14.1	10	50	50	50	50	10	50
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	8	91.6	95.5	2.5	50	50	125	280	2.5	280
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	3	803.3	1339.8	0	0	60	2350	2350	0	2350
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	3	560	969.9	0	0	0	1680	1680	0	1680
70300	Residue, total filtrable: mg/l	1	214	.	214	214	214	214	214	214	214
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	0.26	.	0.26	0.26	0.26	0.26	0.26	0.26	0.26

FRESHWATER CANYON (FW1)

STORET No.: 599520 Park: Arches Spring Type: Wash Spring Period of Record: 8/15/83 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	18	17.4	8.2	1.4	13.6	18.6	21.9	27.5	0.9	33.2
00061	Flow, instaneous: cubic feet/second	4	0.654	0.719	0.025	0.057	0.545	1.25	1.5	0.025	1.5
00090	Oxidation reduction potential (ORP): mV	1	0.106	.	0.106	0.106	0.106	0.106	0.106	0.106	0.106
00094	Specific conductance, field: µmhos/cm	18	365.2	89.8	258	294	369	419	492	172	512
00095	Specific conductance, lab: µmhos/cm	6	359.5	107.39	177	324	367.5	433	488	177	488
00300	Oxygen, dissolved: mg/l	17	8.60	2.46	5.15	6.75	8.9	10	12.3	5	13.8
00400	pH, field: standard units	18	7.56	1.52	5.7	7.6	7.85	8.2	8.9	2.4	9.3
00405	Carbon dioxide: mg/l	6	2.2	0.8	1	2	2	3	3	1	3
00410	Alkalinity, total (as CaCO3): mg/l	18	174.5	75.3	84	120	159.5	220	290.7	17.1	290.7
00440	Bicarbonate (as HCO3): mg/l	6	196.3	73.2	103	143	195.5	225	316	103	316
00445	Carbonate (as CO3): mg/l	6	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	6	1.5	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	6	0.033	0.018	0.025	0.025	0.025	0.025	0.07	0.025	0.07
00615	Nitrite (as N), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00620	Nitrate (as N), total: mg/l	13	0.08	0.08	0.05	0.05	0.05	0.05	0.2	0.05	0.3
00625	Nitrogen, Kjeldahl, total: mg/l	6	0.4	0.38	0.05	0.2	0.25	0.56	1.09	0.05	1.09
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	5	0.05	0.04	0.005	0.03	0.07	0.07	0.09	0.005	0.09
00655	Phosphate, poly (as PO4): mg/l	12	1.05	0.88	0.05	0.22	0.85	1.85	2.2	0.05	2.4
00660	Phosphate, ortho (as PO4): mg/l	1	0.01	.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
00665	Phosphorus (as P), total: mg/l	6	0.008	0.006	0.005	0.005	0.005	0.005	0.02	0.005	0.02
00666	Phosphorus (as P), dissolved: mg/l	5	0.011	0.008	0.005	0.005	0.005	0.02	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	19	190.3	56.1	117.4	136.8	190	223.9	272	90.1	307.8
00915	Calcium, dissolved: mg/l	6	42.2	17.1	19	31	40	58	65	19	65
00925	Magnesium, dissolved: mg/l	6	12.5	5.5	3.1	11	13	17	18	3.1	18
00930	Sodium, dissolved: mg/l	6	11.2	7.6	3	7	9.45	13	25	3	25
00935	Potassium, dissolved: mg/l	6	2.17	1.27	0.5	1.1	2.3	3	3.8	0.5	3.8
00940	Chloride, total: mg/l	14	44.6	53.7	6.5	11.2	22.7	30.3	151.5	0.5	151.5
00945	Sulfate, total: mg/l	18	17.7	10.6	2.5	9	17.5	28	31.5	2.5	38
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	310	.	310	310	310	310	310	310	310
01007	Barium, total: µg/l	4	255	116.2	160	175	220	335	420	160	420
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01042	Copper, total: µg/l	14	70.7	101.1	10	10	50	50	150	10	400
01045	Iron, total: µg/l	14	64.3	47.5	50	50	50	50	140	10	200
01046	Iron, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01049	Lead, dissolved: µg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	128.6	140.7	16	50	50	300	310	12	400
01056	Manganese, dissolved: µg/l	1	5	.	5	5	5	5	5	5	5
01075	Silver, dissolved: µg/l	1	1	.	1	1	1	1	1	1	1
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	1	15	.	15	15	15	15	15	15	15

FRESHWATER CANYON (FW1) Continued

STORET No.: 599520 Park: Arches Spring Type: Wash Spring Period of Record: 8/15/83 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01145	Selenium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	10	92.5	249.4	0	0	5	50	425	0	800
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	1.9	3.7	0	0	0	2.5	10	0	10
70300	Residue, total filtrable: mg/l	6	216	72.2	110	190	210	248	328	110	328
71830	Hydroxide: mg/l	6	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	6	1.43	1.29	0.4	0.9	1	1.3	4	0.4	4

JUNCTION SPRING (HC1)

STORET No.: 599556 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/1/84 - 5/3/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	22	4.7	17.1	18.6	20.6	25	28.1	16.9	31.8
00059	Flow, instaneous: gallons/minute	2	34.98	43.44	4.26	4.26	34.98	65.7	65.7	4.26	65.7
00061	Flow, instaneous: cubic feet/second	2	0.078	0.097	0.009	0.009	0.078	0.146	0.146	0.009	0.146
00090	Oxidation reduction potential (ORP): mV	1	0.088	.	0.088	0.088	0.088	0.088	0.088	0.088	0.088
00094	Specific conductance, field: µmhos/cm	12	627.7	449.8	102	119	926.5	982.5	1073	101	1078
00095	Specific conductance, lab: µmhos/cm	4	1042.8	10.9	1028	1035.5	1044.5	1050	1054	1028	1054
00300	Oxygen, dissolved: mg/l	13	7.67	1.07	6.2	7.25	7.6	8.15	8.65	6.1	10.3
00400	pH, field: standard units	14	7.76	0.4	7.1	7.6	7.8	8.1	8.25	7	8.3
00405	Carbon dioxide: mg/l	4	3.5	1	3	3	3	4	5	3	5
00410	Alkalinity, total (as CaCO3): mg/l	12	194.1	67.1	155	188.6	198.5	234.7	255	8.5	273.6
00440	Bicarbonate (as HCO3): mg/l	4	224.2	23.2	190	210	233.5	238.5	240	190	240
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	20.4	33.1	1.5	2.75	5	38	70	1.5	70
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00620	Nitrate (as N), total: mg/l	9	0.06	0.02	0.05	0.05	0.05	0.05	0.11	0.05	0.11
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.05	0.01	0.04	0.04	0.05	0.06	0.06	0.04	0.06
00655	Phosphate, poly (as PO4): mg/l	9	1.81	3.17	0.05	0.05	0.6	2.1	9.9	0.05	9.9
00665	Phosphorus (as P), total: mg/l	4	0.006	0.003	0.005	0.005	0.005	0.008	0.01	0.005	0.01
00666	Phosphorus (as P), dissolved: mg/l	4	0.009	0.008	0.005	0.005	0.005	0.013	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	12	521.2	61.6	444.1	479.4	504.2	562.6	598.5	440	640
00915	Calcium, dissolved: mg/l	4	92.5	7.7	84	86	93	99	100	84	100
00925	Magnesium, dissolved: mg/l	4	60	2.6	57	58	60	62	63	57	63
00930	Sodium, dissolved: mg/l	4	41.8	0.5	41	41.5	42	42	42	41	42
00935	Potassium, dissolved: mg/l	4	9.72	0.49	9	9.45	9.95	10	10	9	10
00940	Chloride, total: mg/l	9	63.1	59.9	0.5	20.5	21.4	106	151.5	0.5	151.5
00945	Sulfate, total: mg/l	13	238.5	154.5	80	96	228	357.8	380	74	547.2
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	57.5	22.2	40	45	50	70	90	40	90
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	113.1	212.9	10	10	50	50	180	10	800
01045	Iron, total: µg/l	13	76.2	56.6	50	50	50	60	170	10	180
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	12	144.6	167	42	46	50	180	300	21	600
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	175	247.5	0	0	175	350	350	0	350
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	4	762.5	12	746	754	765	771	774	746	774
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	3.06	2.93	0.43	0.86	2.4	5.25	7	0.43	7

HOLEMAN SPRING (HSB1)

STORET No.: 599564 Park: Canyonlands District: Island in the Sky Period of Record: 10/29/84 - 8/14/91

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	12	13.8	3.4	10.5	10.9	14.3	16.8	16.9	8.2	17.5
00059	Flow, instaneous: gallons/minute	4	1.66	0.71	1	1.1	1.54	2.22	2.56	1	2.56
00061	Flow, instaneous: cubic feet/second	4	0.004	0.002	0.002	0.003	0.004	0.005	0.006	0.002	0.006
00090	Oxidation reduction potential (ORP): mV	1	0.16	.	0.16	0.16	0.16	0.16	0.16	0.16	0.16
00094	Specific conductance, field: µmhos/cm	13	256.6	15.8	242	250	260	265	273	218	280
00095	Specific conductance, lab: µmhos/cm	1	243	.	243	243	243	243	243	243	243
00300	Oxygen, dissolved: mg/l	13	8.10	1.21	7.3	7.65	8.12	8.5	9.4	5.4	10.7
00400	pH, field: standard units	13	7.40	0.72	6.8	6.85	7.4	7.78	8.1	6.05	8.9
00405	Carbon dioxide: mg/l	1	2	.	2	2	2	2	2	2	2
00410	Alkalinity, total (as CaCO3): mg/l	13	148.3	39.1	100	120	140	188.1	188.1	80	205.2
00440	Bicarbonate (as HCO3): mg/l	1	152	.	152	152	152	152	152	152	152
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	12	0.09	0.07	0.05	0.05	0.05	0.12	0.2	0.05	0.2
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.16	.	0.16	0.16	0.16	0.16	0.16	0.16	0.16
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	0.48	.	0.48	0.48	0.48	0.48	0.48	0.48	0.48
00655	Phosphate, poly (as PO4): mg/l	12	0.83	0.82	0.2	0.45	0.6	0.75	1.9	0.05	3
00665	Phosphorus (as P), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	13	163.7	23.4	130	153.9	160	180	193	120	200
00915	Calcium, dissolved: mg/l	1	29	.	29	29	29	29	29	29	29
00925	Magnesium, dissolved: mg/l	1	14	.	14	14	14	14	14	14	14
00930	Sodium, dissolved: mg/l	1	2.8	.	2.8	2.8	2.8	2.8	2.8	2.8	2.8
00935	Potassium, dissolved: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00940	Chloride, total: mg/l	7	50.3	35.2	3.5	37.9	45.4	53	121.2	3.5	121.2
00945	Sulfate, total: mg/l	12	16.4	25.5	2.5	2.5	10.2	16.5	20.1	2.5	95
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	1	220	.	220	220	220	220	220	220	220
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	46.9	11.1	50	50	50	50	50	10	50
01045	Iron, total: µg/l	13	58.5	43.9	50	50	50	50	50	10	200
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	254	357.8	50	50	50	200	800	2.5	1200
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	7	31.4	56.7	0	0	0	60	150	0	150
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	6	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	1	136	.	136	136	136	136	136	136	136
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	0.28	.	0.28	0.28	0.28	0.28	0.28	0.28	0.28

HORSESHOE UPPER (HSC1)

STORET No.: 599555 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 9/27/84 - 5/5/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	10	15	3.8	10.3	12	15	17.1	20.5	10.25	21.9
00059	Flow, instaneous: gallons/minute	1	40.5	.	40.5	40.5	40.5	40.5	40.5	40.5	40.5
00061	Flow, instaneous: cubic feet/second	1	0.09	.	0.09	0.09	0.09	0.09	0.09	0.09	0.09
00090	Oxidation reduction potential (ORP): mV	1	0.317	.	0.317	0.317	0.317	0.317	0.317	0.317	0.317
00094	Specific conductance, field: µmhos/cm	10	570.8	51.1	508.5	533	573.5	587	640.5	490	682
00095	Specific conductance, lab: µmhos/cm	4	563.8	19.6	536	551.5	568.5	576	582	536	582
00300	Oxygen, dissolved: mg/l	10	6.69	2.05	3.7	5.8	6.65	8.17	9.45	3.1	9.9
00400	pH, field: standard units	10	6.95	0.96	5.52	6.2	7.15	7.5	8.14	5.3	8.4
00405	Carbon dioxide: mg/l	4	4.2	1.3	3	3.5	4	5	6	3	6
00410	Alkalinity, total (as CaCO3): mg/l	13	242.2	84.2	205.2	220	240	274	324.9	8.5	376.2
00440	Bicarbonate (as HCO3): mg/l	4	315.2	20.3	288	300.5	319	330	335	288	335
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	20.5	36.4	1.5	1.5	2.75	39.5	75	1.5	75
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.69	.	0.69	0.69	0.69	0.69	0.69	0.69	0.69
00620	Nitrate (as N), total: mg/l	8	0.06	0.03	0.05	0.05	0.05	0.05	0.14	0.05	0.14
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.21	.	0.21	0.21	0.21	0.21	0.21	0.21	0.21
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.3	0.14	0.21	0.21	0.23	0.46	0.46	0.21	0.46
00655	Phosphate, poly (as PO4): mg/l	9	2.26	2.3	0.75	0.9	1.5	2.4	8	0.75	8
00665	Phosphorus (as P), total: mg/l	4	0.014	0.018	0.005	0.005	0.005	0.023	0.04	0.005	0.04
00666	Phosphorus (as P), dissolved: mg/l	4	0.019	0.028	0.005	0.005	0.005	0.033	0.06	0.005	0.06
00900	Hardness, total (as CaCO3): mg/l	12	295	37.3	240	268.5	293.7	324.9	324.9	239.4	359.4
00915	Calcium, dissolved: mg/l	4	39.5	5.2	34	35.5	39	43.5	46	34	46
00925	Magnesium, dissolved: mg/l	4	43.2	3.1	39	41	44	45.5	46	39	46
00930	Sodium, dissolved: mg/l	4	14.2	0.96	13	13.5	14.5	15	15	13	15
00935	Potassium, dissolved: mg/l	4	6.6	0.46	6	6.3	6.65	6.9	7.1	6	7.1
00940	Chloride, total: mg/l	9	36.2	28.7	9.4	12	30.3	53	83.3	9.4	83.33
00945	Sulfate, total: mg/l	13	54.2	56.5	28.5	33	38	45	64	24	239.4
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	232.5	38.6	180	205	240	260	270	180	270
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	132.3	308.9	10	10	50	50	180	10	1150
01045	Iron, total: µg/l	12	102.5	119.1	40	50	50	80	300	30	400
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	12	188.5	168.8	50	50	165	230	400	50	600
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	3	53.3	92.4	0	0	0	160	160	0	160
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	2	2.5	3.5	0	0	2.5	5	5	0	5
70300	Residue, total filtrable: mg/l	4	317	4.8	312	313	317	321	322	312	322
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	3.12	2.81	1	1.15	2.2	5.1	7.1	1	7.1

HORSESHOE LOWER (HSC2)

STORET No.: 599554 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 7/10/85 - 10/27/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	7	17.1	6.7	8.7	13.5	17.7	17.8	30.4	8.7	30.4
00059	Flow, instaneous: gallons/minute	1	0.29	.	0.29	0.29	0.29	0.29	0.29	0.29	0.29
00061	Flow, instaneous: cubic feet/second	1	28.5	.	28.5	28.5	28.5	28.5	28.5	28.5	28.5
00090	Oxidation reduction potential (ORP): mV	1	0.329	.	0.329	0.329	0.329	0.329	0.329	0.329	0.329
00094	Specific conductance, field: µmhos/cm	7	630	139.2	511	515	582	767	868	511	868
00095	Specific conductance, lab: µmhos/cm	1	933	.	933	933	933	933	933	933	933
00300	Oxygen, dissolved: mg/l	7	5.13	2.86	0.75	2.9	5.73	7.4	8.7	0.75	8.7
00400	pH, field: standard units	7	7.17	0.51	6.3	6.8	7.2	7.7	7.72	6.3	7.72
00405	Carbon dioxide: mg/l	1	20	.	20	20	20	20	20	20	20
00410	Alkalinity, total (as CaCO3): mg/l	8	282.8	151.2	8.5	205	282.4	393.6	492	8.5	492
00440	Bicarbonate (as HCO3): mg/l	1	600	.	600	600	600	600	600	600	600
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	35	.	35	35	35	35	35	35	35
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.05	.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00620	Nitrate (as N), total: mg/l	6	0.3	0.62	0.05	0.05	0.05	0.05	1.58	0.05	1.58
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.2	.	0.2	0.2	0.2	0.2	0.2	0.2	0.2
00655	Phosphate, poly (as PO4): mg/l	7	4.85	6.79	0.05	0.7	0.9	7	19	0.05	19
00665	Phosphorus(as P), total: mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00666	Phosphorus(as P), dissolved: mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00900	Hardness, total (as CaCO3): mg/l	7	336.7	101.8	200	290.7	290.7	461.7	483.4	200	483.4
00915	Calcium, dissolved: mg/l	1	75	.	75	75	75	75	75	75	75
00925	Magnesium, dissolved: mg/l	1	72	.	72	72	72	72	72	72	72
00930	Sodium, dissolved: mg/l	1	14	.	14	14	14	14	14	14	14
00935	Potassium, dissolved: mg/l	1	7	.	7	7	7	7	7	7	7
00940	Chloride, total: mg/l	6	106.1	140.3	0.5	22.5	56.8	121.2	379	0.5	379
00945	Sulfate, total: mg/l	8	21.1	15.8	2.5	10	20	26	54	2.5	54
01002	Arsenic, total: µg/l	1	10	.	10	10	10	10	10	10	10
01007	Barium, total: µg/l	1	880	.	880	880	880	880	880	880	880
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	8	72.5	81	10	50	50	50	270	10	270
01045	Iron, total: µg/l	7	1445.7	2097.8	50	50	170	3600	5200	50	5200
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	7	550	1001.7	50	50	200	400	2800	50	2800
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	3	3.3	5.8	0	0	0	10	10	0	10
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	3	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	1	540	.	540	540	540	540	540	540	540
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	2	15.9	19.94	1.8	1.8	15.9	30	30	1.8	30

INDIAN CREEK (IC15)

Park: Canyonlands District: Needles Spring Type: Intermittent Stream Period of Record: 8/31/83 and 4/8/87

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	2	20.35	11.1	12.5	12.5	20.35	28.2	28.2	12.5	28.2
00094	Specific conductance, field: μmhos/cm	2	1048	359.21	794	794	1048	1302	1302	794	1302
00300	Oxygen, dissolved: mg/l	2	8.4	0.71	7.9	7.9	8.4	8.9	8.9	7.9	8.9
00400	pH, field: standard units	2	8.6	0	8.6	8.6	8.6	8.6	8.6	8.6	8.6
00410	Alkalinity, total (as CaCO3): mg/l	2	240	141.4	140	140	240	340	340	140	340
00620	Nitrate (as N), total: mg/l	2	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	2	0.85	0.92	0.2	0.2	0.85	1.5	1.5	0.2	1.5
00900	Hardness, total (as CaCO3): mg/l	2	327	66.5	280	280	327	374	374	280	374
00940	Chloride, total: mg/l	1	106.05	.	106.05	106.05	106.05	106.05	106.05	106.05	106.05
00945	Sulfate, total: mg/l	1	115	.	115	115	115	115	115	115	115
01042	Copper, total: μg/l	1	500	.	500	500	500	500	500	500	500
01045	Iron, total: μg/l	1	1650	.	1650	1650	1650	1650	1650	1650	1650
01055	Manganese, total: μg/l	1	50	.	50	50	50	50	50	50	50

KACHINA BRIDGE POOL (KB1)

STORET No.: 599531 Park: Natural Bridges Spring Type: Plunge Seep Period of Record: 5/21/85 - 10/4/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	15	12.5	2.3	9.7	10.8	11.9	14.4	15.8	9.4	17.1
00061	Flow, instaneous: cubic feet/second	1	0	.	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0.193	.	0.193	0.193	0.193	0.193	0.193	0.193	0.193
00094	Specific conductance, field: µmhos/cm	15	410.8	157.1	195	291	441	515	613	176	686
00095	Specific conductance, lab: µmhos/cm	5	615.4	374.2	191	472	513	701	1200	191	1200
00300	Oxygen, dissolved: mg/l	14	7.67	2.79	4.04	6.5	7.5	8.45	11.5	4	14.3
00400	pH, field: standard units	15	7.44	1.01	6.25	6.4	7.7	8	8.3	5.2	9.2
00405	Carbon dioxide: mg/l	5	5	3.4	3	3	4	4	11	3	11
00410	Alkalinity, total (as CaCO3): mg/l	15	199.5	89.1	120	136.8	192	209	239.4	88	484
00440	Bicarbonate (as HCO3): mg/l	5	269.8	188.5	107	162	234	256	590	107	590
00445	Carbonate (as CO3): mg/l	5	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	5	35.9	62.2	1.5	1.5	1.5	30	145	1.5	145
00610	Nitrogen ammonia, total (as N): mg/l	5	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	9	0.16	0.28	0.05	0.05	0.05	0.05	0.9	0.05	0.9
00625	Nitrogen, Kjeldahl, total: mg/l	5	0.49	0.23	0.18	0.36	0.52	0.57	0.8	0.18	0.8
00630	Nitrate plus Nitrite (as N), total: mg/l	2	0.05	0.06	0.01	0.01	0.05	0.09	0.09	0.01	0.09
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.16	0.12	0.005	0.073	0.18	0.24	0.27	0.005	0.27
00655	Phosphate, poly (as PO4): mg/l	10	3.78	7.6	0.175	0.3	0.88	3.9	14.5	0.05	25
00665	Phosphorus (as P), total: mg/l	5	0.015	0.015	0.005	0.005	0.005	0.02	0.04	0.005	0.04
00666	Phosphorus (as P), dissolved: mg/l	4	0.009	0.008	0.005	0.005	0.005	0.013	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	14	205.1	78.2	100	171	198.7	239.4	267.5	90.8	396.1
00915	Calcium, dissolved: mg/l	5	56	18.7	27	48	66	66	73	27	73
00925	Magnesium, dissolved: mg/l	5	22.7	17.8	5.7	14	17	25	52	5.7	52
00930	Sodium, dissolved: mg/l	5	46.6	44.2	12	19	27	55	120	12	120
00935	Potassium, dissolved: mg/l	5	4	2.03	2.8	2.9	3.3	3.4	7.6	2.8	7.6
00940	Chloride, total: mg/l	12	60.7	49.6	13.1	18.8	40.9	106	121.2	7	151.5
00945	Sulfate, total: mg/l	15	50.6	37.9	15	26	40	59.4	130	9	139.44
01000	Arsenic, dissolved: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	2	160	42.4	130	130	160	190	190	130	190
01007	Barium, total: µg/l	2	120	42.4	90	90	120	150	150	90	150
01025	Cadmium, dissolved: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	2	3	0	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	2	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	2	10	0	10	10	10	10	10	10	10
01042	Copper, total: µg/l	11	42.7	16.2	10	50	50	50	50	10	50
01045	Iron, total: µg/l	11	291.8	533.9	50	50	50	170	920	50	1700
01046	Iron, dissolved: µg/l	2	12.5	3.5	10	10	12.5	15	15	10	15
01049	Lead, dissolved: µg/l	2	1.5	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	8	143.8	239.9	20	50	50	100	730	20	730
01056	Manganese, dissolved: µg/l	2	5	0	5	5	5	5	5	5	5
01075	Silver, dissolved: µg/l	2	1	0	1	1	1	1	1	1	1
01077	Silver, total: µg/l	2	1	0	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	2	15	0	15	15	15	15	15	15	15

KACHINA BRIDGE POOL (KB1) Continued

STORET No.: 599531 Park: Natural Bridges Spring Type: Plunge Seep Period of Record: 5/21/85 - 10/4/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
01092	Zinc, total: µg/l	2	10	0	10	10	10	10	10	10	10
01145	Selenium, dissolved: µg/l	2	0.75	0.35	0.5	0.5	0.75	1	1	0.5	1
01147	Selenium, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	9	67.2	182	0	0	0	0	550	0	550
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	1	2.8	0	0	0	0	8	0	8
70300	Residue, total filtrable: mg/l	5	398.8	244.3	158	286	314	438	798	158	798
71830	Hydroxide: mg/l	5	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	2	0.165	0.09	0.1	0.1	0.165	0.23	0.23	0.1	0.23
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	5	13.08	20.84	1.1	2.3	3.3	8.7	50	1.1	50

LOST CANYON (LO2)

STORET No.: 599501 Park: Canyonlands District: Needles Spring Type: Perennial Stream Period of Record: 8/25/83 - 5/17/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	15.6	4.4	11.8	14.4	15.9	18.4	20.4	2.1	20.6
00090	Oxidation reduction potential (ORP): mV	1	0.294	.	0.294	0.294	0.294	0.294	0.294	0.294	0.294
00094	Specific conductance, field: µmhos/cm	16	622.4	49.7	570	588	618	634	703	560	731
00095	Specific conductance, lab: µmhos/cm	4	575.2	21.2	545	561.5	581	589	594	545	594
00300	Oxygen, dissolved: mg/l	14	6.37	2.61	3.3	4.8	6.25	7	8.55	3.25	13.6
00400	pH, field: standard units	16	6.44	1.29	4.9	5.82	6.78	7.45	7.52	2.75	7.65
00405	Carbon dioxide: mg/l	4	7.5	1.7	5	6.5	8	8.5	9	5	9
00410	Alkalinity, total (as CaCO3): mg/l	16	311.3	94	220	283	330.5	368.1	410.4	17.1	410.4
00440	Bicarbonate (as HCO3): mg/l	4	360	23.6	337	343	355.5	377	392	337	392
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	22	23.5	6	6	11	49	49	6	49
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00620	Nitrate (as N), total: mg/l	10	0.06	0.05	0.05	0.05	0.05	0.05	0.125	0.05	0.2
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.17	0.04	0.13	0.14	0.18	0.2	0.2	0.13	0.2
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.01	0.01	0.005	0.005	0.005	0.02	0.02	0.005	0.02
00655	Phosphate, poly (as PO4): mg/l	11	2.4	2.68	0.05	0.5	1.3	4.9	6.8	0.05	7.4
00665	Phosphorus (as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	4	0.011	0.013	0.005	0.005	0.005	0.018	0.03	0.005	0.03
00900	Hardness, total (as CaCO3): mg/l	15	321	48.5	267.4	283.1	324.9	359.1	390	212.5	393.3
00915	Calcium, dissolved: mg/l	4	56.8	11.9	39	50	62	63.5	64	39	64
00925	Magnesium, dissolved: mg/l	4	28.2	1.3	27	27.5	28	29	30	27	30
00930	Sodium, dissolved: mg/l	4	16	0	16	16	16	16	16	16	16
00935	Potassium, dissolved: mg/l	4	2.6	0.47	2.1	2.2	2.65	3	3	2.1	3
00940	Chloride, total: mg/l	10	64.3	49.8	9.1	10.8	56.8	121.2	132.6	9	143.93
00945	Sulfate, total: mg/l	15	18.1	12.6	10	10	13.8	21	36	2.5	51
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	235	5.8	230	230	235	240	240	230	240
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	14	61.4	56.8	10	10	50	50	180	10	180
01045	Iron, total: µg/l	13	260.8	290	50	50	160	300	710	50	1000
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	72.3	58.9	35	50	50	50	200	18	200
01077	Silver, total: µg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	10	48.5	124.3	0	0	0	25	220	0	400
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	1	2.8	0	0	0	0	8	0	8
70300	Residue, total filtrable: mg/l	4	353.5	20.2	332	339	351	368	380	332	380
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	4.55	3.04	2.3	2.65	3.45	6.45	9	2.3	9

LITTLE SPRING CANYON (LS1)

STORET No.: 599506 Park: Canyonlands District: Needles Spring Type: Wash Spring Period of Record: 8/25/83 - 4/24/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	16	4.3	12.7	13.4	14.2	18.2	19	12.1	28.8
00059	Flow, instaneous: gallons/minute	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00061	Flow, instaneous: cubic feet/second	2	0.052	0.069	0.003	0.003	0.052	0.1	0.1	0.003	0.1
00090	Oxidation reduction potential (ORP): mV	1	0.169	.	0.169	0.169	0.169	0.169	0.169	0.169	0.169
00094	Specific conductance, field: µmhos/cm	14	882.3	73.4	808	810	897.5	931	968	758	1021
00095	Specific conductance, lab: µmhos/cm	4	793.5	143.4	584	707.5	841	879.5	908	584	908
00300	Oxygen, dissolved: mg/l	13	6.64	2.52	4	5.55	6.9	7.5	9.7	0.9	11.3
00400	pH, field: standard units	14	6.9	0.82	5.8	6.3	6.92	7.7	7.8	5.25	7.81
00405	Carbon dioxide: mg/l	4	7.5	3.3	3	5	8.5	10	10	3	10
00410	Alkalinity, total (as CaCO3): mg/l	14	261.9	94.4	100	270	298.5	324.9	324.9	8.5	332
00440	Bicarbonate (as HCO3): mg/l	4	358.8	34.4	330	333.5	349.5	384	406	330	406
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	18.9	13.7	1.5	8.75	20	29	34	1.5	34
00610	Nitrogen ammonia, total (as N): mg/l	4	0.036	0.023	0.025	0.025	0.025	0.048	0.07	0.025	0.07
00620	Nitrate (as N), total: mg/l	9	0.42	0.53	0.05	0.05	0.13	0.8	1.5	0.05	1.5
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.4	0.41	0.05	0.1	0.29	0.7	0.97	0.05	0.97
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.359	.	0.359	0.359	0.359	0.359	0.359	0.359	0.359
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	1.52	1.26	0.08	0.08	2.03	2.45	2.45	0.08	2.45
00655	Phosphate, poly (as PO4): mg/l	9	1.62	1.05	0.05	1	1.5	2.5	3	0.05	3
00665	Phosphorus(as P), total: mg/l	4	0.019	0.028	0.005	0.005	0.005	0.033	0.06	0.005	0.06
00666	Phosphorus(as P), dissolved: mg/l	3	0.017	0.01	0.005	0.005	0.02	0.025	0.025	0.005	0.025
00900	Hardness, total (as CaCO3): mg/l	13	332.5	90.3	200	280	349.9	393.3	427.5	143.6	461.7
00915	Calcium, dissolved: mg/l	4	83.8	19.2	59	68.5	88.5	99	99	59	99
00925	Magnesium, dissolved: mg/l	4	28.2	3.2	25	25.5	28.5	31	31	25	31
00930	Sodium, dissolved: mg/l	4	58.2	7.9	49	52	58.5	64.5	67	49	67
00935	Potassium, dissolved: mg/l	4	5.32	1.61	4.2	4.35	4.7	6.3	7.7	4.2	7.7
00940	Chloride, total: mg/l	9	129.6	102.8	40	51.5	90.9	181.8	333.3	40	333.3
00945	Sulfate, total: mg/l	14	110.2	91.8	54	75	80	104	160	42	413
01002	Arsenic, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	3	183.3	68.1	130	130	160	260	260	130	260
01027	Cadmium, total: µg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	11	196.4	178.2	10	10	220	400	420	10	450
01045	Iron, total: µg/l	11	180.9	269.1	50	50	50	210	290	50	950
01051	Lead, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	11	202.7	270.7	50	50	150	200	200	50	1000
01077	Silver, total: µg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	3	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	5	18	40.2	0	0	0	0	90	0	90
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	6	137.3	324.8	0	0	0	24	800	0	800
70300	Residue, total filtrable: mg/l	4	557	38.3	520	524	558	590	592	520	592
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	3	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	4.47	3.88	0.58	1.29	4.15	7.65	9	0.58	9

LITTLE SPRING (LS2)

STORET No.: 599512 Park: Canyonlands District: Needles Spring Type: Intermittent Stream Period of Record: 10/4/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	1	13.9	.	13.9	13.9	13.9	13.9	13.9	13.9	13.9
00061	Flow, instaneous: cubic feet/second	1	1	.	1	1	1	1	1	1	1
00094	Specific conductance, field: µmhos/cm	1	803	.	803	803	803	803	803	803	803
00095	Specific conductance, lab: µmhos/cm	1	815	.	815	815	815	815	815	815	815
00300	Oxygen, dissolved: mg/l	1	8.4	.	8.4	8.4	8.4	8.4	8.4	8.4	8.4
00400	pH, field: standard units	1	7.7	.	7.7	7.7	7.7	7.7	7.7	7.7	7.7
00405	Carbon dioxide: mg/l	1	6	.	6	6	6	6	6	6	6
00410	Alkalinity, total (as CaCO3): mg/l	1	282	.	282	282	282	282	282	282	282
00440	Bicarbonate (as HCO3): mg/l	1	343	.	343	343	343	343	343	343	343
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.4	.	0.4	0.4	0.4	0.4	0.4	0.4	0.4
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	0.65	.	0.65	0.65	0.65	0.65	0.65	0.65	0.65
00665	Phosphorus (as P), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	1	307.3	.	307.3	307.3	307.3	307.3	307.3	307.3	307.3
00915	Calcium, dissolved: mg/l	1	77	.	77	77	77	77	77	77	77
00925	Magnesium, dissolved: mg/l	1	28	.	28	28	28	28	28	28	28
00930	Sodium, dissolved: mg/l	1	63	.	63	63	63	63	63	63	63
00935	Potassium, dissolved: mg/l	1	3.7	.	3.7	3.7	3.7	3.7	3.7	3.7	3.7
00940	Chloride, total: mg/l	1	44.5	.	44.5	44.5	44.5	44.5	44.5	44.5	44.5
00945	Sulfate, total: mg/l	1	92.27	.	92.27	92.27	92.27	92.27	92.27	92.27	92.27
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	140	.	140	140	140	140	140	140	140
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01046	Iron, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01049	Lead, dissolved: µg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01056	Manganese, dissolved: µg/l	1	5	.	5	5	5	5	5	5	5
01075	Silver, dissolved: µg/l	1	1	.	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	1	15	.	15	15	15	15	15	15	15
01145	Selenium, dissolved: µg/l	1	4	.	4	4	4	4	4	4	4
70300	Residue, total filtrable: mg/l	1	474	.	474	474	474	474	474	474	474
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	0.32	.	0.32	0.32	0.32	0.32	0.32	0.32	0.32

OWACHOMO BRIDGE (OB1)

STORET No.: 599532 Park: Natural Bridges Spring Type: Plunge Pool Period of Record: 11/21/84 - 5/30/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	13	18.8	6.3	14.2	17.2	19.5	23.4	24.2	1.1	24.62
00090	Oxidation reduction potential (ORP): mV	1	0.151	.	0.151	0.151	0.151	0.151	0.151	0.151	0.151
00094	Specific conductance, field: µmhos/cm	13	470.9	97.6	356	419	481	533	583	249	608
00095	Specific conductance, lab: µmhos/cm	3	368.3	162.3	261	261	289	555	555	261	555
00300	Oxygen, dissolved: mg/l	12	7.97	2.66	6.12	6.9	7.35	8.3	10	4.45	15.3
00400	pH, field: standard units	13	8.15	1.03	7.2	7.6	7.9	8.3	9.5	6.65	10.6
00405	Carbon dioxide: mg/l	3	1.7	0.6	1	1	2	2	2	1	2
00410	Alkalinity, total (as CaCO3): mg/l	14	183.4	70.6	108	121	202.6	239.4	256.5	8.5	256.5
00440	Bicarbonate (as HCO3): mg/l	3	187	82.7	131	131	148	282	282	131	282
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	11.7	6.8	4	4	14	17	17	4	17
00610	Nitrogen ammonia, total (as N): mg/l	3	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	9	0.13	0.18	0.05	0.05	0.05	0.05	0.55	0.05	0.55
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.4	0.27	0.17	0.17	0.33	0.7	0.7	0.17	0.7
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.06	.	0.06	0.06	0.06	0.06	0.06	0.06	0.06
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.14	0.12	0.01	0.01	0.18	0.23	0.23	0.01	0.23
00655	Phosphate, poly (as PO4): mg/l	10	3.12	6.74	0.05	0.25	0.625	2.8	12.8	0.05	22
00665	Phosphorus (as P), total: mg/l	3	0.01	0.009	0.005	0.005	0.005	0.02	0.02	0.005	0.02
00666	Phosphorus (as P), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	13	224.5	65.7	130.1	205.2	222.3	256.5	290.7	126.5	359.1
00915	Calcium, dissolved: mg/l	3	48.3	22.3	34	34	37	74	74	34	74
00925	Magnesium, dissolved: mg/l	3	13.1	6.1	8.3	8.3	11	20	20	8.3	20
00930	Sodium, dissolved: mg/l	3	13.5	6.8	6.4	6.4	14	20	20	6.4	20
00935	Potassium, dissolved: mg/l	3	2.47	0.31	2.2	2.2	2.4	2.8	2.8	2.2	2.8
00940	Chloride, total: mg/l	11	70.4	59	5	8.8	68.2	121.2	121.2	0.5	181.8
00945	Sulfate, total: mg/l	14	37.8	15.1	16.8	30	40	48	57	10	60.72
01002	Arsenic, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	2	105	7.1	100	100	105	110	110	100	110
01027	Cadmium, total: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	2	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	12	80.8	132.9	10	50	50	50	50	10	500
01045	Iron, total: µg/l	12	183.3	385	50	50	50	125	150	50	1400
01051	Lead, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	12	203.8	252.8	30	50	200	200	300	15	950
01077	Silver, total: µg/l	2	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	2	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	9	1.1	3.3	0	0	0	0	10	0	10
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	3.2	8.4	0	0	0	1	24	0	24
70300	Residue, total filtrable: mg/l	3	224	107.4	160	160	164	348	348	160	348
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	11.87	7.43	3.6	3.6	14	18	18	3.6	18

SIPAPU BRIDGE (SB1)

STORET No.: 599533 Park: Natural Bridges Spring Type: Intermittent Stream Period of Record: 11/20/84 - 10/4/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	15.3	4.4	10.2	13.8	15.8	17.8	19.3	4.5	22.7
00059	Flow, instaneous: gallons/minute	1	3	.	3	3	3	3	3	3	3
00061	Flow, instaneous: cubic feet/second	3	0.336	0.575	0	0	0.007	1	1	0	1
00090	Oxidation reduction potential (ORP): mV	1	0.189	.	0.189	0.189	0.189	0.189	0.189	0.189	0.189
00094	Specific conductance, field: µmhos/cm	14	656.9	89.7	501	648	681	692	716	426	785
00095	Specific conductance, lab: µmhos/cm	5	665.4	80.8	532	665	681	701	748	532	748
00300	Oxygen, dissolved: mg/l	12	6.38	1.79	4.5	4.52	6.2	7.25	9.4	4.45	9.5
00400	pH, field: standard units	14	7.52	1.16	6.7	7	7.45	7.8	8.26	5.45	10.8
00405	Carbon dioxide: mg/l	5	5.4	2.1	3	4	5	7	8	3	8
00410	Alkalinity, total (as CaCO3): mg/l	14	306.6	104.4	205.2	287	325.4	359.1	393.3	8.5	444.6
00440	Bicarbonate (as HCO3): mg/l	5	361	36.6	303	350	373	382	397	303	397
00445	Carbonate (as CO3): mg/l	5	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	5	13.5	7.6	1.5	12	14	20	20	1.5	20
00610	Nitrogen ammonia, total (as N): mg/l	5	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	8	0.11	0.13	0.05	0.05	0.05	0.125	0.4	0.05	0.4
00625	Nitrogen, Kjeldahl, total: mg/l	5	0.31	0.21	0.05	0.25	0.25	0.4	0.62	0.05	0.62
00630	Nitrate plus Nitrite (as N), total: mg/l	2	0.025	0.02	0.01	0.01	0.025	0.04	0.04	0.01	0.04
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.04	0.06	0.005	0.01	0.01	0.07	0.13	0.005	0.13
00655	Phosphate, poly (as PO4): mg/l	9	1.03	1.35	0.05	0.3	0.6	1	4.5	0.05	4.5
00665	Phosphorus (as P), total: mg/l	5	0.006	0.002	0.005	0.005	0.005	0.005	0.01	0.005	0.01
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	13	305.4	37.4	257	282	320	324.9	342.9	233.5	359.1
00915	Calcium, dissolved: mg/l	5	51	7.3	42	46	52	54	61	42	61
00925	Magnesium, dissolved: mg/l	5	34.2	5.7	24	36	37	37	37	24	37
00930	Sodium, dissolved: mg/l	5	40.8	9.1	28	37	40	48	51	28	51
00935	Potassium, dissolved: mg/l	5	4.14	0.66	3.4	3.9	4.1	4.1	5.2	3.4	5.2
00940	Chloride, total: mg/l	12	89.3	83.5	16	16.8	56.8	151.5	212.1	10.3	242.4
00945	Sulfate, total: mg/l	14	47.3	20.5	22	30	47.5	63	72.9	18	88.37
01000	Arsenic, dissolved: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	2	200	14.1	190	190	200	210	210	190	210
01007	Barium, total: µg/l	2	215	35.4	190	190	215	240	240	190	240
01025	Cadmium, dissolved: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	2	3	0	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	2	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	2	10	0	10	10	10	10	10	10	10
01042	Copper, total: µg/l	8	40	18.5	10	30	50	50	50	10	50
01045	Iron, total: µg/l	10	62	21	50	50	50	80	95	50	110
01046	Iron, dissolved: µg/l	2	12.5	3.5	10	10	12.5	15	15	10	15
01049	Lead, dissolved: µg/l	2	1.5	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	10	121.8	118.5	34	50	50	200	300	33	400
01056	Manganese, dissolved: µg/l	2	21.5	23.3	5	5	21.5	38	38	5	38
01075	Silver, dissolved: µg/l	2	1	0	1	1	1	1	1	1	1
01077	Silver, total: µg/l	2	1	0	1	1	1	1	1	1	1

SIPAPU BRIDGE (SB1) Continued

STORET No.: 599533 Park: Natural Bridges Spring Type: Intermittent Stream Period of Record: 11/20/84 - 10/4/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
01090	Zinc, dissolved: µg/l	2	15	0	15	15	15	15	15	15	15
01092	Zinc, total: µg/l	2	10	0	10	10	10	10	10	10	10
01145	Selenium, dissolved: µg/l	2	0.75	0.35	0.5	0.5	0.75	1	1	0.5	1
01147	Selenium, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	8	9.4	10.8	0	0	5	20	25	0	25
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	9	21.1	35.5	0	0	0	20	100	0	100
70300	Residue, total filtrable: mg/l	5	390.8	43.4	318	384	410	420	422	318	422
71830	Hydroxide: mg/l	5	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	5	5.48	4.58	1.4	2.7	4	6.3	13	1.4	13

HORSECOLLAR SEEP (SB2)

STORET No.: 599530 Park: Natural Bridges Spring Type: Alcove Seep Period of Record: 10/7/87 - 6/3/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	6	10.7	1.6	7.65	10.5	11.4	11.6	12	7.65	12
00090	Oxidation reduction potential (ORP): mV	1	0.121	.	0.121	0.121	0.121	0.121	0.121	0.121	0.121
00094	Specific conductance, field: μmhos/cm	6	547.2	16.6	516	546	550	557	564	516	564
00300	Oxygen, dissolved: mg/l	6	5.81	0.53	4.93	5.6	5.85	6.2	6.45	4.93	6.45
00400	pH, field: standard units	6	6.88	0.64	6.2	6.3	6.75	7.58	7.7	6.2	7.7
00410	Alkalinity, total (as CaCO3): mg/l	5	290.7	24.2	273.6	273.6	273.6	307.8	324.9	273.6	324.9
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00620	Nitrate (as N), total: mg/l	6	0.65	1.07	0.05	0.05	0.05	1	2.7	0.05	2.7
00655	Phosphate, poly (as PO4): mg/l	6	2.47	2.4	0.6	1	2	2	7.2	0.6	7.2
00900	Hardness, total (as CaCO3): mg/l	6	347.7	103	273.6	273.6	316.4	359.1	547.2	273.6	547.2
00940	Chloride, total: mg/l	6	214.6	172.6	45.45	90.9	151.5	363.6	484.8	45.45	484.8
00945	Sulfate, total: mg/l	6	79.9	66.4	34	42.5	56.5	78	212	34	212
01042	Copper, total: μg/l	6	155	229.1	50	50	50	110	620	50	620
01045	Iron, total: μg/l	5	68	40.2	50	50	50	50	140	50	140
01055	Manganese, total: μg/l	6	135	94.6	50	50	125	210	250	50	250
31501	Total coliform, MF, Endo AGAR: cfu/100ml	5	0	0	0	0	0	0	0	0	0
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	5	0	0	0	0	0	0	0	0	0

SALT CREEK LOWER JUMP (SC21)

STORET No.: 599510 Park: Canyonlands District: Needles Spring Type: Intermittent Stream Period of Record: 12/12/84 - 5/16/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	15	19.8	6.3	15.3	18.4	20.7	24.4	25.8	0.3	25.85
00059	Flow, instaneous: gallons/minute	6	159.44	227.09	7.5	15.12	70.56	189.9	603	7.5	603
00061	Flow, instaneous: cubic feet/second	6	0.354	0.505	0.017	0.034	0.157	0.422	1.34	0.017	1.34
00090	Oxidation reduction potential (ORP): mV	1	0.149	.	0.149	0.149	0.149	0.149	0.149	0.149	0.149
00094	Specific conductance, field: µmhos/cm	15	3879.3	2032.4	860	2460	4200	5380	6440	384	6700
00095	Specific conductance, lab: µmhos/cm	4	5960	1182.2	4490	5135	6000	6785	7350	4490	7350
00300	Oxygen, dissolved: mg/l	12	7.14	1.87	4.8	5.88	6.96	8.45	8.7	4.1	10.7
00400	pH, field: standard units	15	7.60	0.63	6.5	7.1	7.65	8.16	8.2	6.4	8.5
00405	Carbon dioxide: mg/l	4	6.25	2.2	3	5	7	7.5	8	3	8
00410	Alkalinity, total (as CaCO3): mg/l	14	597.5	231.5	171	564.3	637	746	815	47	867
00440	Bicarbonate (as HCO3): mg/l	4	901.2	107.8	748	829	931.5	973.5	994	748	994
00445	Carbonate (as CO3): mg/l	4	12.8	25.5	0	0	0	25.5	51	0	51
00480	Salinity at 25 °C: parts per thousand (ppt)	1	2.3	.	2.3	2.3	2.3	2.3	2.3	2.3	2.3
00530	Residue, total nonfiltrable: mg/l	3	13.7	4	10	10	13	18	18	10	18
00610	Nitrogen ammonia, total (as N): mg/l	4	0.036	0.023	0.025	0.025	0.025	0.048	0.07	0.025	0.07
00620	Nitrate (as N), total: mg/l	8	0.17	0.2	0.05	0.05	0.05	0.25	0.6	0.05	0.6
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.87	0.3	0.6	0.64	0.8	1.09	1.28	0.6	1.28
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.02	0.02	0.005	0.005	0.02	0.04	0.04	0.005	0.04
00655	Phosphate, poly (as PO4): mg/l	10	3.88	2.62	1.45	1.9	3.12	5.9	7.75	1.4	9.5
00665	Phosphorus(as P), total: mg/l	4	0.028	0.01	0.02	0.02	0.025	0.035	0.04	0.02	0.04
00666	Phosphorus(as P), dissolved: mg/l	3	0.013	0.014	0.005	0.005	0.005	0.03	0.03	0.005	0.03
00900	Hardness, total (as CaCO3): mg/l	14	972.1	510	188.1	680	1019.9	1368	1587.3	85	1718.2
00915	Calcium, dissolved: mg/l	4	59.2	21.6	29	44	65	74.5	78	29	78
00925	Magnesium, dissolved: mg/l	4	317.5	76.8	220	260	325	375	400	220	400
00930	Sodium, dissolved: mg/l	4	972.5	259.7	670	795	960	1150	1300	670	1300
00935	Potassium, dissolved: mg/l	4	15.5	1.3	14	14.5	15.5	16.5	17	14	17
00940	Chloride, total: mg/l	11	948.7	953.3	151.5	303	909	1090	1375	29	3514.8
00945	Sulfate, total: mg/l	14	491.1	582.6	36	100	176	940	1300	2.5	1786.9
01002	Arsenic, total: µg/l	4	3.75	1.4	2.5	2.5	3.75	5	5	2.5	5
01007	Barium, total: µg/l	4	135	97.5	70	80	95	190	280	70	280
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	14	117.1	209.1	10	10	50	50	500	10	700
01045	Iron, total: µg/l	13	364.6	669.4	50	50	120	440	580	10	2500
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	495.8	902.7	39	50	130	180	2400	2.5	2600
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	13.75	7.5	10	10	10	17.5	25	10	25
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	10	140	333.2	0	0	0	50	675	0	1050
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	7	73	188.3	0	0	0	6	500	0	500
70300	Residue, total filtrable: mg/l	4	4352.5	975.5	3174	3664	4353	5041	5530	3174	5530
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	6.28	5.84	2.8	3.05	3.65	9.5	15	2.8	15

SALT CREEK UPPER JUMP (SC8)

STORET No.: 599500 Park: Canyonlands District: Needles Spring Type: Perennial Stream Period of Record: 8/23/83 - 5/15/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	11	17.8	4.9	10.9	12	18.7	21.2	21.5	10.9	25.8
00059	Flow, instaneous: gallons/minute	2	302.4	142.55	201.6	201.6	302.4	403.2	403.2	201.6	403.2
00061	Flow, instaneous: cubic feet/second	2	0.672	0.317	0.448	0.448	0.672	0.896	0.896	0.448	0.896
00090	Oxidation reduction potential (ORP): mV	1	0.165	.	0.165	0.165	0.165	0.165	0.165	0.165	0.165
00094	Specific conductance, field: µmhos/cm	11	738.9	49.8	693	694	737	768	803	681	839
00095	Specific conductance, lab: µmhos/cm	3	711.7	35.5	680	680	705	750	750	680	750
00300	Oxygen, dissolved: mg/l	9	7.81	1.20	6.2	6.9	8	8.5	9.7	6.2	9.7
00400	pH, field: standard units	11	7.68	0.71	6.7	7.2	7.5	8.3	8.32	6.7	8.85
00405	Carbon dioxide: mg/l	3	5	0	5	5	5	5	5	5	5
00410	Alkalinity, total (as CaCO3): mg/l	13	319	140.1	27	342	360	400	427.5	8.5	444.6
00440	Bicarbonate (as HCO3): mg/l	3	435.3	21.5	417	417	430	459	459	417	459
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	15	6	9	9	15	21	21	9	21
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.33	.	0.33	0.33	0.33	0.33	0.33	0.33	0.33
00620	Nitrate (as N), total: mg/l	8	0.06	0.02	0.05	0.05	0.05	0.05	0.12	0.05	0.12
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.32	0.32	0.1	0.1	0.2	0.54	0.77	0.1	0.77
00630	Nitrate plus nitrite (as N), total: mg/l	1	0.23	.	0.23	0.23	0.23	0.23	0.23	0.23	0.23
00631	Nitrate plus nitrite (as N), dissolved: mg/l	3	0.14	0.07	0.08	0.08	0.12	0.21	0.21	0.08	0.21
00655	Phosphate, poly (as PO4): mg/l	9	1.03	0.81	0.05	0.45	0.7	1.7	2.3	0.05	2.3
00665	Phosphorus (as P), total: mg/l	4	0.009	0.008	0.005	0.005	0.005	0.012	0.02	0.005	0.02
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	12	381.6	86.1	331.1	359.1	378	436	480	164.2	495.9
00915	Calcium, dissolved: mg/l	3	49.3	6.7	42	42	51	55	55	42	55
00925	Magnesium, dissolved: mg/l	3	56.7	1.5	55	55	57	58	58	55	58
00930	Sodium, dissolved: mg/l	3	23	1	22	22	23	24	24	22	24
00935	Potassium, dissolved: mg/l	3	3.9	0.2	3.7	3.7	3.9	4.1	4.1	3.7	4.1
00940	Chloride, total: mg/l	9	106.3	160.3	5	20	60.6	90.9	515.1	5	515.1
00945	Sulfate, total: mg/l	12	27.7	5.2	23	24.5	26.1	30.5	32.8	21	40
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	225	19.1	210	210	220	240	250	210	250
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	11	35.5	20.2	10	10	50	50	50	10	50
01045	Iron, total: µg/l	11	210	129.2	50	110	200	310	350	50	470
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	11	66.5	54.2	25	50	50	74	130	2.5	200
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	7	87.9	217.1	0	0	5	20	580	0	580
31616	Fecal coliform: MF, M-FC BROTH, 0.45mm filter: cfu/100ml	7	8.97	9.1	0	0	10	20	20	0	20
70300	Residue, total filtrable: mg/l	3	430.7	13	418	418	430	444	444	418	444
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	3.4	1.23	2	2	3.9	4.3	4.3	2	4.3

SHAFER SPRING (SHS1)

STORET No.: 599562 Park: Canyonlands District: Island in the Sky Spring Type: Wash Spring Period of Record: 8/30/83 - 10/4/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	10	21.2	6.8	10.2	19.9	21.4	25.8	29	9.2	31.2
00059	Flow, instaneous: gallons/minute	2	1.25	1.41	0.25	0.25	1.25	2.25	2.25	0.25	2.25
00061	Flow, instaneous: cubic feet/second	2	0.003	0.003	0.001	0.001	0.003	0.005	0.005	0.001	0.005
00094	Specific conductance, field: µmhos/cm	9	1666.1	575.6	241	1640	1707	1970	2180	241	2180
00095	Specific conductance, lab: µmhos/cm	1	2540	.	2540	2540	2540	2540	2540	2540	2540
00300	Oxygen, dissolved: mg/l	10	7.53	2.83	3.55	5.3	7.85	9.8	10.8	2.5	11.4
00400	pH, field: standard units	10	7.81	0.73	6.9	7.2	7.8	8.4	8.75	6.7	9.1
00405	Carbon dioxide: mg/l	1	6	.	6	6	6	6	6	6	6
00410	Alkalinity, total (as CaCO3): mg/l	10	350.5	44.8	300	320	339.5	393.3	413.8	280	427.5
00440	Bicarbonate (as HCO3): mg/l	1	413	.	413	413	413	413	413	413	413
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	10	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00655	Phosphate, poly (as PO4): mg/l	10	1.84	2.04	0.5	1	1.35	1.7	4.6	0.2	7.5
00665	Phosphorus (as P), total: mg/l	1	0.09	.	0.09	0.09	0.09	0.09	0.09	0.09	0.09
00666	Phosphorus (as P), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00900	Hardness, total (as CaCO3): mg/l	11	329.1	123.8	260	272	342	440	451.7	22.3	470
00915	Calcium, dissolved: mg/l	1	92	.	92	92	92	92	92	92	92
00925	Magnesium, dissolved: mg/l	1	54	.	54	54	54	54	54	54	54
00930	Sodium, dissolved: mg/l	1	370	.	370	370	370	370	370	370	370
00935	Potassium, dissolved: mg/l	1	26	.	26	26	26	26	26	26	26
00940	Chloride, total: mg/l	4	681.8	266.9	454.9	500.2	606	863.6	1060.5	454.9	1060.5
00945	Sulfate, total: mg/l	11	162.9	90.6	89	90	110	264	280	87	330
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	310	.	310	310	310	310	310	310	310
01007	Barium, total: µg/l	1	310	.	310	310	310	310	310	310	310
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01042	Copper, total: µg/l	10	186	277.2	30	50	50	300	625	10	900
01045	Iron, total: µg/l	9	143.3	160.5	50	50	50	190	500	50	500
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	10	521	953.6	50	50	105	400	2050	50	3100
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	4	0	0	0	0	0	0	0	0	0
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	3	6.7	11.5	0	0	0	20	20	0	20
70300	Residue, total filtrable: mg/l	1	1616	.	1616	1616	1616	1616	1616	1616	1616
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	125	.	125	125	125	125	125	125	125

PLUG SPRING (SF1)

STORET No.: 599551 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/14/84 - 5/2/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	12.7	3.2	9.9	11.8	12.2	12.8	16	7.9	22
00059	Flow, instaneous: gallons/minute	3	49.75	85.52	0.12	0.12	0.62	148.5	148.5	0.12	148.5
00061	Flow, instaneous: cubic feet/second	3	0.444	0.509	0.001	0.001	0.33	1	1	0.001	1
00090	Oxidation reduction potential (ORP): mV	1	0.037	.	0.037	0.037	0.037	0.037	0.037	0.037	0.037
00094	Specific conductance, field: µmhos/cm	14	694.3	45	640	662	695.5	735	742	615	759
00095	Specific conductance, lab: µmhos/cm	3	704.7	75.6	661	661	661	792	792	661	792
00300	Oxygen, dissolved: mg/l	12	6.68	1.54	5.25	5.55	5.9	7.92	8.9	5.1	9.5
00400	pH, field: standard units	14	6.89	0.67	6	6.25	6.95	7.3	7.7	5.7	8
00405	Carbon dioxide: mg/l	3	5.7	0.6	5	5	6	6	6	5	6
00410	Alkalinity, total (as CaCO3): mg/l	13	334.9	64.9	260	280	330	374	444.6	256.5	451.7
00440	Bicarbonate (as HCO3): mg/l	3	388.7	42.2	340	340	411	415	415	340	415
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	12.5	13.8	1.5	1.5	8	28	28	1.5	28
00610	Nitrogen ammonia, total (as N): mg/l	3	0.053	0.049	0.025	0.025	0.025	0.11	0.11	0.025	0.11
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00620	Nitrate (as N), total: mg/l	12	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.2	0.26	0.05	0.05	0.05	0.5	0.5	0.05	0.5
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	2	0.045	0.04	0.02	0.02	0.045	0.07	0.07	0.02	0.07
00655	Phosphate, poly (as PO4): mg/l	12	2.77	4.33	0.5	0.68	1.3	2.8	4	0.4	16
00665	Phosphorus (as P), total: mg/l	3	0.017	0.02	0.005	0.005	0.005	0.04	0.04	0.005	0.04
00666	Phosphorus (as P), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	349.2	56.6	300	335.2	358.5	376.2	410.4	200	427.5
00915	Calcium, dissolved: mg/l	3	65	8.9	58	58	62	75	75	58	75
00925	Magnesium, dissolved: mg/l	3	39.3	4.2	36	36	38	44	44	36	44
00930	Sodium, dissolved: mg/l	3	16.3	1.2	15	15	17	17	17	15	17
00935	Potassium, dissolved: mg/l	3	4.43	0.38	4	4	4.6	4.7	4.7	4	4.7
00940	Chloride, total: mg/l	9	51.7	39.8	13.5	14.2	45.4	68.2	136.35	13.5	136.35
00945	Sulfate, total: mg/l	15	27.2	23.6	2.5	2.5	24	35.4	47.5	2.5	93
01002	Arsenic, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	3	266.7	5.8	260	260	270	270	270	260	270
01027	Cadmium, total: µg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	70	71.8	10	50	50	50	180	10	280
01045	Iron, total: µg/l	15	613.3	689.6	50	110	280	1400	1700	20	2000
01051	Lead, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	14	297.8	331.5	36	50	165	600	650	21	1150
01077	Silver, total: µg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	3	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	3	1.8	1.2	0.5	0.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	75	106.1	0	0	75	150	150	0	150
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	3	418	51	380	380	398	476	476	380	476
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	3	0.13	0.06	0.1	0.1	0.1	0.2	0.2	0.1	0.2
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	2.48	2.80	0.63	0.63	1.1	5.7	5.7	0.63	5.7

HARVEST SCENE (SF2)

STORET No.: 599548 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/1/84 - 5/4/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	18.5	5.1	13.8	15.6	17.2	21.2	27.1	11.4	30
00059	Flow, instaneous: gallons/minute	1	22.5	.	22.5	22.5	22.5	22.5	22.5	22.5	22.5
00061	Flow, instaneous: cubic feet/second	1	0.05	.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00090	Oxidation reduction potential (ORP): mV	1	0.127	.	0.127	0.127	0.127	0.127	0.127	0.127	0.127
00094	Specific conductance, field: µmhos/cm	15	704	272	103	709	751	837	1009	101	1053
00095	Specific conductance, lab: µmhos/cm	4	847.2	249.6	545	645	877	1049.5	1090	545	1090
00300	Oxygen, dissolved: mg/l	14	5.53	2.36	3	3.95	5.65	7.2	7.9	1.1	10.5
00400	pH, field: standard units	15	6.84	0.73	6.3	6.5	7.1	7.3	7.3	4.6	7.6
00405	Carbon dioxide: mg/l	4	8	1.8	6	6.5	8	9.5	10	6	10
00410	Alkalinity, total (as CaCO3): mg/l	13	333.1	71.1	273.6	280	340	376.2	410.4	201	468
00440	Bicarbonate (as HCO3): mg/l	4	418.2	143	245	305.5	428.5	531	571	245	571
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	32.6	33.6	1.5	10.75	24.5	54.5	80	1.5	80
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.09	.	0.09	0.09	0.09	0.09	0.09	0.09	0.09
00620	Nitrate (as N), total: mg/l	11	0.09	0.14	0.05	0.05	0.05	0.05	0.05	0.05	0.5
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.22	0.26	0.05	0.05	0.125	0.4	0.6	0.05	0.6
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.05	0.03	0.03	0.03	0.04	0.09	0.09	0.03	0.09
00655	Phosphate, poly (as PO4): mg/l	11	2.57	3.79	0.15	0.3	0.8	3.9	8	0.05	11.5
00665	Phosphorus(as P), total: mg/l	4	0.016	0.013	0.005	0.005	0.015	0.028	0.03	0.005	0.03
00666	Phosphorus(as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	402	54.6	351.6	393.3	409.2	427.5	444.6	252.4	481.8
00915	Calcium, dissolved: mg/l	4	58.5	9.3	48	51.5	58	65.5	70	48	70
00925	Magnesium, dissolved: mg/l	4	57.5	27	28	35.5	57	79.5	88	28	88
00930	Sodium, dissolved: mg/l	4	36	14.6	18	24.5	37.5	47.5	51	18	51
00935	Potassium, dissolved: mg/l	4	4.3	0.93	3	3.7	4.5	4.9	5.2	3	5.2
00940	Chloride, total: mg/l	12	72.5	56.2	22.7	37.7	59.9	90.9	128.8	0.5	212.1
00945	Sulfate, total: mg/l	15	80.1	42.7	46	55	59	96	160	45.5	192
01002	Arsenic, total:µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	205	42	160	175	200	235	260	160	260
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	68.7	97	10	10	50	50	140	10	400
01045	Iron, total: µg/l	15	375.3	979.9	50	50	80	260	350	50	3900
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	14	173.4	159.6	50	50	130	250	320	18	600
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	3	33.3	57.7	0	0	0	100	100	0	100
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	2	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	4	508.5	165.7	308	378	520	639	686	308	686
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	13.6	9.36	1.4	7.2	14.5	20	24	1.4	24

MAZE OVERLOOK (SF3)

STORET No.: 599550 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/2/84 - 5/9/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	19.3	4.3	14.2	16.3	17.4	23	25.2	13.2	27.3
00061	Flow, instaneous: cubic feet/second	1	0.9	.	0.9	0.9	0.9	0.9	0.9	0.9	0.9
00090	Oxidation reduction potential (ORP): mV	1	0.294	.	0.294	0.294	0.294	0.294	0.294	0.294	0.294
00094	Specific conductance, field: µmhos/cm	16	585.1	57.4	543	551	574	600	630	531	775
00095	Specific conductance, lab: µmhos/cm	5	599	32.1	572	583	589	597	654	572	654
00300	Oxygen, dissolved: mg/l	15	8.15	1.56	6.7	7.1	8	8.62	11.2	5.4	11.4
00400	pH, field: standard units	16	7.55	0.83	6.15	7.35	7.65	8.02	8.5	5.4	8.7
00405	Carbon dioxide: mg/l	5	3.2	1.1	2	3	3	3	5	2	5
00410	Alkalinity, total (as CaCO3): mg/l	15	234.2	37.8	198	200	223	270	290.7	160	290.7
00440	Bicarbonate (as HCO3): mg/l	5	284	31.6	242	272	279	301	326	242	326
00445	Carbonate (as CO3): mg/l	5	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	5	5.2	8.3	1.5	1.5	1.5	1.5	20	1.5	20
00610	Nitrogen ammonia, total (as N): mg/l	5	0.082	0.127	0.025	0.025	0.025	0.025	0.31	0.025	0.31
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00620	Nitrate (as N), total: mg/l	11	0.28	0.72	0.05	0.05	0.05	0.05	0.18	0.05	2.44
00625	Nitrogen, Kjeldahl, total: mg/l	5	0.18	0.22	0.05	0.05	0.05	0.2	0.57	0.05	0.57
00630	Nitrate plus Nitrite (as N), total: mg/l	2	0.03	0.01	0.02	0.02	0.03	0.037	0.037	0.02	0.037
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.03	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.03
00655	Phosphate, poly (as PO4): mg/l	11	2.14	2.58	0.3	0.5	1.1	3	6	0.05	8
00665	Phosphorus(as P), total: mg/l	5	0.008	0.007	0.005	0.005	0.005	0.005	0.02	0.005	0.02
00666	Phosphorus(as P), dissolved: mg/l	4	0.014	0.018	0.005	0.005	0.005	0.023	0.04	0.005	0.04
00900	Hardness, total (as CaCO3): mg/l	15	288.2	40.4	240	261.1	300	323	342	200	342
00915	Calcium, dissolved: mg/l	5	47.4	4	42	46	47	49	53	42	53
00925	Magnesium, dissolved: mg/l	5	35.8	2.9	31	36	36	38	38	31	38
00930	Sodium, dissolved: mg/l	5	20	2.6	17	19	20	20	24	17	24
00935	Potassium, dissolved: mg/l	5	6.04	0.67	5.6	5.6	5.8	6	7.2	5.6	7.2
00940	Chloride, total: mg/l	12	47.6	37.26	13.2	15.2	37.9	72	98.5	9.4	121.2
00945	Sulfate, total: mg/l	16	74.7	39.2	47	51	62.5	84	104	45	204
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	162.5	47.9	120	130	150	195	230	120	230
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	48	40.7	10	10	50	50	50	10	180
01045	Iron, total: µg/l	14	93.6	96	50	50	50	100	210	10	370
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	120.4	113.8	31	50	50	180	300	13	380
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	3	30	26.5	0	0	40	50	50	0	50
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	5	354	14.6	340	346	350	356	378	340	378
71830	Hydroxide: mg/l	5	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	5	1.74	1.40	0.45	0.76	1.5	2	4	0.45	4

CHOCOLATE DROPS (SF4)

STORET No.: 599542 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 6/4/85 - 9/30/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	15	19.8	3.4	16.2	17.1	19	22.4	25.5	14.4	26
00059	Flow, instaneous: gallons/minute	1	0.58	.	0.58	0.58	0.58	0.58	0.58	0.58	0.58
00061	Flow, instaneous: cubic feet/second	3	0.3	0.519	0	0	0.001	0.9	0.9	0	0.9
00090	Oxidation reduction potential (ORP): mV	1	0.327	.	0.327	0.327	0.327	0.327	0.327	0.327	0.327
00094	Specific conductance, field: µmhos/cm	15	613.3	69.1	516	567	596	674	704	498	744
00095	Specific conductance, lab: µmhos/cm	6	576.3	36.8	539	546	567.5	602	636	539	636
00300	Oxygen, dissolved: mg/l	14	6.33	2	4.15	4.4	6.25	8.4	9.3	3.9	9.4
00400	pH, field: standard units	15	7.19	0.70	6.4	6.7	7.2	7.8	7.9	5.7	8.2
00405	Carbon dioxide: mg/l	6	3.5	1	2	3	3.5	4	5	2	5
00410	Alkalinity, total (as CaCO3): mg/l	14	260.7	50.3	208	221	257.5	289	324.9	200	359.1
00440	Bicarbonate (as HCO3): mg/l	6	280.2	28.4	254	259	270	300	328	254	328
00445	Carbonate (as CO3): mg/l	6	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	6	3.4	2.3	1.5	1.5	2.75	5	7	1.5	7
00610	Nitrogen ammonia, total (as N): mg/l	6	0.048	0.055	0.025	0.025	0.025	0.025	0.16	0.025	0.16
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.52	.	0.52	0.52	0.52	0.52	0.52	0.52	0.52
00620	Nitrate (as N), total: mg/l	9	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	6	0.17	0.24	0.05	0.05	0.05	0.17	0.66	0.05	0.66
00630	Nitrate plus Nitrite (as N), total: mg/l	2	0.036	0.037	0.01	0.01	0.036	0.062	0.062	0.01	0.062
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.11	0.1	0.01	0.02	0.11	0.2	0.21	0.01	0.21
00655	Phosphate, poly (as PO4): mg/l	9	1.63	2.82	0.05	0.15	0.9	1.2	9	0.05	9
00665	Phosphorus (as P), total: mg/l	6	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	5	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	15	298.4	52.1	240	251.4	300	354.1	376.2	221.4	376.2
00915	Calcium, dissolved: mg/l	6	47	8.9	31	44	49	52	57	31	57
00925	Magnesium, dissolved: mg/l	6	32.8	1.3	32	32	32	34	35	32	35
00930	Sodium, dissolved: mg/l	6	17.5	0.8	17	17	17	18	19	17	19
00935	Potassium, dissolved: mg/l	6	5.73	0.67	5	5.4	5.65	5.7	7	5	7
00940	Chloride, total: mg/l	13	40.6	31.2	10.7	13	30.3	60.6	90.9	10.2	90.9
00945	Sulfate, total: mg/l	15	70.7	20.9	46	60.8	65	80	92	41.5	128
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	95	.	95	95	95	95	95	95	95
01007	Barium, total: µg/l	4	132.5	40.3	90	100	130	165	180	90	180
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01042	Copper, total: µg/l	13	68.5	116.2	10	10	50	50	50	10	450
01045	Iron, total: µg/l	13	63.1	61.8	10	50	50	50	170	10	220
01046	Iron, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01049	Lead, dissolved: µg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	95.4	99.3	10	50	50	120	200	6	350
01056	Manganese, dissolved: µg/l	1	5	.	5	5	5	5	5	5	5

CHOCOLATE DROPS (SF4) Continued

STORET No.: 599542 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 6/4/85 - 9/30/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
01075	Silver, dissolved: µg/l	1	1	.	1	1	1	1	1	1	1
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	1	15	.	15	15	15	15	15	15	15
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01145	Selenium, dissolved: µg/l	1	2	.	2	2	2	2	2	2	2
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	6	335	22.3	306	324	331	346	372	306	372
71830	Hydroxide: mg/l	6	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	6	0.81	0.53	0.3	0.5	0.58	1.2	1.7	0.3	1.7

GAP DOWNSTREAM (SF5)

STORET No.: 599543 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/15/84 - 5/1/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	12.7	2.9	9.7	10.4	12.7	15.2	16.1	8.5	18.7
00059	Flow, instaneous: gallons/minute	1	2.03	.	2.03	2.03	2.03	2.03	2.03	2.03	2.03
00061	Flow, instaneous: cubic feet/second	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00090	Oxidation reduction potential (ORP): mV	2	0.019	0.026	0	0	0.019	0.037	0.037	0	0.037
00094	Specific conductance, field: µmhos/cm	13	581.8	51	528	543	600	609	655	488	660
00095	Specific conductance, lab: µmhos/cm	4	566	29.1	542	547.5	557	584.5	608	542	608
00300	Oxygen, dissolved: mg/l	14	5.62	2.95	1.7	2.4	6.33	8.5	8.8	1.25	8.9
00400	pH, field: standard units	14	6.88	1.12	4.7	6.6	7	7.6	8.2	4.5	8.2
00405	Carbon dioxide: mg/l	4	4	0.8	3	3.5	4	4.5	5	3	5
00410	Alkalinity, total (as CaCO3): mg/l	12	248.6	67.2	209	232	243	283.9	340	85.4	342
00440	Bicarbonate (as HCO3): mg/l	4	280.8	19.1	255	268.5	283.5	293	301	255	301
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	5.6	8.2	1.5	1.5	1.5	9.75	18	1.5	18
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
00620	Nitrate (as N), total: mg/l	10	0.06	0.05	0.05	0.05	0.05	0.05	0.12	0.05	0.2
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.06	.	0.06	0.06	0.06	0.06	0.06	0.06	0.06
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.05	0.03	0.03	0.03	0.03	0.08	0.08	0.03	0.08
00655	Phosphate, poly (as PO4): mg/l	10	2.63	3.56	0.28	0.5	1.15	2	9.25	0.05	10
00665	Phosphorus(as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus(as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	388.8	314.2	241.4	263.8	307	342	380	240.6	1470
00915	Calcium, dissolved: mg/l	4	49.8	10.5	42	43	46	56.5	65	42	65
00925	Magnesium, dissolved: mg/l	4	33.8	1.5	32	32.5	34	35	35	32	35
00930	Sodium, dissolved: mg/l	4	14.8	0.5	14	14.5	15	15	15	14	15
00935	Potassium, dissolved: mg/l	4	3.95	0.13	3.8	3.85	3.95	4.05	4.1	3.8	4.1
00940	Chloride, total: mg/l	10	72.6	88.7	14.3	15	45.4	90.9	212.1	14	303
00945	Sulfate, total: mg/l	14	50.8	11.6	39	43	50.4	56	65	31	78
01002	Arsenic, total: ug/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	150	20	140	140	140	160	180	140	180
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	14	73.6	120	10	10	50	50	110	10	480
01045	Iron, total: µg/l	14	86.4	65.9	10	50	50	120	170	10	230
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	12	154.2	182.6	9	22	50	250	380	7	580
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	1	50	.	50	50	50	50	50	50	50
70300	Residue, total filtrable: mg/l	4	329	17.9	312	315	326	343	352	312	352
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	1.54	1.07	0.46	0.83	1.35	2.25	3	0.46	3

GAP UPPER SPRING (SF6)

STORET No.: 599544 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 10/15/84 - 5/13/91

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	11	14.9	3.9	11.5	11.8	14.1	16.4	18.6	9.7	24.1
00059	Flow, instaneous: gallons/minute	1	0.23	.	0.23	0.23	0.23	0.23	0.23	0.23	0.23
00061	Flow, instaneous: cubic feet/second	1	0.001	.	0.001	0.001	0.001	0.001	0.001	0.001	0.001
00094	Specific conductance, field: µmhos/cm	10	667.3	114.1	494.5	620	666.5	761	793	437	797
00095	Specific conductance, lab: µmhos/cm	1	463	.	463	463	463	463	463	463	463
00300	Oxygen, dissolved: mg/l	10	6.22	1.82	4.15	5.2	5.58	7.6	8.8	3.3	9.4
00400	pH, field: standard units	11	7.42	0.67	6.7	6.8	7.3	7.9	8.4	6.6	8.5
00405	Carbon dioxide: mg/l	1	3	.	3	3	3	3	3	3	3
00410	Alkalinity, total (as CaCO3): mg/l	11	273.3	91.5	160	188.1	260	360	376.2	124	393.3
00440	Bicarbonate (as HCO3): mg/l	1	152	.	152	152	152	152	152	152	152
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.31	.	0.31	0.31	0.31	0.31	0.31	0.31	0.31
00620	Nitrate (as N), total: mg/l	11	0.15	0.28	0.05	0.05	0.05	0.05	0.2	0.05	1
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.05	.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	11	2.06	3.88	0.05	0.05	0.9	2.1	2.5	0.05	13.5
00665	Phosphorus (as P), total: mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00666	Phosphorus (as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	11	354.1	75.3	260	300	360	410.4	410.4	209.5	478.8
00915	Calcium, dissolved: mg/l	1	51	.	51	51	51	51	51	51	51
00925	Magnesium, dissolved: mg/l	1	20	.	20	20	20	20	20	20	20
00930	Sodium, dissolved: mg/l	1	15	.	15	15	15	15	15	15	15
00935	Potassium, dissolved: mg/l	1	4	.	4	4	4	4	4	4	4
00940	Chloride, total: mg/l	6	86.2	94.4	9.9	45.4	53	83.3	272.7	9.9	272.7
00945	Sulfate, total: mg/l	12	55.8	22.1	36	41.5	46.5	64.5	96	35	100
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	1	190	.	190	190	190	190	190	190	190
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	12	104.2	130.8	50	50	50	130	130	10	500
01045	Iron, total: µg/l	12	135.8	98.4	50	50	115	210	270	10	300
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	11	229.3	215.2	50	50	200	480	550	2.5	600
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	0	0	0	0	0	0	0	0	0
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	2	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	1	280	.	280	280	280	280	280	280	280
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	0.7	.	0.7	0.7	0.7	0.7	0.7	0.7	0.7

LOWER SOUTH FORK (SF7)

STORET No.: 599549 Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 6/6/85 - 5/14/91

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	9	15.5	2.5	11.3	13.9	15.5	18.1	18.3	11.3	18.3
00090	Oxidation reduction potential (ORP): mV	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00094	Specific conductance, field: µmhos/cm	8	824.2	62.6	747	770	815	879.5	918	747	918
00095	Specific conductance, lab: µmhos/cm	1	899	.	899	899	899	899	899	899	899
00300	Oxygen, dissolved: mg/l	9	3.52	2.69	0.75	1.1	2.45	5.45	8.3	0.75	8.3
00400	pH, field: standard units	9	6.15	1.7	3.5	4.5	6.85	7.24	8.1	3.5	8.1
00405	Carbon dioxide: mg/l	1	7	.	7	7	7	7	7	7	7
00410	Alkalinity, total (as CaCO3): mg/l	8	332	51.6	270	276.8	341	378.65	393.3	270	393.3
00440	Bicarbonate (as HCO3): mg/l	1	445	.	445	445	445	445	445	445	445
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	2	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
00620	Nitrate (as N), total: mg/l	8	0.08	0.05	0.05	0.05	0.05	0.1	0.18	0.05	0.18
00625	Nitrogen, Kjeldahl, total: mg/l	2	0.12	0.11	0.05	0.05	0.12	0.2	0.2	0.05	0.2
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	0.03	.	0.03	0.03	0.03	0.03	0.03	0.03	0.03
00655	Phosphate, poly (as PO4): mg/l	8	3.19	5.82	0.4	0.45	1.4	1.95	17.5	0.4	17.5
00665	Phosphorus(as P), total: mg/l	2	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus(as P), dissolved: mg/l	2	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	8	435.3	58.5	359.1	401.85	417.1	477.5	530.1	359.1	530.1
00915	Calcium, dissolved: mg/l	1	72	.	72	72	72	72	72	72	72
00925	Magnesium, dissolved: mg/l	1	57	.	57	57	57	57	57	57	57
00930	Sodium, dissolved: mg/l	1	34	.	34	34	34	34	34	34	34
00935	Potassium, dissolved: mg/l	1	4.7	.	4.7	4.7	4.7	4.7	4.7	4.7	4.7
00940	Chloride, total: mg/l	6	106.3	47.7	31.7	98.5	106.2	113.6	181.8	31.7	181.8
00945	Sulfate, total: mg/l	9	156.1	164.4	56	83	92	156	584	56	584
01002	Arsenic, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	2	90	113.1	10	10	90	170	170	10	170
01027	Cadmium, total: µg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	2	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	10	80	87.9	10	50	50	50	240	10	280
01045	Iron, total: µg/l	10	182	145.9	50	50	140	300	415	50	430
01051	Lead, total: µg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	9	267.3	141.5	6	200	290	350	500	6	500
01077	Silver, total: µg/l	2	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	2	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	2	1.5	1.4	0.5	0.5	1.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	25	35.4	0	0	25	50	50	0	50
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	1	538	.	538	538	538	538	538	538	538
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5

SLEEPY HOLLOW (SH1)

STORET No.: 599525 Park: Arches Spring Type: Alcove Spring Period of Record: 1/3/85 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	15.7	5.6	9.8	12.4	15.1	21.6	21.8	2.6	22.4
00061	Flow, instaneous: cubic feet/second	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
00094	Specific conductance, field: µmhos/cm	16	353.6	269.9	198	224.5	265.5	292	696	176	1230
00095	Specific conductance, lab: µmhos/cm	6	259.5	43.4	189	237	266.5	280	318	189	318
00300	Oxygen, dissolved: mg/l	16	9.01	3.43	4.2	6.88	8.82	10.56	13.3	3	16.9
00400	pH, field: standard units	15	7.41	0.47	6.7	7.1	7.5	7.75	8.1	6.65	8.1
00405	Carbon dioxide: mg/l	6	3.3	3.4	1	1	2.5	3	10	1	10
00410	Alkalinity, total (as CaCO3): mg/l	16	129.2	41.8	79	116.8	133.9	153.4	171	17.1	200
00440	Bicarbonate (as HCO3): mg/l	6	150.8	31.3	96	139	156.5	170	187	96	187
00445	Carbonate (as CO3): mg/l	6	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	6	6.8	8	1.5	1.5	3.2	9	22	1.5	22
00610	Nitrogen ammonia, total (as N): mg/l	6	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	9	0.06	0.03	0.05	0.05	0.05	0.05	0.15	0.05	0.15
00625	Nitrogen, Kjeldahl, total: mg/l	6	0.3	0.25	0.05	0.05	0.26	0.53	0.67	0.05	0.67
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	6	0.14	0.06	0.07	0.07	0.16	0.17	0.24	0.07	0.24
00655	Phosphate, poly (as PO4): mg/l	9	2.01	2.03	0.4	0.8	1.2	2.4	6.2	0.4	6.2
00665	Phosphorus (as P), total: mg/l	6	0.009	0.01	0.005	0.005	0.005	0.005	0.03	0.005	0.03
00666	Phosphorus (as P), dissolved: mg/l	6	0.012	0.011	0.005	0.005	0.005	0.02	0.03	0.005	0.03
00900	Hardness, total (as CaCO3): mg/l	16	139.9	27.7	119.2	119.8	136.8	151.1	187	96.8	210
00915	Calcium, dissolved: mg/l	6	46.7	7.9	34	42	47.5	53	56	34	56
00925	Magnesium, dissolved: mg/l	6	3.7	0.4	2.9	3.5	3.8	3.9	4	2.9	4
00930	Sodium, dissolved: mg/l	6	3.6	0.4	3.1	3.1	3.6	4	4.1	3.1	4.1
00935	Potassium, dissolved: mg/l	6	1.93	0.19	1.6	1.9	1.95	2.1	2.1	1.6	2.1
00940	Chloride, total: mg/l	13	27.1	46.7	1.5	2.5	7.6	22.8	60.6	0.5	171
00945	Sulfate, total: mg/l	15	14.7	15.2	6	8	13	14	15	2.5	68
01000	Arsenic, dissolved: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01005	Barium, dissolved: µg/l	1	250	.	250	250	250	250	250	250	250
01007	Barium, total: µg/l	4	282.5	35	240	255	285	310	320	240	320
01025	Cadmium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01030	Chromium, dissolved: µg/l	1	3	.	3	3	3	3	3	3	3
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01040	Copper, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01042	Copper, total: µg/l	12	36.7	19.7	10	10	50	50	50	10	50
01045	Iron, total: µg/l	13	49.2	17.5	30	50	50	50	60	10	90
01046	Iron, dissolved: µg/l	1	10	.	10	10	10	10	10	10	10
01049	Lead, dissolved: µg/l	1	1.5	.	1.5	1.5	1.5	1.5	1.5	1.5	1.5
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	10	167.2	134.9	33.5	50	137.5	300	360	17	380
01056	Manganese, dissolved: µg/l	1	5	.	5	5	5	5	5	5	5
01075	Silver, dissolved: µg/l	1	1	.	1	1	1	1	1	1	1
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01090	Zinc, dissolved: µg/l	1	15	.	15	15	15	15	15	15	15
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01145	Selenium, dissolved: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5

SLEEPY HOLLOW (SH1) Continued

STORET No.: 599525 Park: Arches Spring Type: Alcove Spring Period of Record: 1/3/85 - 10/1/93

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
31501	Total coliform, MF, Endo AGAR: cfu/100ml	10	63.5	137.7	0	0	20	50	257.5	0	450
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	6.5	9.3	0	0	0	16	20	0	20
70300	Residue, total filtrable: mg/l	6	159.7	24.5	130	136	159	182	192	130	192
71830	Hydroxide: mg/l	6	0	0	0	0	0	0	0	0	0
71890	Mercury, dissolved: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	6	5.83	10.39	0.8	1	1.8	2.6	27	0.8	27

SEVEN MILE CANYON (SM1)

STORET No.: 599526 Park: Arches Spring Type: Wash Spring Period of Record: 1/3/85 - 3/23/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	11	14.6	5.6	12.5	12.6	14.5	18.2	18.2	0.6	23.2
00094	Specific conductance, field: μmhos/cm	11	325.8	381.6	125	127	166	420	451	105	1422
00095	Specific conductance, lab: μmhos/cm	3	225.7	215	12	12	223	442	442	12	442
00300	Oxygen, dissolved: mg/l	11	5.04	4.13	0.15	1.1	6.9	8.9	9	0.05	11
00400	pH, field: standard units	10	6.59	1.32	4.7	6.05	6.7	7.6	8	3.6	8.2
00405	Carbon dioxide: mg/l	3	2	1.7	1	1	1	4	4	1	4
00410	Alkalinity, total (as CaCO3): mg/l	11	243	143.5	104	106	215	342	444.6	17.1	476
00440	Bicarbonate (as HCO3): mg/l	3	173	77.1	127	127	130	262	262	127	262
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	8.7	12.4	1.5	1.5	1.5	23	23	1.5	23
00610	Nitrogen ammonia, total (as N): mg/l	3	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	4	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.06	0.01	0.05	0.05	0.05	0.07	0.07	0.05	0.07
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.36	0.32	0.005	0.005	0.5	0.59	0.59	0.005	0.59
00655	Phosphate, poly (as PO4): mg/l	7	3.06	3.02	0.5	1	1.6	5.5	8.8	0.5	8.8
00665	Phosphorus(as P), total: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus(as P), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	11	430.5	232.6	118.8	180	500	596	718.2	110	731
00915	Calcium, dissolved: mg/l	3	53	23.4	38	38	41	80	80	38	80
00925	Magnesium, dissolved: mg/l	3	5	2.1	3.7	3.7	4	7.4	7.4	3.7	7.4
00930	Sodium, dissolved: mg/l	3	4.4	2.3	3.1	3.1	3.1	7	7	3.1	7
00935	Potassium, dissolved: mg/l	3	1.37	0.06	1.3	1.3	1.4	1.4	1.4	1.3	1.4
00940	Chloride, total: mg/l	8	138.2	129.9	3.3	6.6	135.7	257.6	303	3.3	303
00945	Sulfate, total: mg/l	10	70.1	71.1	11.1	25	47.8	94	178	9.5	248
01002	Arsenic, total: μg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: μg/l	3	353.3	15.3	340	340	350	370	370	340	370
01027	Cadmium, total: μg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: μg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: μg/l	10	491	694.2	10	10	210	650	1550	10	2300
01045	Iron, total: μg/l	10	240	279.4	10	50	205	300	650	10	950
01051	Lead, total: μg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: μg/l	10	232.7	224.8	8	81	210	280	550	8	800
01077	Silver, total: μg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: μg/l	3	10	0	10	10	10	10	10	10	10
01147	Selenium, total: μg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	8	7.5	17.5	0	0	0	5	50	0	50
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	6	0.3	0.8	0	0	0	0	2	0	2
70300	Residue, total filtrable: mg/l	3	184	84.1	116	116	158	278	278	116	278
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: μg/l	3	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	0.87	0.55	0.46	0.46	0.65	1.5	1.5	0.46	1.5

SQUAW CANYON UPPER (SQ1A)

STORET No.: 599504 Park: Canyonlands District: Needles Spring Type: Intermittent Stream Period of Record: 8/28/85 - 9/23/90

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	10	25	6	16.4	17.3	27.7	28.6	31	15.5	31.9
00059	Flow, instaneous: gallons/minute	1	0.86	.	0.86	0.86	0.86	0.86	0.86	0.86	0.86
00061	Flow, instaneous: cubic feet/second	1	0.002	.	0.002	0.002	0.002	0.002	0.002	0.002	0.002
00090	Oxidation reduction potential (ORP): mV	1	0.163	.	0.163	0.163	0.163	0.163	0.163	0.163	0.163
00094	Specific conductance, field: µmhos/cm	10	659.3	189.4	457	564	603	737	958	358	1047
00095	Specific conductance, lab: µmhos/cm	1	1130	.	1130	1130	1130	1130	1130	1130	1130
00300	Oxygen, dissolved: mg/l	8	7.94	2.6	3.5	6.7	8.4	8.84	12.1	3.5	12.1
00400	pH, field: standard units	10	7.66	0.61	6.92	7.1	7.6	8.2	8.54	6.9	8.76
00405	Carbon dioxide: mg/l	1	18	.	18	18	18	18	18	18	18
00410	Alkalinity, total (as CaCO3): mg/l	10	248.2	121.8	81.2	239.4	248.3	280	395.35	8.5	500
00440	Bicarbonate (as HCO3): mg/l	1	610	.	610	610	610	610	610	610	610
00445	Carbonate (as CO3): mg/l	1	0	.	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00610	Nitrogen ammonia, total (as N): mg/l	1	0.025	.	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00620	Nitrate (as N), total: mg/l	7	0.06	0.02	0.05	0.05	0.05	0.05	0.11	0.05	0.11
00625	Nitrogen, Kjeldahl, total: mg/l	1	0.4	.	0.4	0.4	0.4	0.4	0.4	0.4	0.4
00655	Phosphate, poly (as PO4): mg/l	8	1.72	1.1	0.05	1	1.7	2.4	3.5	0.05	3.5
00665	Phosphorus (as P), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	9	301.1	131.8	116.3	260	290.7	307.8	572	116.3	572
00915	Calcium, dissolved: mg/l	1	160	.	160	160	160	160	160	160	160
00925	Magnesium, dissolved: mg/l	1	42	.	42	42	42	42	42	42	42
00930	Sodium, dissolved: mg/l	1	36	.	36	36	36	36	36	36	36
00935	Potassium, dissolved: mg/l	1	2	.	2	2	2	2	2	2	2
00940	Chloride, total: mg/l	7	134.8	58.1	68.2	68.2	151.5	189.4	212.1	68.18	212.1
00945	Sulfate, total: mg/l	9	64.4	51.2	20	37	45	66	180	20	180
01002	Arsenic, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	1	270	.	270	270	270	270	270	270	270
01027	Cadmium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	1	3	.	3	3	3	3	3	3	3
01042	Copper, total: µg/l	8	67.5	48	10	50	50	85	160	10	160
01045	Iron, total: µg/l	8	126.2	136.6	50	50	50	160	440	50	440
01051	Lead, total: µg/l	1	2.5	.	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	8	208.8	176.5	50	50	190	310	520	50	520
01077	Silver, total: µg/l	1	1	.	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	1	10	.	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	1	0.5	.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	9	38.9	116.7	0	0	0	0	350	0	350
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	7	10.3	17.7	0	0	0	32	40	0	40
70300	Residue, total filtrable: mg/l	1	798	.	798	798	798	798	798	798	798
71830	Hydroxide: mg/l	1	0	.	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	1	0.1	.	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	1	1.6	.	1.6	1.6	1.6	1.6	1.6	1.6	1.6

SQUAW CANYON LOWER (SQ2)

STORET No.: 599503 Park: Canyonlands District: Needles Spring Type: Intermittent Stream Period of Record: 8/25/83 - 5/16/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	15	19.5	7.1	13.6	14.8	20.4	24.1	27.1	1.1	30.2
00090	Oxidation reduction potential (ORP): mV	1	0.201	.	0.201	0.201	0.201	0.201	0.201	0.201	0.201
00094	Specific conductance, field: µmhos/cm	15	526.7	230.9	258	285	585	711	834	139	850
00095	Specific conductance, lab: µmhos/cm	3	507.7	343.3	144	144	553	826	826	144	826
00300	Oxygen, dissolved: mg/l	13	7.49	2.56	4.2	5.2	7.4	9	10.3	3.7	12.4
00400	pH, field: standard units	15	7.28	1.05	5.2	6.5	7.7	8	8.27	5	8.47
00405	Carbon dioxide: mg/l	3	5.7	3.8	3	3	4	10	10	3	10
00410	Alkalinity, total (as CaCO3): mg/l	15	186.1	104.7	8.5	119.7	220	260	307.8	8.5	332
00440	Bicarbonate (as HCO3): mg/l	3	261.7	174	68	68	312	405	405	68	405
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	46	45.6	9	9	32	97	97	9	97
00610	Nitrogen ammonia, total (as N): mg/l	3	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	10	0.24	0.58	0.05	0.05	0.05	0.05	1.025	0.05	1.9
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.56	0.39	0.26	0.26	0.41	1	1	0.26	1
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.01	.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	2	0.27	0.37	0.005	0.005	0.27	0.53	0.53	0.005	0.53
00655	Phosphate, poly (as PO4): mg/l	11	1.45	1.17	0.3	0.6	1.2	2.5	2.5	0.05	4
00665	Phosphorus(as P), total: mg/l	3	0.032	0.034	0.005	0.005	0.02	0.07	0.07	0.005	0.07
00666	Phosphorus(as P), dissolved: mg/l	2	0.013	0.011	0.005	0.005	0.013	0.02	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	14	224.1	107.6	130	153.9	188.2	300	390	65.1	418.7
00915	Calcium, dissolved: mg/l	3	58.3	53.8	21	21	34	120	120	21	120
00925	Magnesium, dissolved: mg/l	3	17.7	13.3	3.1	3.1	21	29	29	3.1	29
00930	Sodium, dissolved: mg/l	3	20	14.2	3.9	3.9	25	31	31	3.9	31
00935	Potassium, dissolved: mg/l	3	2.2	0.36	1.9	1.9	2.1	2.6	2.6	1.9	2.6
00940	Chloride, total: mg/l	10	71.9	67.5	8.4	15	49.2	121.2	178	2	196.95
00945	Sulfate, total: mg/l	14	37.9	27.4	13.4	22	30.5	36	75	11	110
01002	Arsenic, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	3	150	101.5	60	60	130	260	260	60	260
01027	Cadmium, total: µg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	13	53.8	52.8	10	50	50	50	50	10	220
01045	Iron, total: µg/l	12	239.2	368.7	50	50	80	190	600	50	1300
01051	Lead, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	12	148.2	145.5	50	50	55	200	330	38	500
01077	Silver, total: µg/l	3	1.5	0.9	1	1	1	2.5	2.5	1	2.5
01092	Zinc, total: µg/l	3	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	11	359.5	932.2	0	0	0	100	700	0	3100
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	8	100	208.1	0	0	0	100	600	0	600
70300	Residue, total filtrable: mg/l	3	334	218.2	104	104	360	538	538	104	538
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	3	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	17.8	14.34	1.4	1.4	24	28	28	1.4	28

CAVE SPRING (SQ3)

STORET No.: 599505 Park: Canyonlands District: Needles Spring Type: Alcove Seep Period of Record: 8/22/83 - 5/16/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	17	14.9	5.1	11	11.4	16.3	18	20.9	1.4	23.1
00059	Flow, instaneous: gallons/minute	1	0.12	.	0.12	0.12	0.12	0.12	0.12	0.12	0.12
00061	Flow, instaneous: cubic feet/second	1	0	.	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0.214	.	0.214	0.214	0.214	0.214	0.214	0.214	0.214
00094	Specific conductance, field: µmhos/cm	17	312.4	162.8	209	288	299	305	333	101	907
00095	Specific conductance, lab: µmhos/cm	4	310.2	30.3	286	290.5	300.5	330	354	286	354
00300	Oxygen, dissolved: mg/l	14	6.48	1.5	4.8	5	6.9	7.5	8.2	3.2	8.25
00400	pH, field: standard units	17	7.16	1	5.6	6.45	7.2	8	8.4	5.4	8.8
00405	Carbon dioxide: mg/l	4	3.5	1.7	2	2.5	3	4.5	6	2	6
00410	Alkalinity, total (as CaCO3): mg/l	17	164.2	74.8	17.5	140	168	188.1	300	17.1	307.8
00440	Bicarbonate (as HCO3): mg/l	4	179.2	17.8	166	167.5	173	191	205	166	205
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	123.7	99.7	55	55	78	238	238	55	238
00610	Nitrogen ammonia, total (as N): mg/l	4	0.169	0.288	0.025	0.025	0.025	0.313	0.6	0.025	0.6
00620	Nitrate (as N), total: mg/l	11	0.38	0.67	0.05	0.05	0.05	0.29	1	0.05	2.2
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.42	0.41	0.05	0.17	0.32	0.68	1	0.05	1
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	4	0.44	0.09	0.36	0.36	0.41	0.5	0.56	0.36	0.56
00655	Phosphate, poly (as PO4): mg/l	12	1.88	1.87	0.05	0.9	1.7	2	2.8	0.05	7.2
00665	Phosphorus (as P), total: mg/l	4	0.228	0.337	0.02	0.04	0.08	0.415	0.73	0.02	0.73
00666	Phosphorus (as P), dissolved: mg/l	4	0.018	0.014	0.005	0.005	0.018	0.03	0.03	0.005	0.03
00900	Hardness, total (as CaCO3): mg/l	15	197.9	58.6	153.9	169.5	185.3	200	280	145.5	376.2
00915	Calcium, dissolved: mg/l	4	31	4.8	27	28	29.5	34	38	27	38
00925	Magnesium, dissolved: mg/l	4	21	1.8	19	19.5	21	22.5	23	19	23
00930	Sodium, dissolved: mg/l	4	5.2	2.8	3.6	3.8	4	6.7	9.4	3.6	9.4
00935	Potassium, dissolved: mg/l	4	1.4	0.65	0.5	0.95	1.55	1.85	2	0.5	2
00940	Chloride, total: mg/l	12	44.9	49.2	4	7.7	30.3	64.385	121.2	4	151.5
00945	Sulfate, total: mg/l	16	22.2	18.9	10	12.7	17.26	22.5	36	10	88
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	377.5	64	310	325	375	430	450	310	450
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	14	42.9	26.7	10	10	50	50	50	10	110
01045	Iron, total: µg/l	14	142.1	279.1	50	50	50	60	200	50	1100
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	14	165.1	112.3	31	50	200	210	300	8	400
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	13.75	7.5	10	10	10	17.5	25	10	25
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	9	106.7	135.2	0	0	50	250	300	0	300
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	9	1.3	4	0	0	0	0	12	0	12
70300	Residue, total filtrable: mg/l	4	195.5	16.4	176	182	198	209	210	176	210
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	31.45	22.19	9.8	12.4	31.5	50.5	53	9.8	53

SALT VALLEY WASH (SVW1)

STORET No.: 599523 Park: Arches Spring Type: Wash Spring Period of Record: 5/15/89 - 3/21/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	4	12.8	4.2	10.5	10.6	10.8	15	19.1	10.5	19.1
00094	Specific conductance, field: μmhos/cm	4	2231.2	1261.1	355	1492.5	2795	2970	2980	355	2980
00095	Specific conductance, lab: μmhos/cm	2	3285	77.8	3230	3230	3285	3340	3340	3230	3340
00300	Oxygen, dissolved: mg/l	4	5.59	2.24	2.56	3.93	6.1	7.25	7.6	2.56	7.6
00400	pH, field: standard units	4	6.92	0.61	6	6.6	7.2	7.235	7.27	6	7.27
00405	Carbon dioxide: mg/l	2	15	4.2	12	12	15	18	18	12	18
00410	Alkalinity, total (as CaCO3): mg/l	4	182.1	136.6	8.5	94.2	189	270	342	8.5	342
00440	Bicarbonate (as HCO3): mg/l	2	230.5	16.3	219	219	230.5	242	242	219	242
00445	Carbonate (as CO3): mg/l	2	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0.9	.	0.9	0.9	0.9	0.9	0.9	0.9	0.9
00530	Residue, total nonfiltrable: mg/l	2	3291	3916	522	522	3291	6060	6060	522	6060
00610	Nitrogen ammonia, total (as N): mg/l	2	1.325	1.138	0.52	0.52	1.325	2.13	2.13	0.52	2.13
00620	Nitrate (as N), total: mg/l	2	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00625	Nitrogen, Kjeldahl, total: mg/l	2	2.28	1.86	0.97	0.97	2.28	3.6	3.6	0.97	3.6
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	1	1.1	.	1.1	1.1	1.1	1.1	1.1	1.1	1.1
00655	Phosphate, poly (as PO4): mg/l	1	3.5	.	3.5	3.5	3.5	3.5	3.5	3.5	3.5
00660	Phosphate, ortho (as PO4): mg/l	1	0.23	.	0.23	0.23	0.23	0.23	0.23	0.23	0.23
00665	Phosphorus(as P), total: mg/l	2	0.38	0	0.38	0.38	0.38	0.38	0.38	0.38	0.38
00666	Phosphorus(as P), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	4	2355.2	303.3	2137.5	2186.2	2239.4	2524	2804.4	2137.5	2804.4
00915	Calcium, dissolved: mg/l	2	520	28.3	500	500	520	540	540	500	540
00925	Magnesium, dissolved: mg/l	2	244	5.7	240	240	244	248	248	240	248
00930	Sodium, dissolved: mg/l	2	43	1.4	42	42	43	44	44	42	44
00935	Potassium, dissolved: mg/l	2	9.5	4.95	6	6	9.5	13	13	6	13
00940	Chloride, total: mg/l	4	62.1	62.9	17.2	18.1	39.8	106	151.5	17.2	151.5
00945	Sulfate, total: mg/l	4	1445.6	1056	28	641.2	1727.2	2250	2300	28	2300
01002	Arsenic, total: μg/l	2	8.75	8.8	2.5	2.5	8.8	15	15	2.5	15
01007	Barium, total: μg/l	2	100	56.6	60	60	100	140	140	60	140
01027	Cadmium, total: μg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: μg/l	2	9	8.5	3	3	9	15	15	3	15
01042	Copper, total: μg/l	4	850.2	1141.3	31	60.5	445	1640	2480	31	2480
01045	Iron, total: μg/l	4	6242.5	6295	250	925	5800	11560	13120	250	13120
01051	Lead, total: μg/l	2	31.2	40.7	2.5	2.5	31.2	60	60	2.5	60
01055	Manganese, total: μg/l	4	7557.5	7064.1	830	2515	6100	12600	17200	830	17200
01077	Silver, total: μg/l	2	1	0	1	1	1	1	1	1	1
01092	Zinc, total: μg/l	2	108.5	115.3	27	27	108.5	190	190	27	190
01147	Selenium, total: μg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	5	7.1	0	0	5	10	10	0	10
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	3	3.3	5.8	0	0	0	10	10	0	10
70300	Residue, total filtrable: mg/l	2	3513	199.4	3372	3372	3513	3654	3654	3372	3654
71830	Hydroxide: mg/l	2	0	0	0	0	0	0	0	0	0
71900	Mercury, total: μg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	2	550	636.4	100	100	550	1000	1000	100	1000

SALT WASH (SW3)

STORET No.: 599522 Park: Arches Spring Type: Perennial Stream Period of Record: 8/18/83 - 3/20/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	18	17.6	8.3	2.2	15.8	18.1	21.4	28	0.6	31.7
00059	Flow, instaneous: gallons/minute	4	281.7	236.91	112.5	135	192.15	428.4	630	112.5	630
00061	Flow, instaneous: cubic feet/second	4	0.626	0.526	0.25	0.3	0.427	0.952	1.4	0.25	1.4
00094	Specific conductance, field: µmhos/cm	18	1380.3	1533.5	216	335	396.5	3160	3700	153	3925
00095	Specific conductance, lab: µmhos/cm	4	3585	339.1	3270	3310	3535	3860	4000	3270	4000
00300	Oxygen, dissolved: mg/l	17	9.45	4.05	5.8	6.85	9.8	11.1	13.8	0.05	18.7
00400	pH, field: standard units	18	7.3	1.24	5.6	6.7	7.55	7.9	8	4	10.3
00405	Carbon dioxide: mg/l	4	4	0.8	3	3.5	4	4.5	5	3	5
00410	Alkalinity, total (as CaCO3): mg/l	19	251.9	60.3	171	199	260	298	342	160	360
00440	Bicarbonate (as HCO3): mg/l	4	287.5	64.7	226	234	280.5	341	363	226	363
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	16	9	4	9.5	17.5	22.5	25	4	25
00610	Nitrogen ammonia, total (as N): mg/l	4	0.036	0.023	0.025	0.025	0.025	0.048	0.07	0.025	0.07
00620	Nitrate (as N), total: mg/l	10	0.24	0.55	0.05	0.05	0.05	0.05	1	0.05	1.8
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.8	1.49	0.05	0.05	0.05	1.54	3.03	0.05	3.03
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.03	0.04	0.005	0.005	0.01	0.07	0.07	0.005	0.07
00655	Phosphate, poly (as PO4): mg/l	12	1.37	0.94	0.4	0.58	1.25	2.05	2.2	0.05	3.25
00660	Phosphate, ortho (as PO4): mg/l	1	0.01	.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
00665	Phosphorus (as P), total: mg/l	4	0.018	0.017	0.005	0.005	0.013	0.03	0.04	0.005	0.04
00666	Phosphorus (as P), dissolved: mg/l	2	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	19	377.6	105.9	237	320	359.1	460	568	227.3	596
00915	Calcium, dissolved: mg/l	4	63	22.1	40	45.5	61	80.5	90	40	90
00925	Magnesium, dissolved: mg/l	4	37	9.7	30	30.5	33.5	43.5	51	30	51
00930	Sodium, dissolved: mg/l	4	657.5	91.8	560	580	660	735	750	560	750
00935	Potassium, dissolved: mg/l	4	8.68	1.3	7.2	7.6	8.75	9.75	10	7.2	10
00940	Chloride, total: mg/l	12	1369.6	591.8	799.9	1008	1232.7	1908.9	2090.7	303	2302.8
00945	Sulfate, total: mg/l	17	147.3	169.4	44	51	80	192	260	34	740
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	217.5	34	170	195	225	240	250	170	250
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	88	160.7	10	10	50	50	180	10	650
01045	Iron, total: µg/l	16	193.1	221.7	50	50	50	315	500	50	800
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	14	328.9	590.4	50	50	165	280	600	10	2300
01077	Silver, total: µg/l	4	3	4	1	1	1	5	9	1	9
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	12	80.8	228.5	0	0	0	35	100	0	800
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	9	16.2	32.5	0	0	0	20	100	0	100
70300	Residue, total filtrable: mg/l	4	2050	134.7	1924	1934	2048	2166	2180	1924	2180
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	7.56	8.12	0.95	1.12	5.65	14	18	0.95	18

SALT SPRING (SW5)

STORET No.: 599521 Park: Arches Spring Type: Wall Spring Period of Record: 8/17/83 - 3/24/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	12	17.9	2.5	16.1	16.7	17.6	19.4	21.2	13.1	22.4
00090	Oxidation reduction potential (ORP): mV	1	0.13	.	0.13	0.13	0.13	0.13	0.13	0.13	0.13
00094	Specific conductance, field: µmhos/cm	12	1837.8	2378.7	418	510	600.5	2700.5	6140	380	6310
00095	Specific conductance, lab: µmhos/cm	3	4323.3	1035.6	3150	3150	4710	5110	5110	3150	5110
00300	Oxygen, dissolved: mg/l	11	7.82	0.91	6.9	7	7.7	8.5	8.7	6.75	9.67
00400	pH, field: standard units	11	7.11	0.65	6.1	6.6	7.1	7.7	7.76	6	7.8
00405	Carbon dioxide: mg/l	3	2.7	1.2	2	2	2	4	4	2	4
00410	Alkalinity, total (as CaCO3): mg/l	12	237.2	54.7	188.1	201.1	249.2	256.5	273.6	140	360
00440	Bicarbonate (as HCO3): mg/l	3	265.7	27.3	241	241	261	295	295	241	295
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	3.2	.	3.2	3.2	3.2	3.2	3.2	3.2	3.2
00530	Residue, total nonfiltrable: mg/l	3	5.2	3.3	1.5	1.5	6	8	8	1.5	8
00610	Nitrogen ammonia, total (as N): mg/l	3	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	9	0.17	0.16	0.05	0.05	0.05	0.3	0.4	0.05	0.4
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.16	0.2	0.05	0.05	0.05	0.39	0.39	0.05	0.39
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.34	0.08	0.25	0.25	0.37	0.41	0.41	0.25	0.41
00655	Phosphate, poly (as PO4): mg/l	7	1.66	1.73	0.25	0.4	1	4.1	4.2	0.25	4.2
00665	Phosphorus (as P), total: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	12	353	81.8	272	282.2	351.2	415.2	444.6	236.5	510
00915	Calcium, dissolved: mg/l	3	63.3	18.9	42	42	70	78	78	42	78
00925	Magnesium, dissolved: mg/l	3	38.3	5.5	32	32	41	42	42	32	42
00930	Sodium, dissolved: mg/l	3	823.3	226	570	570	900	1000	1000	570	1000
00935	Potassium, dissolved: mg/l	3	12.67	1.53	11	11	13	14	14	11	14
00940	Chloride, total: mg/l	9	1910.6	913.7	799.9	1363.5	1696.8	2090.7	3787.5	799.9	3787.5
00945	Sulfate, total: mg/l	12	198.6	96.4	80	131.5	189.5	245.6	280	70	414
01002	Arsenic, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	3	63.3	15.3	50	50	60	80	80	50	80
01027	Cadmium, total: µg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	9	50	49	10	10	50	50	170	10	170
01045	Iron, total: µg/l	8	62.5	49.8	10	50	50	55	180	10	180
01051	Lead, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	8	95.9	82.4	2.5	50	52.5	155	250	2.5	250
01077	Silver, total: µg/l	3	1.7	1.2	1	1	1	3	3	1	3
01092	Zinc, total: µg/l	3	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	3	1.8	1.2	0.5	0.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	4	30	47.6	0	0	10	60	100	0	100
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	4	12.5	25	0	0	0	25	50	0	50
70300	Residue, total filtrable: mg/l	3	2476	651.4	1746	1746	2684	2998	2998	1746	2998
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	3	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	0.97	1.01	0.17	0.17	0.63	2.1	2.1	0.17	2.1

THE NECK SPRING (TC1)

STORET No.: 599561 Park: Canyonlands District: Island in the Sky Spring Type: Alcove Seep Period of Record: 8/29/83 - 4/18/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	10	7.2	4.5	1.6	4.2	6.8	10.6	13.2	0.9	13.4
00094	Specific conductance, field: µmhos/cm	9	430.3	158.7	205	395	411	520	679	205	679
00095	Specific conductance, lab: µmhos/cm	3	594	165.2	407	407	655	720	720	407	720
00300	Oxygen, dissolved: mg/l	9	7.24	2.78	2.7	5.6	8.16	9.7	10.4	2.7	10.4
00400	pH, field: standard units	9	7.06	1.03	5.3	6.25	7.2	7.8	8.3	5.3	8.3
00405	Carbon dioxide: mg/l	3	7.3	3.2	5	5	6	11	11	5	11
00410	Alkalinity, total (as CaCO3): mg/l	11	246.7	78.5	205	205.2	240	324.9	348	80	356
00440	Bicarbonate (as HCO3): mg/l	3	370	104	250	250	425	435	435	250	435
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	4.8	3.82	1.5	1.5	4	9	9	1.5	9
00610	Nitrogen ammonia, total (as N): mg/l	3	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	8	0.1	0.13	0.05	0.05	0.05	0.05	0.43	0.05	0.43
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.16	0.13	0.05	0.05	0.12	0.3	0.3	0.05	0.3
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00655	Phosphate, poly (as PO4): mg/l	8	1.25	1.98	0.05	0.18	0.55	1.2	6	0.05	6
00665	Phosphorus (as P), total: mg/l	3	0.01	0.009	0.005	0.005	0.005	0.02	0.02	0.005	0.02
00666	Phosphorus (as P), dissolved: mg/l	2	0.023	0.025	0.005	0.005	0.023	0.04	0.04	0.005	0.04
00900	Hardness, total (as CaCO3): mg/l	11	249.1	63.4	200	208.8	256.5	273.6	300	130	380.2
00915	Calcium, dissolved: mg/l	3	71	20	54	54	66	93	93	54	93
00925	Magnesium, dissolved: mg/l	3	25.7	9.3	18	18	23	36	36	18	36
00930	Sodium, dissolved: mg/l	3	8.1	3.6	5	5	7.3	12	12	5	12
00935	Potassium, dissolved: mg/l	3	4.57	2.4	2.5	2.5	4	7.2	7.2	2.5	7.2
00940	Chloride, total: mg/l	7	33.5	26.2	6.5	9.1	30.3	45.4	83.3	6.5	83.33
00945	Sulfate, total: mg/l	11	20	8.3	11.5	12	20	28	30	10	36
01002	Arsenic, total: µg/l	3	3.3	1.4	2.5	2.5	2.5	5	5	2.5	5
01007	Barium, total: µg/l	3	200	36.1	170	170	190	240	240	170	240
01027	Cadmium, total: µg/l	3	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	3	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	10	45	32.4	10	10	50	50	85	10	120
01045	Iron, total: µg/l	10	60	53.3	10	50	50	50	140	10	200
01051	Lead, total: µg/l	3	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	9	119.4	153.3	8	50	50	150	500	8	500
01077	Silver, total: µg/l	3	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	3	17.3	12.7	10	10	10	32	32	10	32
01147	Selenium, total: µg/l	3	1.8	1.2	0.5	0.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	4	12	24	0	0	0	24	48	0	48
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	4	2	4	0	0	0	4	8	0	8
70300	Residue, total filtrable: mg/l	3	360.7	115.7	230	230	402	450	450	230	450
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	3	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	2.83	3.01	0.9	0.9	1.3	6.3	6.3	0.9	6.3

CABIN SPRING (TC2)

STORET No.: 599560 Park: Canyonlands District: Island in the Sky Spring Type: Alcove Spring Period of Record: 8/29/83 - 4/18/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	17	10.9	5.1	3.8	7.2	11.8	12.7	17.4	3.4	23.3
00059	Flow, instaneous: gallons/minute	2	0.64	0.8	0.07	0.07	0.635	1.2	1.2	0.07	1.2
00061	Flow, instaneous: cubic feet/second	2	0.002	0.002	0	0	0.002	0.003	0.003	0	0.003
00090	Oxidation reduction potential (ORP): mV	1	0.206	.	0.206	0.206	0.206	0.206	0.206	0.206	0.206
00094	Specific conductance, field: µmhos/cm	17	336	175.1	184	191	203	492	580	175	710
00095	Specific conductance, lab: µmhos/cm	4	248.2	123.9	180	183.5	189.5	313	434	180	434
00300	Oxygen, dissolved: mg/l	17	8.4	2.16	4.6	8.2	8.83	9.55	10.6	3.2	11.7
00400	pH, field: standard units	17	7.01	1.16	4.7	6.8	7.45	7.85	8	4.5	8
00405	Carbon dioxide: mg/l	4	2.2	1	1	1.5	2.5	3	3	1	3
00410	Alkalinity, total (as CaCO3): mg/l	17	161.6	76	86	102.6	136.8	188.1	240	85	380
00440	Bicarbonate (as HCO3): mg/l	4	145	79.3	104	104.5	106	185.5	264	104	264
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	1.5	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.71	.	0.71	0.71	0.71	0.71	0.71	0.71	0.71
00620	Nitrate (as N), total: mg/l	12	0.58	1.04	0.05	0.12	0.28	0.475	0.7	0.05	3.8
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.26	0.26	0.05	0.05	0.18	0.46	0.6	0.05	0.6
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.59	0.5	0.005	0.005	0.87	0.89	0.89	0.005	0.89
00655	Phosphate, poly (as PO4): mg/l	12	1.08	0.9	0.05	0.45	0.85	1.75	2	0.05	3
00665	Phosphorus (as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	17	180.8	96.1	93.7	102.6	171	233.7	370	93.3	400
00915	Calcium, dissolved: mg/l	4	35.8	18.8	26	26	26.5	45.5	64	26	64
00925	Magnesium, dissolved: mg/l	4	9.6	5.6	6.7	6.8	7	12.5	18	6.7	18
00930	Sodium, dissolved: mg/l	4	3.1	1.6	1.9	2	2.6	4.2	5.3	1.9	5.3
00935	Potassium, dissolved: mg/l	4	1.7	0.32	1.3	1.45	1.75	1.95	2	1.3	2
00940	Chloride, total: mg/l	11	35.6	36.1	3.1	4.5	30.3	60.6	68.2	3	121.2
00945	Sulfate, total: mg/l	16	22.3	26.8	2.5	4.6	11.8	25.4	66	2.5	92
01002	Arsenic, total: µg/l	4	4.6	1.5	2.5	3.8	5	5.5	6	2.5	6
01007	Barium, total: µg/l	4	230	8.2	220	225	230	235	240	220	240
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	276	919.7	10	10	50	50	50	10	3600
01045	Iron, total: µg/l	15	79.3	134.6	10	10	50	50	150	10	550
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	15	119.3	170	2.5	26	50	200	400	2.5	600
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	8	62.5	157.5	0	0	0	25	450	0	450
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	9	32.7	82.5	0	0	0	4	250	0	250
70300	Residue, total filtrable: mg/l	4	151.5	73.7	112	113	116	190	262	112	262
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	0.41	0.1	0.27	0.34	0.44	0.48	0.5	0.27	0.5

TAYLOR CANYON SPIGOT (TC3)

Park: Canyonlands District: Island in the Sky Spring Type: Spigot (Drilled) Period of Record: 12/29/85 and 6/1/87

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	1	19.2	.	19.2	19.2	19.2	19.2	19.2	19.2	19.2
00094	Specific conductance, field: μmhos/cm	1	2940	.	2940	2940	2940	2940	2940	2940	2940
00300	Oxygen, dissolved: mg/l	1	4.8	.	4.8	4.8	4.8	4.8	4.8	4.8	4.8
00400	pH, field: standard units	1	6.6	.	6.6	6.6	6.6	6.6	6.6	6.6	6.6
00410	Alkalinity, total (as CaCO3): mg/l	2	139.7	140	40	40	139.7	239.4	239.4	40	239.4
00620	Nitrate (as N), total: mg/l	1	0.05	.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	1	20	.	20	20	20	20	20	20	20
00900	Hardness, total (as CaCO3): mg/l	2	1263.7	486.1	920	920	1263.7	1607.4	1607.4	920	1607.4
00940	Chloride, total: mg/l	1	121.2	.	121.2	121.2	121.2	121.2	121.2	121.2	121.2
00945	Sulfate, total: mg/l	1	80	.	80	80	80	80	80	80	80
01042	Copper, total: μg/l	1	2000	.	2000	2000	2000	2000	2000	2000	2000
01045	Iron, total: μg/l	1	50	.	50	50	50	50	50	50	50
01055	Manganese, total: μg/l	1	50	.	50	50	50	50	50	50	50

TO-KO-CHI CANYON (TKC1)

STORET No.: 599534 Park: Natural Bridges Spring Type: Wash Spring Period of Record: 10/8/87 - 5/31/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	9	18.5	6.1	10.3	13.6	18	22.4	27.2	10.3	27.2
00090	Oxidation reduction potential (ORP): mV	1	0.168	.	0.168	0.168	0.168	0.168	0.168	0.168	0.168
00094	Specific conductance, field: μmhos/cm	9	1177.6	600.4	264	710	968	1760	1968	264	1968
00095	Specific conductance, lab: μmhos/cm	3	496	249.5	274	274	448	766	766	274	766
00300	Oxygen, dissolved: mg/l	9	6.29	0.98	4.4	5.6	6.7	6.9	7.5	4.4	7.5
00400	pH, field: standard units	9	6.95	0.9	5.9	6.4	6.55	7.9	8.4	5.9	8.4
00405	Carbon dioxide: mg/l	3	2.3	0.6	2	2	2	3	3	2	3
00410	Alkalinity, total (as CaCO3): mg/l	9	392.2	228.8	103	242	307.8	581.4	752.4	103	752.4
00440	Bicarbonate (as HCO3): mg/l	3	205	85.6	126	126	193	296	296	126	296
00445	Carbonate (as CO3): mg/l	3	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	3	9.8	10.8	1.5	1.5	6	22	22	1.5	22
00610	Nitrogen ammonia, total (as N): mg/l	3	0.047	0.038	0.025	0.025	0.025	0.09	0.09	0.025	0.09
00620	Nitrate (as N), total: mg/l	5	0.1	0.11	0.05	0.05	0.05	0.05	0.3	0.05	0.3
00625	Nitrogen, Kjeldahl, total: mg/l	3	0.55	0.36	0.19	0.19	0.57	0.9	0.9	0.19	0.9
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.06	.	0.06	0.06	0.06	0.06	0.06	0.06	0.06
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.07	0.04	0.03	0.03	0.09	0.1	0.1	0.03	0.1
00655	Phosphate, poly (as PO4): mg/l	6	3.12	3.11	0.6	0.8	1.65	6	8	0.6	8
00665	Phosphorus(as P), total: mg/l	3	0.025	0.018	0.005	0.005	0.03	0.04	0.04	0.005	0.04
00666	Phosphorus(as P), dissolved: mg/l	3	0.015	0.009	0.005	0.005	0.02	0.02	0.02	0.005	0.02
00900	Hardness, total (as CaCO3): mg/l	9	360.5	182.9	87	239.3	324.9	530.1	666.9	87	666.9
00915	Calcium, dissolved: mg/l	3	41.7	17.6	23	23	44	58	58	23	58
00925	Magnesium, dissolved: mg/l	3	18.7	10.1	7.2	7.2	23	26	26	7.2	26
00930	Sodium, dissolved: mg/l	3	61.3	31.8	25	25	75	84	84	25	84
00935	Potassium, dissolved: mg/l	3	5.63	1.27	4.8	4.8	5	7.1	7.1	4.8	7.1
00940	Chloride, total: mg/l	9	182.6	137.5	10	90.9	121.2	272.7	393.9	10	393.9
00945	Sulfate, total: mg/l	9	114.4	91.8	30.9	46	98	108	288	30.9	288
01002	Arsenic, total: μg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: μg/l	2	125	21.2	110	110	125	140	140	110	140
01027	Cadmium, total: μg/l	2	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: μg/l	2	3	0	3	3	3	3	3	3	3
01042	Copper, total: μg/l	7	125.7	172.8	10	10	50	150	500	10	500
01045	Iron, total: μg/l	8	416.2	584.8	30	50	155	695	1500	30	1500
01051	Lead, total: μg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: μg/l	8	163.1	189.7	10	32.5	50	315	500	10	500
01077	Silver, total: μg/l	2	1	0	1	1	1	1	1	1	1
01092	Zinc, total: μg/l	2	10	0	10	10	10	10	10	10	10
01147	Selenium, total: μg/l	2	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	5	350	777	0	0	0	10	1740	0	1740
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	6	0.3	0.8	0	0	0	0	2	0	2
70300	Residue, total filtrable: mg/l	3	368.7	161.6	184	184	438	484	484	184	484
71830	Hydroxide: mg/l	3	0	0	0	0	0	0	0	0	0
71900	Mercury, total: μg/l	2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	3	14.4	18.75	2.3	2.3	4.9	36	36	2.3	36

ERNIE'S COUNTRY WEST (WA1)

STORET No.: 599546 Park: Canyonlands District: Maze Spring Type: Alcove Seep Period of Record: 10/16/84 - 4/30/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	14.9	4.5	11.4	12.1	14.4	16.4	21	7.1	25.6
00059	Flow, instaneous: gallons/minute	2	0.035	0.01	0.03	0.03	0.035	0.04	0.04	0.03	0.04
00061	Flow, instaneous: cubic feet/second	2	0	0	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0.084	.	0.084	0.084	0.084	0.084	0.084	0.084	0.084
00094	Specific conductance, field: µmhos/cm	15	310.2	38.4	282	292	309	331	350	223	398
00095	Specific conductance, lab: µmhos/cm	4	321.8	15	300	312.5	326.5	331	334	300	334
00300	Oxygen, dissolved: mg/l	15	10.53	3.95	6.2	8.5	9.6	12.35	13.6	4.8	22
00400	pH, field: standard units	16	8.24	0.58	7.3	7.9	8.42	8.75	8.9	7.2	8.9
00405	Carbon dioxide: mg/l	4	1.5	0.6	1	1	1.5	2	2	1	2
00410	Alkalinity, total (as CaCO3): mg/l	14	156.1	44.4	120	136.8	145	180	188.1	80	273.6
00440	Bicarbonate (as HCO3): mg/l	4	174.2	11	159	167	176.5	181.5	185	159	185
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	2.75	1.4	1.5	1.5	2.75	4	4	1.5	4
00610	Nitrogen ammonia, total (as N): mg/l	4	0.09	0.108	0.025	0.025	0.043	0.155	0.25	0.025	0.25
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.14	.	0.14	0.14	0.14	0.14	0.14	0.14	0.14
00620	Nitrate (as N), total: mg/l	10	0.07	0.04	0.05	0.05	0.05	0.05	0.15	0.05	0.15
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.39	0.42	0.05	0.14	0.26	0.65	1	0.05	1
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.52	.	0.52	0.52	0.52	0.52	0.52	0.52	0.52
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.16	0.08	0.07	0.07	0.17	0.24	0.24	0.07	0.24
00655	Phosphate, poly (as PO4): mg/l	11	4.12	6.77	0.25	0.4	1.1	3.2	15	0.25	20
00665	Phosphorus (as P), total: mg/l	4	0.009	0.008	0.005	0.005	0.005	0.013	0.02	0.005	0.02
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	178.1	16.7	160	163	180	188.1	204	150.5	205.2
00915	Calcium, dissolved: mg/l	4	32.5	2.4	29	31	33.5	34	34	29	34
00925	Magnesium, dissolved: mg/l	4	19.2	0.5	19	19	19	19.5	20	19	20
00930	Sodium, dissolved: mg/l	4	6.6	0.4	6	6.3	6.7	6.85	6.9	6	6.9
00935	Potassium, dissolved: mg/l	4	2.2	0.28	2	2	2.1	2.4	2.6	2	2.6
00940	Chloride, total: mg/l	10	28.8	21.4	6.8	8	26.5	53	56.8	6.8	60.6
00945	Sulfate, total: mg/l	14	16.6	6.1	8	14	18.2	20	22.5	2.5	25.97
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	117.5	53.2	40	85	135	150	160	40	160
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	63.3	74.8	10	10	50	50	160	10	300
01045	Iron, total: µg/l	15	61.3	55	10	50	50	50	120	10	240
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	15	283.2	709	2.5	11	50	200	500	2.5	2800
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	13.2	6.5	10	10	10	16.5	23	10	23
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	250	282.8	50	50	250	450	450	50	450
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	2	0	0	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	4	176	4.3	170	173	177	179	180	170	180
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	1.03	0.36	0.63	0.82	1	1.25	1.5	0.63	1.5

ERNIE'S COUNTRY EAST (WA2)

STORET No.: 599545 Park: Canyonlands District: Maze Spring Type: Alcove Seep Period of Record: 10/16/84 - 4/30/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	16	15.4	5.2	9.8	12.2	15.6	18.9	22.7	4	23.8
00059	Flow, instaneous: gallons/minute	4	0.019	0.013	0.002	0.011	0.02	0.027	0.033	0.002	0.033
00061	Flow, instaneous: cubic feet/second	4	0	0	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0.083	.	0.083	0.083	0.083	0.083	0.083	0.083	0.083
00094	Specific conductance, field: µmhos/cm	15	259.1	11.1	246	249	259	265	273	239	282
00095	Specific conductance, lab: µmhos/cm	4	260.2	8	254	255.5	257.5	265	272	254	272
00300	Oxygen, dissolved: mg/l	15	8.77	1.95	6.8	7.1	8.1	10.85	12	6.6	12.14
00400	pH, field: standard units	16	7.84	0.97	6.85	7.65	7.98	8.35	8.7	5	9.38
00405	Carbon dioxide: mg/l	4	2	0.8	1	1.5	2	2.5	3	1	3
00410	Alkalinity, total (as CaCO3): mg/l	14	151.8	45	123	126	136.8	171	187	120	290.7
00440	Bicarbonate (as HCO3): mg/l	4	153.5	4	150	150.5	152.5	156.5	159	150	159
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	1.5	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00613	Nitrite (as N), dissolved: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00618	Nitrate (as N), dissolved: mg/l	1	0.12	.	0.12	0.12	0.12	0.12	0.12	0.12	0.12
00620	Nitrate (as N), total: mg/l	10	0.2	0.39	0.05	0.05	0.05	0.05	0.8	0.05	1.3
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.1	0.07	0.05	0.05	0.08	0.155	0.2	0.05	0.2
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.07	.	0.07	0.07	0.07	0.07	0.07	0.07	0.07
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.18	0.18	0.07	0.07	0.08	0.39	0.39	0.07	0.39
00655	Phosphate, poly (as PO4): mg/l	11	1.08	1.52	0.05	0.4	0.45	1	2.9	0.05	5
00665	Phosphorus (as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	14	156.6	16.3	138.3	140.8	156.95	171	171	131.7	187
00915	Calcium, dissolved: mg/l	4	34.5	1.3	33	33.5	34.5	35.5	36	33	36
00925	Magnesium, dissolved: mg/l	4	12.75	0.5	12	12.5	13	13	13	12	13
00930	Sodium, dissolved: mg/l	4	2.1	0.2	2	2	2.1	2.25	2.3	2	2.3
00935	Potassium, dissolved: mg/l	4	1.38	0.42	1.1	1.15	1.2	1.6	2	1.1	2
00940	Chloride, total: mg/l	11	21.2	21.7	1.5	2	22.7	22.7	60.6	0.5	60.6
00945	Sulfate, total: mg/l	14	13	7.5	2.5	8	12.3	14	26.5	2.5	28
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	70	46.9	40	45	50	95	140	40	140
01027	Cadmium, total: µg/l	4	0.4	0.2	0	0.25	0.5	0.5	0.5	0	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	56	52.3	10	10	50	50	150	10	200
01045	Iron, total: µg/l	15	76.7	89.1	10	40	50	50	180	10	350
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	15	148.3	223	2.5	7	50	260	320	2.5	850
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	19	10.9	10	10	17	28	32	10	32
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	2	225	318.2	0	0	225	450	450	0	450
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	1	0	.	0	0	0	0	0	0	0
70300	Residue, total filtrable: mg/l	4	148	2.8	144	146	149	150	150	144	150
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	0.7	0.48	0.33	0.42	0.54	0.98	1.4	0.33	1.4

WATER CANYON (WC1)

Park: Canyonlands District: Maze Spring Type: Wash Spring Period of Record: 9/1/83 - 4/6/88

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	4	23.8	7.6	12.9	18.6	25.8	28.9	30.4	12.9	30.4
00059	Flow, instaneous: gallons/minute	1	0.29	.	0.29	0.29	0.29	0.29	0.29	0.29	0.29
00061	Flow, instaneous: cubic feet/second	1	0	.	0	0	0	0	0	0	0
00090	Oxidation reduction potential (ORP): mV	1	0	.	0	0	0	0	0	0	0
00094	Specific conductance, field: µmhos/cm	4	636.8	52.8	566	604	643.5	669.5	694	566	694
00300	Oxygen, dissolved: mg/l	4	7.95	2.04	5.3	6.35	8.45	9.55	9.6	5.3	9.6
00400	pH, field: standard units	4	7.72	0.67	7.1	7.15	7.7	8.3	8.4	7.1	8.4
00410	Alkalinity, total (as CaCO3): mg/l	5	226.6	50.3	180	200	205.2	240	307.8	180	307.8
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00620	Nitrate (as N), total: mg/l	3	0.05	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05
00655	Phosphate, poly (as PO4): mg/l	4	2.7	2.95	0.4	0.85	1.7	4.55	7	0.4	7
00900	Hardness, total (as CaCO3): mg/l	5	242.9	55.4	200	222.3	222.3	230	340	200	340
00940	Chloride, total: mg/l	2	64.4	5.4	60.6	60.6	64.4	68.17	68.17	60.6	68.17
00945	Sulfate, total: mg/l	4	42	13	28	31	43	53	54	28	54
01042	Copper, total: µg/l	3	83.3	57.7	50	50	50	150	150	50	150
01045	Iron, total: µg/l	3	50	0	50	50	50	50	50	50	50
01055	Manganese, total: µg/l	3	1400	2338.3	50	50	50	4100	4100	50	4100

LATHROP CANYON (WR1)

STORET No.: 599563 Park: Canyonlands District: Island in the Sky Spring Type: Wash Spring Period of Record: 8/30/83 - 9/12/89

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	12	19.8	6	13.1	16.4	19.6	21.2	29	10	31.9
00094	Specific conductance, field: μmhos/cm	11	4594.1	1315.4	3800	3880	4050	4920	6355	2700	7430
00300	Oxygen, dissolved: mg/l	12	7.2	2.83	4.2	4.6	6.75	9	11.8	3.65	11.9
00400	pH, field: standard units	12	7.21	0.46	6.6	6.9	7.2	7.5	7.7	6.5	8.1
00410	Alkalinity, total (as CaCO3): mg/l	12	291.1	58.24	240	258.2	285.4	332.4	360	180	393.3
00620	Nitrate (as N), total: mg/l	12	0.06	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.18
00655	Phosphate, poly (as PO4): mg/l	12	2.09	2.88	0.5	0.95	1.45	1.68	2.5	0.05	11
00900	Hardness, total (as CaCO3): mg/l	12	608.2	170.2	480	533.5	562.6	707.6	786.6	270	940.5
00940	Chloride, total: mg/l	5	2151.3	948.8	1545.3	1666.5	1696.8	2030.1	3817.8	1545.3	3817.8
00945	Sulfate, total: mg/l	12	157.6	103.5	90	90	102.5	270	312	28	316
01042	Copper, total: μg/l	11	331.8	507.9	50	50	190	300	500	50	1800
01045	Iron, total: μg/l	11	100	111.8	50	50	50	50	300	50	350
01055	Manganese, total: μg/l	11	770.9	1235.9	50	50	200	1000	2100	50	4000
31501	Total coliform, MF, Endo AGAR: cfu/100ml	8	18.8	37.2	0	0	0	25	100	0	100
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	7	0	0	0	0	0	0	0	0	0

WILLOW SPRING (WS1)

STORET No.: 599527 Park: Arches Spring Type: Wash Spring Period of Record: 8/16/83 - 3/23/92

PARAMETER		OBS.	MEAN	STD. DEV.	P10	P25	MEDIAN	P75	P90	MINIMUM	MAXIMUM
00010	Temperature, water: degrees Celsius	14	19.6	8.3	11.2	15.8	19	22.9	30.5	1.3	34.6
00059	Flow, instaneous: gallons/minute	2	12.33	11.07	4.5	4.5	12.33	20.16	20.16	4.5	20.16
00061	Flow, instaneous: cubic feet/second	2	0.027	0.025	0.01	0.01	0.027	0.045	0.045	0.01	0.045
00090	Oxidation reduction potential (ORP): mV	1	0.094	.	0.094	0.094	0.094	0.094	0.094	0.094	0.094
00094	Specific conductance, field: µmhos/cm	14	535.3	115.6	362	529	566.5	605	646	260	674
00095	Specific conductance, lab: µmhos/cm	4	493.5	150.8	268	413	560.5	574	585	268	585
00300	Oxygen, dissolved: mg/l	13	7.48	2.77	4.5	6.2	6.5	8.04	9.2	4.3	15.2
00400	pH, field: standard units	13	7.28	0.47	6.3	7.1	7.45	7.6	7.66	6.3	7.7
00405	Carbon dioxide: mg/l	4	3.75	2.9	0	2	4	5.5	7	0	7
00410	Alkalinity, total (as CaCO3): mg/l	17	199	93.3	17.1	160	240	259.9	300	8.5	307.8
00440	Bicarbonate (as HCO3): mg/l	4	252.8	106.8	93	195.5	301	310	316	93	316
00445	Carbonate (as CO3): mg/l	4	0	0	0	0	0	0	0	0	0
00480	Salinity at 25 °C: parts per thousand (ppt)	1	0	.	0	0	0	0	0	0	0
00530	Residue, total nonfiltrable: mg/l	4	2.6	2.25	1.5	1.5	1.5	3.8	6	1.5	6
00610	Nitrogen ammonia, total (as N): mg/l	4	0.025	0	0.025	0.025	0.025	0.025	0.025	0.025	0.025
00620	Nitrate (as N), total: mg/l	10	0.17	0.27	0.05	0.05	0.05	0.12	0.6	0.05	0.9
00625	Nitrogen, Kjeldahl, total: mg/l	4	0.16	0.22	0.05	0.05	0.05	0.26	0.48	0.05	0.48
00630	Nitrate plus Nitrite (as N), total: mg/l	1	0.005	.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00631	Nitrate plus Nitrite (as N), dissolved: mg/l	3	0.04	0.03	0.01	0.01	0.05	0.06	0.06	0.01	0.06
00655	Phosphate, poly (as PO4): mg/l	10	2.62	2.55	0.28	0.5	1.9	4	6.65	0.05	7.8
00660	Phosphate, ortho (as PO4): mg/l	1	0.02	.	0.02	0.02	0.02	0.02	0.02	0.02	0.02
00665	Phosphorus (as P), total: mg/l	4	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00666	Phosphorus (as P), dissolved: mg/l	3	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005
00900	Hardness, total (as CaCO3): mg/l	17	251.1	67.7	171	220	256	273.6	359.1	111.9	380
00915	Calcium, dissolved: mg/l	4	65	24.4	30	49.5	72	80.5	86	30	86
00925	Magnesium, dissolved: mg/l	4	12.5	2.5	9	11	13	14	15	9	15
00930	Sodium, dissolved: mg/l	4	22	6	13	19	25	25	25	13	25
00935	Potassium, dissolved: mg/l	4	2.28	0.39	1.9	1.95	2.25	2.6	2.7	1.9	2.7
00940	Chloride, total: mg/l	9	37.9	24.5	11.5	13	45.5	53	68.17	11.5	68.17
00945	Sulfate, total: mg/l	16	39.5	16.6	16	33	37.4	46.5	57	11	84
01002	Arsenic, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01007	Barium, total: µg/l	4	277.5	70.4	200	230	270	325	370	200	370
01027	Cadmium, total: µg/l	4	0.5	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
01034	Chromium, total: µg/l	4	3	0	3	3	3	3	3	3	3
01042	Copper, total: µg/l	15	124	173.9	10	10	50	150	380	10	630
01045	Iron, total: µg/l	15	70	70	10	50	50	50	130	10	300
01051	Lead, total: µg/l	4	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
01055	Manganese, total: µg/l	13	202.5	131.4	50	170	200	200	300	12	560
01077	Silver, total: µg/l	4	1	0	1	1	1	1	1	1	1
01092	Zinc, total: µg/l	4	10	0	10	10	10	10	10	10	10
01147	Selenium, total: µg/l	4	2	1	0.5	1.5	2.5	2.5	2.5	0.5	2.5
31501	Total coliform, MF, Endo AGAR: cfu/100ml	12	793.3	2095.2	0	0	15	140	1950	0	7210
31616	Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100ml	9	1121.1	3329.6	0	0	0	22	10000	0	10000
70300	Residue, total filtrable: mg/l	4	304.5	90.9	170	249	343	360	362	170	362
71830	Hydroxide: mg/l	4	0	0	0	0	0	0	0	0	0
71900	Mercury, total: µg/l	4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82079	Turbidity, lab: Nephelometric Turbidity Units (NTU)	4	1.19	0.53	0.56	0.78	1.2	1.6	1.8	0.56	1.8

Appendix G

Summary Statistics and Comparisons by Agency

Summary Statistics for Southeast Utah Group Total Alkalinity Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
BLM	State	1	103.0	.	103.0	103.0	103.0	103.0	103.0	103.0	103.0
BS2	Park	8	130.8	96.8	8.5	82.8	94.1	188.1	307.8	8.5	307.8
BS2	State	5	195.0	80.5	88.0	142.0	203.0	267.0	275.0	88.0	275.0
BS3	Park	4	192.1	135.2	8.5	94.3	220.0	290.0	320.0	8.5	320.0
BS4	Park	11	258.3	88.7	240.0	256.5	260.0	307.8	324.9	8.5	342.0
BS4	State	4	157.5	82.8	50.0	106.0	164.0	209.0	252.0	50.0	252.0
BS6	Park	12	224.4	107.7	140.0	190.0	239.4	248.3	260.0	8.5	484.8
BS6	State	4	187.0	76.3	74.0	144.0	216.0	230.0	242.0	74.0	242.0
BWC1	Park	10	169.8	90.0	8.5	160.0	202.6	210.0	256.0	8.5	272.0
BWC1	State	1	262.0	.	262.0	262.0	262.0	262.0	262.0	262.0	262.0
CW1	Park	14	142.3	62.0	17.1	123.1	157.0	200.0	200.0	8.5	205.2
CW1	State	6	199.0	17.3	180.0	188.0	193.5	212.0	227.0	180.0	227.0
DC8	Park	9	393.8	81.3	280.0	320.0	410.4	460.0	495.9	280.0	495.9
DC8	State	4	352.0	146.4	146.0	259.5	385.5	444.5	491.0	146.0	491.0
FS1	Park	7	189.8	38.7	136.8	140.0	200.0	220.0	239.4	136.8	239.4
FS1	State	1	151.0	.	151.0	151.0	151.0	151.0	151.0	151.0	151.0
FW1	Park	12	181.5	83.5	119.7	128.4	177.0	254.5	290.7	17.1	290.7
FW1	State	6	160.5	60.1	84.0	117.0	159.5	184.0	259.0	84.0	259.0
HC1	Park	8	199.3	82.6	8.5	194.1	215.0	247.2	273.6	8.5	273.6
HC1	State	4	183.8	19.4	155.0	172.0	191.5	195.5	197.0	155.0	197.0
HSB1	Park	12	150.3	40.2	100.0	119.9	147.0	188.1	188.1	80.0	205.2
HSB1	State	1	125.0	.	125.0	125.0	125.0	125.0	125.0	125.0	125.0
HSC1	Park	9	234.9	101.7	8.5	219.7	240.0	280.0	376.2	8.5	376.2
HSC1	State	4	258.5	16.5	236.0	246.5	262.0	270.5	274.0	236.0	274.0
HSC2	Park	7	252.9	135.4	8.5	200.0	240.0	376.2	411.0	8.5	411.0
HSC2	State	1	492.0	.	492.0	492.0	492.0	492.0	492.0	492.0	492.0
IC15	Park	2	240.0	141.4	140.0	140.0	240.0	340.0	340.0	140.0	340.0
KB1	Park	10	188.8	36.3	128.4	180.0	196.7	205.2	229.7	120.0	239.4
KB1	State	5	221.0	154.7	88.0	132.0	192.0	209.0	484.0	88.0	484.0
LO2	Park	12	316.7	108.8	220.0	293.9	351.0	376.2	410.4	17.1	410.4
LO2	State	4	295.0	19.3	276.0	281.0	291.5	309.0	321.0	276.0	321.0
LSC1	Park	10	249.1	109.4	54.3	220.0	300.0	324.9	324.9	8.5	324.9
LSC1	State	4	293.8	28.0	270.0	273.0	286.5	314.5	332.0	270.0	332.0
LSC2	State	1	282.0	.	282.0	282.0	282.0	282.0	282.0	282.0	282.0
OB1	Park	11	191.6	72.2	120.0	188.1	205.2	240.0	256.5	8.5	256.5

Summary Statistics for Southeast Utah Group Total Alkalinity Data by Agency (mg/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
OB1	State	3	153.3	67.6	108.0	108.0	121.0	231.0	231.0	108.0	231.0
SB1	Park	9	312.3	131.0	8.5	324.9	359.1	376.2	444.6	8.5	444.6
SB1	State	5	296.2	29.9	249.0	287.0	306.0	313.0	326.0	249.0	326.0
SB2	Park	5	290.7	24.2	273.6	273.6	273.6	307.8	324.9	273.6	324.9
SC21	Park	10	532.3	238.5	109.0	513.0	590.0	700.0	743.9	47.0	786.6
SC21	State	4	760.5	109.5	614.0	680.0	780.5	841.0	867.0	614.0	867.0
SC8	Park	10	307.7	159.6	17.8	280.0	360.0	410.4	436.1	8.5	444.6
SC8	State	3	356.7	17.5	342.0	342.0	352.0	376.0	376.0	342.0	376.0
SCS1	Park	9	351.7	47.3	280.0	320.0	340.0	393.3	427.5	280.0	427.5
SCS1	State	1	339.0	.	339.0	339.0	339.0	339.0	339.0	339.0	339.0
SF1	Park	10	339.8	72.4	258.3	280.0	318.9	393.3	448.2	256.5	451.7
SF1	State	3	318.7	34.4	279.0	279.0	337.0	340.0	340.0	279.0	340.0
SF2	Park	9	328.7	48.6	273.6	280.0	340.0	357.0	410.4	273.6	410.4
SF2	State	4	343.0	117.2	201.0	250.5	351.5	435.5	468.0	201.0	468.0
SF3	Park	10	235.0	43.9	180.0	200.0	222.3	272.0	290.7	160.0	290.7
SF3	State	5	232.6	25.8	198.0	223.0	229.0	246.0	267.0	198.0	267.0
SF4	Park	8	284.2	53.4	200.0	248.0	284.5	324.7	359.1	200.0	359.1
SF4	State	6	229.5	23.4	208.0	212.0	221.0	246.0	269.0	208.0	269.0
SF5	Park	8	258.1	81.8	85.4	239.7	255.0	323.9	342.0	85.4	342.0
SF5	State	4	229.8	15.3	209.0	220.0	232.0	239.5	246.0	209.0	246.0
SF6	Park	10	288.2	81.1	174.1	240.0	275.4	360.0	384.8	160.0	393.3
SF6	State	1	124.0	.	124.0	124.0	124.0	124.0	124.0	124.0	124.0
SF7	Park	7	327.5	54.0	270.0	273.6	340.0	393.3	393.3	270.0	393.3
SF7	State	1	364.0	.	364.0	364.0	364.0	364.0	364.0	364.0	364.0
SH1	Park	10	132.5	50.1	58.6	119.7	136.8	170.0	185.5	17.1	200.0
SH1	State	6	123.7	25.5	79.0	114.0	128.5	139.0	153.0	79.0	153.0
SM1	Park	8	280.9	149.1	17.1	190.0	293.9	393.3	476.0	17.1	476.0
SM1	State	3	141.7	63.5	104.0	104.0	106.0	215.0	215.0	104.0	215.0
SQ1A	Park	9	220.2	88.8	8.5	239.4	240.0	273.6	290.7	8.5	290.7
SQ1A	State	1	500.0	.	500.0	500.0	500.0	500.0	500.0	500.0	500.0
SQ2	Park	12	179.1	100.0	8.5	128.3	187.0	260.0	280.0	8.5	307.8
SQ2	State	3	214.3	142.4	56.0	56.0	255.0	332.0	332.0	56.0	332.0
SQ3	Park	13	169.5	85.3	17.5	140.0	171.0	205.2	300.0	17.1	307.8
SQ3	State	4	147.0	14.5	136.0	137.5	142.0	156.5	168.0	136.0	168.0
SVW1	Park	2	175.3	235.8	8.5	8.5	175.3	342.0	342.0	8.5	342.0

Summary Statistics for Southeast Utah Group Total Alkalinity Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SVW1	State	2	189.0	12.7	180.0	180.0	189.0	198.0	198.0	180.0	198.0
SW3	Park	15	256.2	63.0	171.0	205.2	260.0	307.8	342.0	160.0	360.0
SW3	State	4	235.8	53.0	185.0	192.0	230.0	279.5	298.0	185.0	298.0
SW5	Park	9	243.7	61.6	140.0	205.2	256.5	256.5	360.0	140.0	360.0
SW5	State	3	217.7	22.7	197.0	197.0	214.0	242.0	242.0	197.0	242.0
TC1	Park	8	225.6	69.8	80.0	212.6	231.2	256.0	324.9	80.0	324.9
TC1	State	3	303.0	85.0	205.0	205.0	348.0	356.0	356.0	205.0	356.0
TC2	Park	13	174.8	76.5	102.6	136.8	140.0	188.1	240.0	100.0	380.0
TC2	State	4	118.8	64.8	85.0	85.5	87.0	152.0	216.0	85.0	216.0
TC3	Park	2	139.7	141.0	40.0	40.0	139.7	239.4	239.4	40.0	239.4
TKC1	Park	6	504.5	191.0	273.6	307.8	521.6	649.8	752.4	273.6	752.4
TKC1	State	3	167.7	70.0	103.0	103.0	158.0	242.0	242.0	103.0	242.0
WA1	Park	10	161.3	52.1	100.0	136.8	155.5	187.0	230.9	80.0	273.6
WA1	State	4	143.0	8.5	131.0	137.5	145.0	148.5	151.0	131.0	151.0
WA2	Park	10	162.3	49.9	125.0	136.8	140.0	171.0	238.9	120.0	290.7
WA2	State	4	125.5	3.3	123.0	123.0	124.5	128.0	130.0	123.0	130.0
WC1	Park	5	226.6	50.3	180.0	200.0	205.2	240.0	307.8	180.0	307.8
WR1	Park	12	291.1	58.2	240.0	258.3	285.4	332.5	360.0	180.0	393.3
WS1	Park	13	196.5	98.3	17.1	160.0	222.3	260.0	300.0	8.5	307.8
WS1	State	4	207.3	87.7	76.0	160.5	247.0	254.0	259.0	76.0	259.0

* Values of 8.5 represent values below detection and are ½ the detection limit of 17 mg/l

SAS NPAR1WAY PROCEDURE FOR ALKALINITY

Analysis of Variance for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			5526.76414	15526.9362
Park	430	242.511907		
State	144	235.354167	F Value	Prob > F
			0.356	0.5510

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	430	126617.0	123625.0	1722.20295	294.458140
State	144	38408.0	41400.0	1722.20295	266.722222

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 38408.0 Z= -1.73702 Prob > |Z| = 0.0824

T-Test approx. Significance = 0.0829

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 3.0182 DF= 1 Prob > CHISQ= 0.0823

Median Scores (Number of Points above Median) for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	430	216.0	206.759582	5.19384451	0.502325581
State	144	60.0	69.240418	5.19384451	0.416666667

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 60.0000 Z= -1.77911 Prob > |Z| = 0.0752

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 3.1652 DF= 1 Prob > CHISQ= 0.0752

Van der Waerden Scores (Normal) for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	430	11.0034599	0.0	10.2793582	0.025589442
State	144	-11.0034599	0.0	10.2793582	-.076412916

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -11.0035 Z= -1.07044 Prob > |Z| = 0.2844

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 1.1458 DF= 1 Prob > CHISQ= 0.2844

SAS NPAR1WAY PROCEDURE FOR ALKALINITY

Savage Scores (Exponential) for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	430	9.92693676	0.0	10.3310043	0.023085899
State	144	-9.92693676	0.0	10.3310043	-.068937061

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= -9.92694 Z= -.960888 Prob > |Z| = 0.3366

Savage 1-Way (Chi-Square Approximation)
CHISQ= 0.92331 DF= 1 Prob > CHISQ= 0.3366

Kolmogorov-Smirnov Test for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	430	0.6	-0.61145701
State	144	0.7	1.05662021
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	574	0.6	

Maximum Deviation occurred at Observation 268
Value of ALKALIN at maximum 270.000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.050955 D = 0.117539
KSa = 1.22079 Prob > KSa = 0.1015

Cramer-von Mises Test for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	430	0.090251590
State	144	0.269501275

Cramer-von Mises Statistic (Asymptotic)
CM = 0.000627 CMa = 0.359753

Kuiper Test for Variable ALKALIN, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	430	0.069767442
State	144	0.117538760

Kuiper 2-Sample Test (Asymptotic)
K = 0.187306 Ka = 1.94541 Prob > Ka = 0.0146

Summary Statistics for Southeast Utah Group Total Hardness Data by Agency (mg/l) 1983-1993											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
BLM	State	1	125.8	.	125.8	125.8	125.8	125.8	125.8	125.8	125.8
BS2	Park	7	139.7	96.6	68.4	85.5	88.9	222.3	324.9	68.4	324.9
BS2	State	5	168.2	50.0	90.6	154.9	176.2	197.1	222.1	90.6	222.1
BS3	Park	3	209.6	108.8	88.9	88.9	240.0	300.0	300.0	88.9	300.0
BS4	Park	10	273.9	93.7	130.5	256.6	290.7	324.9	367.7	41.0	376.2
BS4	State	4	160.4	83.8	50.7	105.9	168.4	215.0	254.3	50.7	254.3
BS6	Park	11	230.8	56.4	222.3	222.3	239.4	260.0	280.0	82.1	307.8
BS6	State	4	173.4	63.2	82.2	131.0	197.6	215.9	216.3	82.2	216.3
BWC1	Park	8	968.4	383.2	77.0	934.5	1094.3	1148.0	1316.7	77.0	1316.7
BWC1	State	1	1149.9	.	1149.9	1149.9	1149.9	1149.9	1149.9	1149.9	1149.9
CW1	Park	14	354.6	103.6	210.0	300.0	331.0	420.0	478.5	205.0	581.4
CW1	State	6	349.2	46.2	267.4	324.4	364.7	386.6	387.5	267.4	387.5
DC8	Park	9	470.5	144.2	340.0	393.3	420.0	500.0	820.0	340.0	820.0
DC8	State	4	398.8	60.2	326.1	352.3	401.7	445.4	465.9	326.1	465.9
FS1	Park	7	211.7	17.2	188.1	200.0	205.2	222.3	240.0	188.1	240.0
FS1	State	1	178.1	.	178.1	178.1	178.1	178.1	178.1	178.1	178.1
FW1	Park	13	205.9	54.0	136.8	160.0	220.0	239.4	272.0	133.0	307.8
FW1	State	6	156.7	48.4	90.1	117.4	159.5	190.0	223.9	90.1	223.9
HC1	Park	8	543.0	64.1	440.0	496.5	554.1	581.4	640.0	440.0	640.0
HC1	State	4	477.7	23.5	444.1	461.5	485.6	493.9	495.5	444.1	495.5
HSB1	Park	12	166.5	22.0	153.9	153.9	165.0	184.1	193.0	120.0	200.0
HSB1	State	1	130.0	.	130.0	130.0	130.0	130.0	130.0	130.0	130.0
HSC1	Park	8	304.2	43.0	239.4	270.0	322.5	324.9	359.4	239.4	359.4
HSC1	State	4	276.5	11.0	261.8	268.5	278.4	284.5	287.4	261.8	287.4
HSC2	Park	6	312.3	86.1	200.0	290.7	290.7	340.0	461.7	200.0	461.7
HSC2	State	1	483.4	.	483.4	483.4	483.4	483.4	483.4	483.4	483.4
IC15	Park	2	327.0	66.5	280.0	280.0	327.0	374.0	374.0	280.0	374.0
KB1	Park	9	189.5	52.7	100.0	171.0	171.0	239.4	256.5	100.0	256.5
KB1	State	5	233.3	113.0	90.8	177.4	234.6	267.5	396.1	90.8	396.1
LO2	Park	11	344.0	28.7	320.0	320.0	342.0	360.0	390.0	307.8	393.3
LO2	State	4	257.8	31.1	212.5	240.0	267.9	275.7	283.1	212.5	283.1
LSC1	Park	9	335.7	108.2	143.6	280.0	380.0	410.0	461.7	143.6	461.7
LSC1	State	4	325.2	36.5	274.8	298.5	336.1	352.0	354.0	274.8	354.0
LSC2	State	1	307.3	.	307.3	307.3	307.3	307.3	307.3	307.3	307.3
OB1	Park	10	239.6	57.0	172.6	220.0	230.9	256.5	324.9	140.0	359.1

Summary Statistics for Southeast Utah Group Total Hardness Data by Agency (mg/l) 1983-1993											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
OB1	State	3	174.5	80.0	126.5	126.5	130.1	266.9	266.9	126.5	266.9
SB1	Park	8	328.8	20.3	290.7	322.5	324.9	342.9	359.1	290.7	359.1
SB1	State	5	268.0	25.3	233.5	257.0	267.0	282.0	300.3	233.5	300.3
SB2	Park	6	347.7	103.0	273.6	273.6	316.4	359.1	547.2	273.6	547.2
SC21	Park	10	779.2	455.1	136.6	427.5	764.8	1214.1	1364.0	85.0	1368.0
SC21	State	4	1454.2	267.6	1099.8	1255.7	1499.4	1652.8	1718.2	1099.8	1718.2
SC8	Park	9	390.0	98.7	164.2	359.1	400.0	461.7	495.9	164.2	495.9
SC8	State	3	356.3	22.9	331.1	331.1	361.8	375.9	375.9	331.1	375.9
SCS1	Park	10	316.9	123.3	141.2	272.0	331.0	376.2	455.0	22.3	470.0
SCS1	State	1	451.7	.	451.7	451.7	451.7	451.7	451.7	451.7	451.7
SF1	Park	11	356.1	62.0	300.0	340.0	376.2	393.3	410.4	200.0	427.5
SF1	State	3	324.0	19.8	301.1	301.1	335.2	335.7	335.7	301.1	335.7
SF2	Park	10	409.9	23.8	376.7	400.0	409.2	427.5	436.1	360.0	444.6
SF2	State	4	382.5	102.6	252.4	302.0	398.0	463.1	481.8	252.4	481.8
SF3	Park	10	299.5	45.3	220.0	300.0	307.8	324.9	342.0	200.0	342.0
SF3	State	5	265.6	11.4	249.8	261.1	265.4	271.1	280.4	249.8	280.4
SF4	Park	9	329.0	43.7	240.0	307.8	324.9	359.1	376.2	240.0	376.2
SF4	State	6	252.4	17.5	221.4	249.7	253.9	261.4	273.9	221.4	273.9
SF5	Park	10	439.2	363.9	275.4	300.0	341.0	359.1	925.0	260.0	1470.0
SF5	State	4	263.0	30.7	240.6	241.0	252.6	285.0	306.2	240.6	306.2
SF6	Park	10	368.6	61.2	280.0	340.0	368.1	410.4	444.6	260.0	478.8
SF6	State	1	209.5	.	209.5	209.5	209.5	209.5	209.5	209.5	209.5
SF7	Park	7	438.3	62.5	359.1	393.3	420.0	513.0	530.1	359.1	530.1
SF7	State	1	414.2	.	414.2	414.2	414.2	414.2	414.2	414.2	414.2
SH1	Park	10	144.9	30.8	119.7	120.0	136.8	153.9	198.5	119.7	210.0
SH1	State	6	131.5	21.4	96.8	119.2	134.4	148.3	156.2	96.8	156.2
SM1	Park	8	534.6	174.9	180.0	470.0	555.8	657.1	731.0	180.0	731.0
SM1	State	3	152.9	66.9	110.0	110.0	118.8	230.0	230.0	110.0	230.0
SQ1A	Park	8	267.2	89.8	116.3	215.6	282.2	307.8	410.4	116.3	410.4
SQ1A	State	1	572.0	.	572.0	572.0	572.0	572.0	572.0	572.0	572.0
SQ2	Park	11	225.7	92.0	136.8	153.9	205.2	300.0	359.1	130.0	390.0
SQ2	State	3	218.3	181.5	65.1	65.1	171.2	418.7	418.7	65.1	418.7
SQ3	Park	11	210.3	63.9	171.0	171.1	188.1	205.2	280.0	153.9	376.2
SQ3	State	4	163.7	17.5	145.5	150.1	162.1	177.4	185.3	145.5	185.3
SVW1	Park	2	2471.0	471.6	2137.5	2137.5	2471.0	2804.4	2804.4	2137.5	2804.4

Summary Statistics for Southeast Utah Group Total Hardness Data by Agency (mg/l) 1983-1993											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SVW1	State	2	2239.4	6.2	2235.0	2235.0	2239.4	2243.7	2243.7	2235.0	2243.7
SW3	Park	15	395.8	104.3	256.5	324.9	380.0	461.7	568.0	237.0	596.0
SW3	State	4	309.4	93.2	227.3	239.0	288.0	379.9	434.4	227.3	434.4
SW5	Park	9	365.4	85.3	272.0	290.7	359.1	420.0	510.0	272.0	510.0
SW5	State	3	315.7	69.7	236.5	236.5	343.3	367.4	367.4	236.5	367.4
TC1	Park	8	236.4	53.5	130.0	210.0	248.0	272.8	300.0	130.0	300.0
TC1	State	3	282.8	88.1	208.8	208.8	259.3	380.2	380.2	208.8	380.2
TC2	Park	13	196.8	99.6	102.6	119.7	180.0	256.5	370.0	100.0	400.0
TC2	State	4	128.9	69.9	93.3	93.5	94.3	164.3	233.7	93.3	233.7
TC3	Park	2	1263.7	486.1	920.0	920.0	1263.7	1607.4	1607.4	920.0	1607.4
TKC1	Park	6	450.3	147.8	290.7	324.9	444.6	530.1	666.9	290.7	666.9
TKC1	State	3	181.0	82.2	87.0	87.0	216.8	239.3	239.3	87.0	239.3
WA1	Park	10	185.3	13.7	165.5	180.0	188.1	188.1	204.6	160.0	205.2
WA1	State	4	160.3	7.1	150.5	155.5	161.8	165.1	167.1	150.5	167.1
WA2	Park	10	163.9	13.1	147.0	153.9	165.5	171.0	179.0	140.0	187.0
WA2	State	4	138.5	5.0	131.7	135.0	139.6	142.1	143.3	131.7	143.3
WC1	Park	5	242.9	55.4	200.0	222.3	222.3	230.0	340.0	200.0	340.0
WR1	Park	12	608.2	170.2	480.0	533.5	562.7	707.7	786.6	270.0	940.5
WS1	Park	13	262.6	65.4	180.0	220.0	260.0	290.7	359.1	171.0	380.0
WS1	State	4	213.6	70.0	111.9	168.8	237.2	258.5	268.1	111.9	268.1

SAS NPAR1WAY PROCEDURE FOR HARDNESS

Analysis of Variance for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			106388.905	78118.7027
Park	420	348.633333		
State	144	317.135417	F Value	Prob > F
			1.362	0.2437

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	420	125162.500	118650.0	1687.33053	298.005952
State	144	34167.500	40680.0	1687.33053	237.274306

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 34167.5 Z= -3.85935 Prob > |Z| = 0.0001

T-Test approx. Significance = 0.0001

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 14.897 DF= 1 Prob > CHISQ= 0.0001

Median Scores (Number of Points above Median) for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	420	236.0	210.0	5.18228983	0.561904762
State	144	46.0	72.0	5.18228983	0.319444444

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 46.0000 Z= -5.01709 Prob > |Z| = 0.0001

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 25.171 DF= 1 Prob > CHISQ= 0.0001

Van der Waerden Scores (Normal) for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	420	36.8130400	0.0	10.2631977	0.087650095
State	144	-36.8130400	0.0	10.2631977	-.255646111

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -36.8130 Z= -3.58690 Prob > |Z| = 0.0003

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 12.866 DF= 1 Prob > CHISQ= 0.0003

SAS NPAR1WAY PROCEDURE FOR HARDNESS

Savage Scores (Exponential) for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	420	25.1053593	0.0	10.3003004	0.059774665
State	144	-25.1053593	0.0	10.3003004	-.174342773

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= -25.1054 Z= -2.43734 Prob > |Z| = 0.0148

Savage 1-Way (Chi-Square Approximation)
CHISQ= 5.9406 DF= 1 Prob > CHISQ= 0.0148

Kolmogorov-Smirnov Test for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	420	0.4	-1.26867009
State	144	0.7	2.16666667
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	564	0.5	

Maximum Deviation occurred at Observation 459
Value of HARDNESS at maximum 287.400000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.105723 D = 0.242460
KSa = 2.51077 Prob > KSa = 0.0001

Cramer-von Mises Test for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	420	0.37592540
State	144	1.09644908

Cramer-von Mises Statistic (Asymptotic)
CM = 0.002611 CMa = 1.47237

Kuiper Test for Variable HARDNESS, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	420	0.025198413
State	144	0.242460317

Kuiper 2-Sample Test (Asymptotic)
K = 0.267659 Ka = 2.77171 Prob > Ka = 0.0001

Summary Statistics for Southeast Utah Group Total Chloride Data by Agency (mg/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
BLM	State	1	9.0	.	9.0	9.0	9.0	9.0	9.0	9.0	9.0
BS2	Park	7	83.3	56.2	30.3	30.3	90.9	121.2	181.8	30.3	181.8
BS2	State	4	15.5	8.8	3.4	10.0	17.2	21.1	24.4	3.4	24.4
BS3	Park	1	303.0	.	303.0	303.0	303.0	303.0	303.0	303.0	303.0
BS4	Park	7	106.1	83.6	7.6	53.0	90.9	121.2	272.7	7.6	272.7
BS4	State	3	8.7	12.5	0.5	0.5	2.5	23.0	23.0	0.5	23.0
BS6	Park	7	121.2	108.1	15.2	53.0	60.6	272.7	272.7	15.2	272.7
BS6	State	4	10.3	7.2	0.5	5.2	11.9	15.5	17.0	0.5	17.0
BWC1	Park	4	89.0	20.9	68.2	72.0	87.1	106.1	113.6	68.2	113.6
BWC1	State	1	46.7	.	46.7	46.7	46.7	46.7	46.7	46.7	46.7
CW1	Park	9	186.9	171.7	0.5	75.8	151.5	242.4	515.1	0.5	515.1
CW1	State	6	27.3	22.1	6.9	19.5	20.6	25.9	70.5	6.9	70.5
DC8	Park	5	97.0	47.7	30.3	68.2	113.6	121.2	151.5	30.3	151.5
DC8	State	3	20.8	4.3	16.5	16.5	21.0	25.0	25.0	16.5	25.0
FS1	Park	6	74.6	43.1	0.5	53.0	83.3	106.1	121.2	0.5	121.2
FS1	State	1	14.1	.	14.1	14.1	14.1	14.1	14.1	14.1	14.1
FW1	Park	8	69.1	60.7	22.7	22.7	30.3	136.4	151.5	22.7	151.5
FW1	State	6	11.8	9.6	0.5	6.5	10.5	13.9	29.0	0.5	29.0
HC1	Park	5	97.1	62.8	0.5	75.8	106.1	151.5	151.5	0.5	151.5
HC1	State	4	20.7	0.6	20.1	20.3	20.7	21.2	21.4	20.1	21.4
HSB1	Park	6	58.1	31.3	37.9	45.5	45.5	53.0	121.2	37.9	121.2
HSB1	State	1	3.5	.	3.5	3.5	3.5	3.5	3.5	3.5	3.5
HSC1	Park	5	56.1	23.1	30.3	37.9	53.0	75.8	83.3	30.3	83.3
HSC1	State	4	11.4	1.3	9.4	10.7	12.0	12.1	12.1	9.4	12.1
HSC2	Park	5	122.9	150.0	0.5	37.9	75.8	121.2	379.0	0.5	379.0
HSC2	State	1	22.5	.	22.5	22.5	22.5	22.5	22.5	22.5	22.5
IC15	Park	1	106.1	.	106.1	106.1	106.1	106.1	106.1	106.1	106.1
KB1	Park	7	80.0	55.1	7.0	30.3	90.9	121.2	151.5	7.0	151.5
KB1	State	5	33.6	25.4	13.1	15.0	22.5	44.0	73.4	13.1	73.4
LO2	Park	7	87.7	39.8	45.5	53.0	68.2	121.2	143.9	45.5	143.9
LO2	State	3	9.7	1.0	9.0	9.0	9.2	10.8	10.8	9.0	10.8
LSC1	Park	5	193.9	97.2	90.9	121.2	181.8	242.4	333.3	90.9	333.3
LSC1	State	4	49.2	8.5	40.0	42.8	48.5	55.7	59.9	40.0	59.9
LSC2	State	1	44.5	.	44.5	44.5	44.5	44.5	44.5	44.5	44.5
OB1	Park	8	92.9	53.4	0.5	64.4	94.7	121.2	181.8	0.5	181.8

Summary Statistics for Southeast Utah Group Total Chloride Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
OB1	State	3	10.4	6.4	5.0	5.0	8.8	17.5	17.5	5.0	17.5
SB1	Park	7	141.8	71.2	45.5	68.2	151.5	212.1	242.4	45.5	242.4
SB1	State	5	15.9	3.4	10.3	16.0	16.7	17.0	19.5	10.3	19.5
SB2	Park	6	214.6	172.6	45.5	90.9	151.5	363.6	484.8	45.5	484.8
SC21	Park	7	895.8	1211.8	29.0	151.5	363.6	999.9	3514.8	29.0	3514.8
SC21	State	4	1041.2	273.7	712.4	849.9	1038.7	1232.5	1375.0	712.4	1375.0
SC8	Park	6	149.8	185.1	5.0	60.6	83.3	151.5	515.1	5.0	515.1
SC8	State	3	19.1	1.6	17.2	17.2	20.0	20.0	20.0	17.2	20.0
SCS1	Park	3	757.5	269.3	545.4	545.4	666.6	1060.5	1060.5	545.4	1060.5
SCS1	State	1	454.9	.	454.9	454.9	454.9	454.9	454.9	454.9	454.9
SF1	Park	6	70.7	35.1	37.9	45.5	64.4	75.8	136.4	37.9	136.4
SF1	State	3	13.7	0.4	13.5	13.5	13.5	14.2	14.2	13.5	14.2
SF2	Park	8	87.2	63.7	0.5	49.2	75.8	117.4	212.1	0.5	212.1
SF2	State	4	43.1	20.0	22.7	26.3	42.4	59.9	64.9	22.7	64.9
SF3	Park	7	71.4	30.9	30.3	45.5	68.2	98.5	121.2	30.3	121.2
SF3	State	5	14.3	3.3	9.4	13.2	15.0	15.5	18.5	9.4	18.5
SF4	Park	7	64.9	21.4	30.3	53.0	60.6	90.9	90.9	30.3	90.9
SF4	State	6	12.3	1.5	10.2	10.7	13.0	13.1	13.7	10.2	13.7
SF5	Park	6	111.1	98.5	45.5	45.5	75.8	121.2	303.0	45.5	303.0
SF5	State	4	14.9	0.8	14.0	14.3	14.8	15.4	15.8	14.0	15.8
SF6	Park	5	101.5	96.9	45.5	45.5	60.6	83.3	272.7	45.5	272.7
SF6	State	1	9.9	.	9.9	9.9	9.9	9.9	9.9	9.9	9.9
SF7	Park	5	121.3	34.3	98.5	106.1	106.3	113.6	181.8	98.5	181.8
SF7	State	1	31.7	.	31.7	31.7	31.7	31.7	31.7	31.7	31.7
SH1	Park	7	48.2	56.8	7.6	15.2	22.8	60.6	171.0	7.6	171.0
SH1	State	6	2.3	1.4	0.5	1.5	2.3	3.0	4.5	0.5	4.5
SM1	Park	5	217.9	91.5	83.3	188.1	212.1	303.0	303.0	83.3	303.0
SM1	State	3	5.5	3.2	3.3	3.3	4.0	9.2	9.2	3.3	9.2
SQ1A	Park	7	134.8	58.1	68.2	68.2	151.5	189.4	212.1	68.2	212.1
SQ2	Park	7	98.2	64.3	21.0	45.5	90.9	159.1	197.0	21.0	197.0
SQ2	State	3	10.6	7.4	2.0	2.0	14.8	15.0	15.0	2.0	15.0
SQ3	Park	8	64.4	49.9	22.7	30.3	34.1	106.1	151.5	22.7	151.5
SQ3	State	4	5.9	3.4	4.0	4.0	4.3	7.7	10.9	4.0	10.9
SVW1	Park	2	106.1	64.3	60.6	60.6	106.1	151.5	151.5	60.6	151.5
SVW1	State	2	18.1	1.3	17.2	17.2	18.1	19.0	19.0	17.2	19.0

Summary Statistics for Southeast Utah Group Total Chloride Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SW3	Park	8	1556.7	645.8	303.0	1212.0	1696.8	2015.0	2302.8	303.0	2302.8
SW3	State	4	995.6	176.1	799.9	847.4	1010.0	1143.8	1162.5	799.9	1162.5
SW5	Park	6	2277.6	898.1	1363.5	1696.8	1969.5	2878.5	3787.5	1363.5	3787.5
SW5	State	3	1176.6	333.2	799.9	799.9	1297.5	1432.5	1432.5	799.9	1432.5
TC1	Park	4	49.2	23.6	30.3	34.1	41.7	64.4	83.3	30.3	83.3
TC1	State	3	12.5	8.3	6.5	6.5	9.1	22.0	22.0	6.5	22.0
TC2	Park	7	53.0	34.4	22.7	30.3	37.9	68.2	121.2	22.7	121.2
TC2	State	4	5.0	3.0	3.0	3.1	3.8	6.9	9.3	3.0	9.3
TC3	Park	1	121.2	.	121.2	121.2	121.2	121.2	121.2	121.2	121.2
TKC1	Park	6	247.5	118.8	90.9	121.2	272.7	333.3	393.9	90.9	393.9
TKC1	State	3	53.0	50.1	10.0	10.0	41.0	108.0	108.0	10.0	108.0
WA1	Park	6	42.9	14.9	22.7	30.3	45.5	53.0	60.6	22.7	60.6
WA1	State	4	7.6	0.8	6.8	6.9	7.5	8.3	8.5	6.8	8.5
WA2	Park	7	32.5	19.4	15.2	22.7	22.7	60.6	60.6	15.2	60.6
WA2	State	4	1.6	0.8	0.5	1.0	1.8	2.2	2.4	0.5	2.4
WC1	Park	2	64.4	5.4	60.6	60.6	64.4	68.2	68.2	60.6	68.2
WR1	Park	5	2151.3	948.8	1545.3	1666.5	1696.8	2030.1	3817.8	1545.3	3817.8
WS1	Park	5	57.6	10.1	45.5	53.0	53.0	68.2	68.2	45.5	68.2
WS1	State	4	13.3	1.9	11.5	12.0	12.8	14.5	16.0	11.5	16.0

* Values of 0.5 represent values below detection and are ½ the detection limit of 1 mg/l

SAS NPAR1WAY PROCEDURE FOR CHLORIDE

Analysis of Variance for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			2277544.17	242715.759
Park	269	260.357138		
State	139	102.712230	F Value	Prob > F
			9.384	0.0023

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	269	68390.0	55010.5000	1128.55598	254.237918
State	139	15046.0	28425.5000	1128.55598	108.244604

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 15046.0 Z= -11.8550 Prob > |Z| = 0.0001

T-Test approx. Significance = 0.0001

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 140.55 DF= 1 Prob > CHISQ= 0.0001

Median Scores (Number of Points above Median) for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	269	184.0	133.181373	4.79220588	0.684014870
State	139	18.0	68.818627	4.79220588	0.129496403

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 18.0000 Z= -10.6044 Prob > |Z| = 0.0001

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 112.45 DF= 1 Prob > CHISQ= 0.0001

Van der Waerden Scores (Normal) for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	269	102.679960	0.0	9.45191385	0.381709888
State	139	-102.679960	0.0	9.45191385	-.738704747

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -102.680 Z= -10.8634 Prob > |Z| = 0.0001

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 118.01 DF= 1 Prob > CHISQ= 0.0001

SAS NPAR1WAY PROCEDURE FOR CHLORIDE

Savage Scores (Exponential) for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	269	74.7613644	0.0	9.50441663	0.277923288
State	139	-74.7613644	0.0	9.50441663	-.537851543

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= -74.7614 Z= -7.86596 Prob > |Z| = 0.0001

Savage 1-Way (Chi-Square Approximation)
CHISQ= 61.873 DF= 1 Prob > CHISQ= 0.0001

Kolmogorov-Smirnov Test for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	269	0.1	-4.01049208
State	139	0.8	5.57912900
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	408	0.3	

Maximum Deviation occurred at Observation 341
Value of CHLORIDE at maximum 22.7000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.340165 D = 0.717740
KSa = 6.87101 Prob > KSa = 0.0001

Cramer-von Mises Test for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	269	5.4163467
State	139	10.4819947

Cramer-von Mises Statistic (Asymptotic)
CM = 0.038967 CMa = 15.8983

Kuiper Test for Variable CHLORIDE, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	269	0.000000000
State	139	0.717739563

Kuiper 2-Sample Test (Asymptotic)
K = 0.717740 Ka = 6.87101 Prob > Ka = 0.0001

Summary Statistics for Southeast Utah Group Total Sulfate Data by Agency (mg/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
BLM	State	1	33.0	.	33.0	33.0	33.0	33.0	33.0	33.0	33.0
BS2	Park	8	12.6	13.7	2.5	2.5	8.0	19.5	38.0	2.5	38.0
BS2	State	5	27.4	20.5	5.0	7.6	32.7	40.0	51.8	5.0	51.8
BS3	Park	4	26.5	19.0	2.5	14.5	27.3	38.5	49.0	2.5	49.0
BS4	Park	11	40.9	14.1	30.0	30.0	46.0	50.0	51.0	6.0	55.0
BS4	State	4	26.0	18.6	9.7	12.0	21.7	40.0	51.0	9.7	51.0
BS6	Park	11	39.2	16.3	29.0	29.0	32.5	39.0	60.0	28.0	80.0
BS6	State	4	25.5	12.8	14.0	14.6	24.5	36.4	39.0	14.0	39.0
BWC1	Park	7	274.3	325.6	48.0	90.0	112.0	560.0	896.0	48.0	896.0
BWC1	State	1	1100.0	.	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0
CW1	Park	13	168.5	115.0	68.0	80.0	141.0	200.0	316.0	48.0	420.0
CW1	State	6	249.6	43.7	190.0	203.1	264.8	283.0	291.8	190.0	291.8
DC8	Park	9	26.1	12.5	7.0	22.0	24.0	37.0	41.0	7.0	41.0
DC8	State	4	21.9	12.0	8.9	14.1	20.3	29.6	38.0	8.9	38.0
FS1	Park	8	24.6	11.2	2.5	20.0	26.0	32.5	37.0	2.5	37.0
FS1	State	1	28.0	.	28.0	28.0	28.0	28.0	28.0	28.0	28.0
FW1	Park	12	16.6	10.9	2.5	8.5	15.0	29.0	30.0	2.5	31.5
FW1	State	6	19.7	10.8	8.7	9.0	19.8	23.0	38.0	8.7	38.0
HC1	Park	9	183.6	157.2	74.0	80.0	115.0	228.0	547.2	74.0	547.2
HC1	State	4	362.0	17.2	340.0	348.9	363.9	375.0	380.0	340.0	380.0
HSB1	Park	11	17.0	26.7	2.5	2.5	10.0	19.0	20.1	2.5	95.0
HSB1	State	1	10.4	.	10.4	10.4	10.4	10.4	10.4	10.4	10.4
HSC1	Park	9	59.8	68.4	24.0	31.0	34.0	46.0	239.4	24.0	239.4
HSC1	State	4	41.6	3.7	37.0	38.6	42.1	44.5	45.0	37.0	45.0
HSC2	Park	7	21.1	17.0	2.5	9.0	19.0	28.0	54.0	2.5	54.0
HSC2	State	1	21.0	.	21.0	21.0	21.0	21.0	21.0	21.0	21.0
IC15	Park	1	115.0	.	115.0	115.0	115.0	115.0	115.0	115.0	115.0
KB1	Park	10	33.6	13.2	12.0	26.0	37.5	45.0	47.0	9.0	48.0
KB1	State	5	84.7	49.5	21.6	59.4	73.2	130.0	139.4	21.6	139.4
LO2	Park	11	19.2	14.7	10.0	10.0	12.0	33.0	36.0	2.5	51.0
LO2	State	4	14.9	3.1	11.0	12.4	15.2	17.4	18.0	11.0	18.0
LSC1	Park	10	115.2	109.5	48.0	64.0	80.0	104.0	286.5	42.0	413.0
LSC1	State	4	97.8	16.7	76.1	87.3	99.3	108.4	116.7	76.1	116.7
LSC2	State	1	92.3	.	92.3	92.3	92.3	92.3	92.3	92.3	92.3
OB1	Park	11	38.2	14.0	18.0	30.0	40.0	48.0	52.0	10.0	57.0

Summary Statistics for Southeast Utah Group Total Sulfate Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
OB1	State	3	36.2	22.4	16.8	16.8	31.0	60.7	60.7	16.8	60.7
SB1	Park	9	36.8	14.9	18.0	28.5	30.0	45.0	63.0	18.0	63.0
SB1	State	5	66.2	15.0	50.0	56.6	63.2	72.9	88.4	50.0	88.4
SB2	Park	6	79.9	66.4	34.0	42.5	56.5	78.0	212.0	34.0	212.0
SC21	Park	10	164.4	183.2	19.3	41.8	110.0	176.0	446.0	2.5	640.0
SC21	State	4	1307.7	353.9	940.0	1072.0	1252.0	1543.5	1786.9	940.0	1786.9
SC8	Park	9	26.8	5.5	21.0	24.0	25.0	28.0	40.0	21.0	40.0
SC8	State	3	30.2	3.9	25.7	25.7	32.0	32.8	32.8	25.7	32.8
SCS1	Park	10	146.2	75.6	88.0	90.0	103.0	196.0	272.0	87.0	280.0
SCS1	State	1	330.0	.	330.0	330.0	330.0	330.0	330.0	330.0	330.0
SF1	Park	12	20.4	15.9	2.5	2.5	21.5	32.8	40.5	2.5	47.5
SF1	State	3	54.5	33.4	35.0	35.0	35.4	93.0	93.0	35.0	93.0
SF2	Park	11	81.0	49.5	46.0	53.0	58.0	96.0	160.0	45.5	192.0
SF2	State	4	77.7	18.4	55.0	65.5	78.0	90.0	100.0	55.0	100.0
SF3	Park	11	75.4	47.0	47.0	48.0	53.0	92.0	104.0	45.0	204.0
SF3	State	5	73.2	15.4	55.4	67.0	72.0	74.0	97.4	55.4	97.4
SF4	Park	9	74.4	26.6	41.5	62.0	65.0	90.0	128.0	41.5	128.0
SF4	State	6	65.2	5.2	60.0	60.8	64.2	70.0	71.9	60.0	71.9
SF5	Park	10	50.3	13.9	35.0	42.0	45.8	57.0	71.5	31.0	78.0
SF5	State	4	52.2	2.3	49.8	50.4	52.0	54.0	55.0	49.8	55.0
SF6	Park	11	51.8	18.1	36.0	38.0	46.0	57.0	72.0	35.0	96.0
SF6	State	1	100.0	.	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SF7	Park	8	164.1	173.9	56.0	75.5	105.0	156.0	584.0	56.0	584.0
SF7	State	1	92.0	.	92.0	92.0	92.0	92.0	92.0	92.0	92.0
SH1	Park	9	15.7	20.0	2.5	8.0	10.0	14.0	68.0	2.5	68.0
SH1	State	6	13.2	0.8	12.0	13.0	13.2	13.8	14.2	12.0	14.2
SM1	Park	7	93.4	73.9	28.0	46.5	80.0	108.0	248.0	28.0	248.0
SM1	State	3	15.7	8.2	9.5	9.5	12.7	25.0	25.0	9.5	25.0
SQ1A	Park	8	50.0	29.1	20.0	30.5	44.5	59.0	112.0	20.0	112.0
SQ1A	State	1	180.0	.	180.0	180.0	180.0	180.0	180.0	180.0	180.0
SQ2	Park	11	34.2	19.3	18.0	22.0	31.0	36.0	65.0	11.0	75.0
SQ2	State	3	51.2	51.6	13.4	13.4	30.1	110.0	110.0	13.4	110.0
SQ3	Park	12	24.2	21.6	10.0	11.9	18.0	27.0	36.0	10.0	88.0
SQ3	State	4	16.2	2.8	13.4	14.2	15.8	18.3	20.0	13.4	20.0
SVW1	Park	2	641.2	867.2	28.0	28.0	641.2	1254.4	1254.4	28.0	1254.4

Summary Statistics for Southeast Utah Group Total Sulfate Data by Agency (mg/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SVW1	State	2	2250.0	70.7	2200.0	2200.0	2250.0	2300.0	2300.0	2200.0	2300.0
SW3	Park	13	154.2	189.3	44.0	50.0	80.0	192.0	248.0	34.0	740.0
SW3	State	4	125.2	94.2	56.7	60.4	92.0	190.0	260.0	56.7	260.0
SW5	Park	9	189.4	109.3	70.0	92.0	186.0	220.0	414.0	70.0	414.0
SW5	State	3	226.1	41.7	187.0	187.0	221.2	270.0	270.0	187.0	270.0
TC1	Park	8	20.4	8.7	11.5	13.0	20.0	25.0	36.0	11.5	36.0
TC1	State	3	18.7	9.0	10.0	10.0	18.0	28.0	28.0	10.0	28.0
TC2	Park	12	25.5	30.3	2.5	2.5	11.8	44.0	66.0	2.5	92.0
TC2	State	4	12.9	7.7	6.8	6.9	11.0	19.0	22.9	6.8	22.9
TC3	Park	1	80.0	.	80.0	80.0	80.0	80.0	80.0	80.0	80.0
TKC1	Park	6	138.5	104.5	43.0	46.0	103.0	248.0	288.0	43.0	288.0
TKC1	State	3	66.1	34.2	30.9	30.9	68.0	99.3	99.3	30.9	99.3
WA1	Park	10	14.8	6.2	5.3	12.0	15.3	18.5	22.3	2.5	22.5
WA1	State	4	21.2	3.2	19.0	19.5	20.0	23.0	26.0	19.0	26.0
WA2	Park	10	13.3	9.0	2.5	8.0	11.5	20.0	27.3	2.5	28.0
WA2	State	4	12.4	0.5	12.0	12.0	12.3	12.8	13.0	12.0	13.0
WC1	Park	4	42.0	13.0	28.0	31.0	43.0	53.0	54.0	28.0	54.0
WR1	Park	12	157.6	103.5	90.0	90.0	102.5	270.0	312.0	28.0	316.0
WS1	Park	12	37.0	18.1	16.0	30.5	36.0	39.7	50.0	11.0	84.0
WS1	State	4	46.9	8.4	37.7	40.4	46.5	53.5	57.0	37.7	57.0

* Values of 2.5 represent values below detection and are ½ the detection limit of 5 mg/l

SAS NPAR1WAY PROCEDURE FOR SULFATE

Analysis of Variance for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			510128.665	40394.4940
Park	424	72.601698		
State	144	141.490694	F Value	Prob > F
			12.629	0.0004

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	424	119026.500	120628.0	1701.31896	280.722877
State	144	42569.500	40968.0	1701.31896	295.621528

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 42569.5 Z= 0.941035 Prob > |Z| = 0.3467

T-Test approx. Significance = 0.3471

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 0.88610 DF= 1 Prob > CHISQ= 0.3465

Median Scores (Number of Points above Median) for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	424	211.0	212.0	5.18850989	0.497641509
State	144	73.0	72.0	5.18850989	0.506944444

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 73.0000 Z= 0.192734 Prob > |Z| = 0.8472

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 0.03715 DF= 1 Prob > CHISQ= 0.8472

Van der Waerden Scores (Normal) for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	424	-17.6884366	0.0	10.2518385	-.041718011
State	144	17.6884366	0.0	10.2518385	0.122836365

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= 17.6884 Z= 1.72539 Prob > |Z| = 0.0845

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 2.9770 DF= 1 Prob > CHISQ= 0.0845

SAS NPAR1WAY PROCEDURE FOR SULFATE

Savage Scores (Exponential) for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	424	-24.2392897	0.0	10.3132289	-.057168136
State	144	24.2392897	0.0	10.3132289	0.168328400

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= 24.2393 Z= 2.35031 Prob > |Z| = 0.0188

Savage 1-Way (Chi-Square Approximation)
CHISQ= 5.5240 DF= 1 Prob > CHISQ= 0.0188

Kolmogorov-Smirnov Test for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	424	0.6	0.493850981
State	144	0.5	-.847417840
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	568	0.6	

Maximum Deviation occurred at Observation 293
Value of SULFATE at maximum 49.0000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.041154 D = 0.094602
KSa = 0.980819 Prob > KSa = 0.2912

Cramer-von Mises Test for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	424	0.068097279
State	144	0.200508656

Cramer-von Mises Statistic (Asymptotic)
CM = 0.000473 CMa = 0.268606

Kuiper Test for Variable SULFATE, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	424	0.094601677
State	144	0.069444444

Kuiper 2-Sample Test (Asymptotic)
K = 0.164046 Ka = 1.70081 Prob > Ka = 0.0649

Summary Statistics for Southeast Utah Group Total Copper Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
BLM	State	1	10	.	10	10	10	10	10	10	10
BS2	Park	6	50	0	50	50	50	50	50	50	50
BS2	State	4	10	0	10	10	10	10	10	10	10
BS3	Park	3	250	173	50	50	350	350	350	50	350
BS4	Park	9	80	62	50	50	50	50	220	50	220
BS4	State	4	10	0	10	10	10	10	10	10	10
BS6	Park	9	67	50	50	50	50	50	200	50	200
BS6	State	4	10	0	10	10	10	10	10	10	10
BWC1	Park	9	1698	928	50	1400	1700	2000	3500	50	3500
BWC1	State	1	10	.	10	10	10	10	10	10	10
CW1	Park	10	57	22	50	50	50	50	85	50	120
CW1	State	4	10	0	10	10	10	10	10	10	10
DC8	Park	8	135	121	50	50	50	255	320	50	320
DC8	State	4	10	0	10	10	10	10	10	10	10
FS1	Park	8	105	88	50	50	50	155	280	50	280
FS1	State	1	10	.	10	10	10	10	10	10	10
FW1	Park	10	95	112	50	50	50	50	275	50	400
FW1	State	4	10	0	10	10	10	10	10	10	10
HC1	Park	9	159	246	50	50	50	150	800	50	800
HC1	State	4	10	0	10	10	10	10	10	10	10
HSB1	Park	12	50	0	50	50	50	50	50	50	50
HSB1	State	1	10	.	10	10	10	10	10	10	10
HSC1	Park	9	187	364	50	50	50	50	1150	50	1150
HSC1	State	4	10	0	10	10	10	10	10	10	10
HSC2	Park	7	81	83	50	50	50	50	270	50	270
HSC2	State	1	10	.	10	10	10	10	10	10	10
IC15	Park	1	500	.	500	500	500	500	500	500	500
KB1	Park	9	50	0	50	50	50	50	50	50	50
KB1	State	2	10	0	10	10	10	10	10	10	10
LO2	Park	10	82	55	50	50	50	110	180	50	180
LO2	State	4	10	0	10	10	10	10	10	10	10
LSC1	Park	8	266	158	50	135	270	410	450	50	450
LSC1	State	3	10	0	10	10	10	10	10	10	10
OB1	Park	10	95	142	50	50	50	50	275	50	500
OB1	State	2	10	0	10	10	10	10	10	10	10

Summary Statistics for Southeast Utah Group Total Copper Data by Agency (ug/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
SB1	Park	6	50	0	50	50	50	50	50	50	50
SB1	State	2	10	0	10	10	10	10	10	10	10
SB2	Park	6	155	229	50	50	50	110	620	50	620
SC21	Park	10	160	237	50	50	50	50	600	50	700
SC21	State	4	10	0	10	10	10	10	10	10	10
SC8	Park	7	50	0	50	50	50	50	50	50	50
SC8	State	4	10	0	10	10	10	10	10	10	10
SCS1	Park	9	206	287	50	50	50	300	900	50	900
SCS1	State	1	10	.	10	10	10	10	10	10	10
SF1	Park	12	85	73	50	50	50	80	180	50	280
SF1	State	3	10	0	10	10	10	10	10	10	10
SF2	Park	11	90	106	50	50	50	50	140	50	400
SF2	State	4	10	0	10	10	10	10	10	10	10
SF3	Park	11	62	39	50	50	50	50	50	50	180
SF3	State	4	10	0	10	10	10	10	10	10	10
SF4	Park	9	94	133	50	50	50	50	450	50	450
SF4	State	4	10	0	10	10	10	10	10	10	10
SF5	Park	10	99	135	50	50	50	50	295	50	480
SF5	State	4	10	0	10	10	10	10	10	10	10
SF6	Park	11	113	134	50	50	50	130	130	50	500
SF6	State	1	10	.	10	10	10	10	10	10	10
SF7	Park	8	98	91	50	50	50	125	280	50	280
SF7	State	2	10	0	10	10	10	10	10	10	10
SH1	Park	8	50	0	50	50	50	50	50	50	50
SH1	State	4	10	0	10	10	10	10	10	10	10
SM1	Park	7	697	747	190	200	520	800	2300	190	2300
SM1	State	3	10	0	10	10	10	10	10	10	10
SQ1A	Park	7	76	45	50	50	50	120	160	50	160
SQ1A	State	1	10	.	10	10	10	10	10	10	10
SQ2	Park	10	67	54	50	50	50	50	135	50	220
SQ2	State	3	10	0	10	10	10	10	10	10	10
SQ3	Park	10	56	19	50	50	50	50	80	50	110
SQ3	State	4	10	0	10	10	10	10	10	10	10
SVW1	Park	2	1640	1188	800	800	1640	2480	2480	800	2480
SVW1	State	2	61	42	31	31	61	90	90	31	90

Summary Statistics for Southeast Utah Group Total Copper Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SW3	Park	11	116	181	50	50	50	50	180	50	650
SW3	State	4	10	0	10	10	10	10	10	10	10
SW5	Park	6	70	49	50	50	50	50	170	50	170
SW5	State	3	10	0	10	10	10	10	10	10	10
TC1	Park	7	60	26	50	50	50	50	120	50	120
TC1	State	3	10	0	10	10	10	10	10	10	10
TC2	Park	11	373	1070	50	50	50	50	50	50	3600
TC2	State	4	10	0	10	10	10	10	10	10	10
TC3	Park	1	2000	.	2000	2000	2000	2000	2000	2000	2000
TKC1	Park	5	172	188	50	50	110	150	500	50	500
TKC1	State	2	10	0	10	10	10	10	10	10	10
WA1	Park	11	83	79	50	50	50	50	160	50	300
WA1	State	4	10	0	10	10	10	10	10	10	10
WA2	Park	11	73	52	50	50	50	50	150	50	200
WA2	State	4	10	0	10	10	10	10	10	10	10
WC1	Park	3	83	58	50	50	50	150	150	50	150
WR1	Park	11	332	508	50	50	190	300	500	50	1800
WS1	Park	11	165	188	50	50	50	250	380	50	630
WS1	State	4	10	0	10	10	10	10	10	10	10

* Values of 10 for the state data and 50 for the park data represent values below detection and are ½ the detection limits of 20 μg/l for the state data and 100 μg/l for the park data

SAS NPAR1WAY PROCEDURE FOR COPPER

Analysis of Variance for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			2610751.14	127030.201
Park	389	176.426735		
State	126	10.801587	F Value	Prob > F
			20.552	0.0001

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	389	124580.0	100362.0	1306.02907	320.257069
State	126	8290.0	32508.0	1306.02907	65.793651

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 8290.00 Z= -18.5428 Prob > |Z| = 0.0001

T-Test approx. Significance = 0.0001

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 343.85 DF= 1 Prob > CHISQ= 0.0001

Median Scores (Number of Points above Median) for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	389	100.0	76.2893204	3.87732444	0.257069409
State	126	1.0	24.7106796	3.87732444	0.007936508

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 1.00000 Z= -6.11522 Prob > |Z| = 0.0001

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 37.396 DF= 1 Prob > CHISQ= 0.0001

Van der Waerden Scores (Normal) for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	389	159.008113	0.0	8.85694143	0.40876122
State	126	-159.008113	0.0	8.85694143	-1.26196915

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -159.008 Z= -17.9529 Prob > |Z| = 0.0001

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 322.31 DF= 1 Prob > CHISQ= 0.0001

SAS NPAR1WAY PROCEDURE FOR COPPER

Savage Scores (Exponential) for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	389	107.671619	0.0	9.29993837	0.276790795
State	126	-107.671619	0.0	9.29993837	-.854536661

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= -107.672 Z= -11.5777 Prob > |Z| = 0.0001

Savage 1-Way (Chi-Square Approximation)
CHISQ= 134.04 DF= 1 Prob > CHISQ= 0.0001

Kolmogorov-Smirnov Test for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	389	0.0	-4.78715605
State	126	1.0	8.41137727
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	515	0.2	

Maximum Deviation occurred at Observation 487
Value of COPPER_T at maximum 31.0000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.426474 D = 0.992063
KSa = 9.67823 Prob > KSa = 0.0001

Cramer-von Mises Test for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	389	6.3808677
State	126	19.6996629

Cramer-von Mises Statistic (Asymptotic)
CM = 0.050642 CMa = 26.0805

Kuiper Test for Variable COPPER_T, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	389	0.000000000
State	126	0.992063492

Kuiper 2-Sample Test (Asymptotic)
K = 0.992063 Ka = 9.67823 Prob > Ka = 0.0001

Summary Statistics for Southeast Utah Group Total Iron Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
BLM	State	1	10	.	10	10	10	10	10	10	10
BS2	Park	6	102	80	50	50	50	200	210	50	210
BS2	State	4	118	112	10	30	100	205	260	10	260
BS3	Park	3	50	0	50	50	50	50	50	50	50
BS4	Park	9	67	50	50	50	50	50	200	50	200
BS4	State	4	38	21	10	25	40	50	60	10	60
BS6	Park	9	50	0	50	50	50	50	50	50	50
BS6	State	4	450	568	10	10	295	890	1200	10	1200
BWC1	Park	8	265	492	50	50	50	200	1470	50	1470
BWC1	State	1	650	.	650	650	650	650	650	650	650
CW1	Park	11	75	58	50	50	50	50	140	50	230
CW1	State	4	135	171	30	40	60	230	390	30	390
DC8	Park	7	417	294	50	200	320	700	900	50	900
DC8	State	4	608	258	360	385	610	830	850	360	850
FS1	Park	7	50	0	50	50	50	50	50	50	50
FS1	State	1	10	.	10	10	10	10	10	10	10
FW1	Park	10	65	47	50	50	50	50	125	50	200
FW1	State	4	63	55	10	30	50	95	140	10	140
HC1	Park	9	91	62	50	50	50	170	180	50	180
HC1	State	4	43	22	10	30	50	55	60	10	60
HSB1	Park	12	63	43	50	50	50	50	50	50	200
HSB1	State	1	10	.	10	10	10	10	10	10	10
HSC1	Park	8	125	141	50	50	50	175	400	50	400
HSC1	State	4	58	36	30	35	45	80	110	30	110
HSC2	Park	6	820	1412	50	50	110	1000	3600	50	3600
HSC2	State	1	5200	.	5200	5200	5200	5200	5200	5200	5200
IC15	Park	1	1650	.	1650	1650	1650	1650	1650	1650	1650
KB1	Park	9	247	546	50	50	50	50	1700	50	1700
KB1	State	2	495	601	70	70	495	920	920	70	920
LO2	Park	9	199	308	50	50	50	160	1000	50	1000
LO2	State	4	400	216	220	260	335	540	710	220	710
LSC1	Park	8	163	318	50	50	50	50	950	50	950
LSC1	State	3	230	53	190	190	210	290	290	190	290
OB1	Park	10	195	425	50	50	50	50	775	50	1400
OB1	State	2	125	7	120	120	125	130	130	120	130

Summary Statistics for Southeast Utah Group Total Iron Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SB1	Park	8	58	21	50	50	50	50	110	50	110
SB1	State	2	80	0	80	80	80	80	80	80	80
SB2	Park	5	68	40	50	50	50	50	140	50	140
SC21	Park	9	486	786	50	50	150	500	2500	50	2500
SC21	State	4	93	56	10	60	115	125	130	10	130
SC8	Park	7	167	104	50	50	190	200	350	50	350
SC8	State	4	285	149	110	180	280	390	470	110	470
SCS1	Park	8	155	168	50	50	50	245	500	50	500
SCS1	State	1	50	.	50	50	50	50	50	50	50
SF1	Park	12	746	713	50	200	445	1485	1700	50	2000
SF1	State	3	83	55	20	20	110	120	120	20	120
SF2	Park	11	114	105	50	50	50	160	270	50	350
SF2	State	4	1095	1871	80	110	200	2080	3900	80	3900
SF3	Park	10	62	38	50	50	50	50	110	50	170
SF3	State	4	173	155	10	55	155	290	370	10	370
SF4	Park	9	63	40	50	50	50	50	170	50	170
SF4	State	4	63	105	10	10	10	115	220	10	220
SF5	Park	10	93	48	50	50	85	120	160	50	170
SF5	State	4	70	107	10	10	20	130	230	10	230
SF6	Park	11	147	94	50	50	120	220	270	50	300
SF6	State	1	10	.	10	10	10	10	10	10	10
SF7	Park	8	165	128	50	50	140	245	400	50	400
SF7	State	2	250	255	70	70	250	430	430	70	430
SH1	Park	9	50	0	50	50	50	50	50	50	50
SH1	State	4	48	35	10	20	45	75	90	10	90
SM1	Park	7	297	308	50	50	230	350	950	50	950
SM1	State	3	107	167	10	10	10	300	300	10	300
SQ1A	Park	7	81	55	50	50	50	140	180	50	180
SQ1A	State	1	440	.	440	440	440	440	440	440	440
SQ2	Park	9	132	181	50	50	50	110	600	50	600
SQ2	State	3	560	641	180	180	200	1300	1300	180	1300
SQ3	Park	10	50	0	50	50	50	50	50	50	50
SQ3	State	4	373	488	60	95	165	650	1100	60	1100
SVW1	Park	2	6685	9100	250	250	6685	13120	13120	250	13120
SVW1	State	2	5800	5940	1600	1600	5800	10000	10000	1600	10000

Summary Statistics for Southeast Utah Group Total Iron Data by Agency (ug/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
SW3	Park	12	158	229	50	50	50	160	380	50	800
SW3	State	4	298	183	60	170	315	425	500	60	500
SW5	Park	5	50	0	50	50	50	50	50	50	50
SW5	State	3	83	87	10	10	60	180	180	10	180
TC1	Park	7	71	57	50	50	50	50	200	50	200
TC1	State	3	33	40	10	10	10	80	80	10	80
TC2	Park	11	105	151	50	50	50	50	150	50	550
TC2	State	4	10	0	10	10	10	10	10	10	10
TC3	Park	1	50	.	50	50	50	50	50	50	50
TKC1	Park	6	523	650	50	50	170	1200	1500	50	1500
TKC1	State	2	95	92	30	30	95	160	160	30	160
WA1	Park	11	74	59	50	50	50	50	120	50	240
WA1	State	4	28	21	10	10	25	45	50	10	50
WA2	Park	11	98	96	50	50	50	150	180	50	350
WA2	State	4	18	15	10	10	10	25	40	10	40
WC1	Park	3	50	0	50	50	50	50	50	50	50
WR1	Park	11	100	112	50	50	50	50	300	50	350
WS1	Park	11	80	77	50	50	50	50	130	50	300
WS1	State	4	43	43	10	10	30	75	100	10	100

* Values of 10 for the state data and 50 for the park data represent values below detection and are ½ the detection limits of 20 μg/l for the state data and 100 μg/l for the park data

SAS NPAR1WAY PROCEDURE FOR IRON

Analysis of Variance for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			1531110.11	702030.273
Park	383	201.253264		
State	126	328.333333	F Value	Prob > F
			2.181	0.1403

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	383	97993.0	97665.0	1307.22059	255.856397
State	126	31802.0	32130.0	1307.22059	252.396825

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 31802.0 Z= -.250532 Prob > |Z| = 0.8022

T-Test approx. Significance = 0.8023

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 0.06296 DF= 1 Prob > CHISQ= 0.8019

Median Scores (Number of Points above Median) for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	383	113.0	138.451866	4.68258439	0.295039164
State	126	71.0	45.548134	4.68258439	0.563492063

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 71.0000 Z= 5.43543 Prob > |Z| = 0.0001

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 29.544 DF= 1 Prob > CHISQ= 0.0001

Van der Waerden Scores (Normal) for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	383	16.1597245	0.0	9.00872006	0.042192492
State	126	-16.1597245	0.0	9.00872006	-.128251782

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -16.1597 Z= -1.79379 Prob > |Z| = 0.0728

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 3.2177 DF= 1 Prob > CHISQ= 0.0728

SAS NPAR1WAY PROCEDURE FOR IRON

Savage Scores (Exponential) for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	383	-17.6756607	0.0	9.49405899	-.046150550
State	126	17.6756607	0.0	9.49405899	0.140283022

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= 17.6757 Z= 1.86176 Prob > |Z| = 0.0626

Savage 1-Way (Chi-Square Approximation)
CHISQ= 3.4662 DF= 1 Prob > CHISQ= 0.0626

Kolmogorov-Smirnov Test for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	383	0.0	-1.73019128
State	126	0.4	3.01653406
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	509	0.1	

Maximum Deviation occurred at Observation 389
Value of IRON_T at maximum 40.0000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.154138 D = 0.357143
KSa = 3.47750 Prob > KSa = 0.0001

Cramer-von Mises Test for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	383	1.19120832
State	126	3.62089512

Cramer-von Mises Statistic (Asymptotic)
CM = 0.009454 CMa = 4.81210

Kuiper Test for Variable IRON_T, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	383	0.268452899
State	126	0.357142857

Kuiper 2-Sample Test (Asymptotic)
K = 0.625596 Ka = 6.09143 Prob > Ka = 0.0001

Summary Statistics for Southeast Utah Group Total Manganese Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
BLM	State	1	3	.	3	3	3	3	3	3	3
BS2	Park	6	288	305	50	180	200	200	900	50	900
BS2	State	4	132	152	15	28	81	235	350	15	350
BS3	Park	2	1150	212	1000	1000	1150	1300	1300	1000	1300
BS4	Park	9	106	85	50	50	50	200	250	50	250
BS4	State	4	24	30	3	7	13	41	68	3	68
BS6	Park	9	106	68	50	50	50	150	200	50	200
BS6	State	4	67	92	6	6	32	129	200	6	200
BWC1	Park	8	833	1661	50	85	165	605	4900	50	4900
BWC1	State	1	680	.	680	680	680	680	680	680	680
CW1	Park	12	250	160	50	110	200	400	400	50	500
CW1	State	4	46	33	15	21	40	71	90	15	90
DC8	Park	6	375	393	50	50	275	600	1000	50	1000
DC8	State	4	224	196	14	57	240	390	400	14	400
FS1	Park	7	104	96	50	50	50	200	280	50	280
FS1	State	1	3	.	3	3	3	3	3	3	3
FW1	Park	9	144	145	50	50	50	300	400	50	400
FW1	State	4	93	145	12	14	25	172	310	12	310
HC1	Park	8	183	192	50	50	115	240	600	50	600
HC1	State	4	69	68	21	32	42	106	170	21	170
HSB1	Park	12	275	365	50	50	125	300	800	50	1200
HSB1	State	1	3	.	3	3	3	3	3	3	3
HSC1	Park	8	200	204	50	50	125	300	600	50	600
HSC1	State	4	166	82	72	101	165	230	260	72	260
HSC2	Park	6	175	151	50	50	125	300	400	50	400
HSC2	State	1	2800	.	2800	2800	2800	2800	2800	2800	2800
IC15	Park	1	50	.	50	50	50	50	50	50	50
KB1	Park	6	67	41	50	50	50	50	150	50	150
KB1	State	2	375	502	20	20	375	730	730	20	730
LO2	Park	9	83	66	50	50	50	50	200	50	200
LO2	State	4	48	32	18	27	40	69	93	18	93
LSC1	Park	8	234	317	50	50	160	200	1000	50	1000
LSC1	State	3	120	36	90	90	110	160	160	90	160
OB1	Park	10	240	263	50	50	200	200	625	50	950
OB1	State	2	23	11	15	15	23	30	30	15	30

Summary Statistics for Southeast Utah Group Total Manganese Data by Agency (ug/l) 1983-1993*											
SITE	AGENCY	COUNT	MEAN	ST DEV	P10	P25	MEDIAN	P75	P90	MIN	MAX
SB1	Park	8	144	124	50	50	100	200	400	50	400
SB1	State	2	34	1	33	33	34	35	35	33	35
SB2	Park	6	135	95	50	50	125	210	250	50	250
SC21	Park	9	691	1040	50	50	150	590	2600	50	2600
SC21	State	4	56	54	3	21	47	92	130	3	130
SC8	Park	7	71	57	50	50	50	50	200	50	200
SC8	State	4	58	57	3	14	50	102	130	3	130
SCS1	Park	9	561	1002	50	50	50	400	3100	50	3100
SCS1	State	1	160	.	160	160	160	160	160	160	160
SF1	Park	11	369	342	50	150	200	600	650	50	1150
SF1	State	3	36	16	21	21	36	52	52	21	52
SF2	Park	10	183	177	50	50	125	250	440	50	600
SF2	State	4	150	125	18	74	130	225	320	18	320
SF3	Park	9	146	127	50	50	50	200	380	50	380
SF3	State	4	64	53	13	22	56	106	130	13	130
SF4	Park	9	124	106	50	50	50	200	350	50	350
SF4	State	4	30	34	6	8	17	52	80	6	80
SF5	Park	8	224	189	50	50	190	340	580	50	580
SF5	State	4	15	12	7	8	11	22	32	7	32
SF6	Park	10	252	212	50	50	200	480	575	50	600
SF6	State	1	3	.	3	3	3	3	3	3	3
SF7	Park	7	301	118	180	200	300	380	500	180	500
SF7	State	2	148	201	6	6	148	290	290	6	290
SH1	Park	6	168	144	50	50	115	300	380	50	380
SH1	State	4	166	141	17	56	153	275	340	17	340
SM1	Park	7	319	216	200	200	230	300	800	200	800
SM1	State	3	32	42	8	8	8	81	81	8	81
SQ1A	Park	7	164	134	50	50	180	200	420	50	420
SQ1A	State	1	520	.	520	520	520	520	520	520	520
SQ2	Park	9	150	150	50	50	50	200	500	50	500
SQ2	State	3	143	163	38	38	60	330	330	38	330
SQ3	Park	10	206	104	50	200	200	250	350	50	400
SQ3	State	4	63	52	8	20	62	106	120	8	120
SVW1	Park	2	12600	6505	8000	8000	12600	17200	17200	8000	17200
SVW1	State	2	2515	2383	830	830	2515	4200	4200	830	4200

Summary Statistics for Southeast Utah Group Total Manganese Data by Agency (ug/l) 1983-1993*											
SITE	**AGENCY**	**COUNT**	**MEAN**	**ST DEV**	**P10**	**P25**	**MEDIAN**	**P75**	**P90**	**MIN**	**MAX**
SW3	Park	10	420	685	50	50	210	400	1450	50	2300
SW3	State	4	101	77	10	37	112	165	170	10	170
SW5	Park	5	110	89	50	50	50	150	250	50	250
SW5	State	3	73	80	3	3	55	160	160	3	160
TC1	Park	7	147	165	50	50	50	180	500	50	500
TC1	State	2	23	21	8	8	23	37	37	8	37
TC2	Park	11	159	184	50	50	50	200	400	50	600
TC2	State	4	10	11	3	3	5	17	26	3	26
TC3	Park	1	50	.	50	50	50	50	50	50	50
TKC1	Park	6	213	196	50	50	150	380	500	50	500
TKC1	State	2	13	4	10	10	13	15	15	10	15
WA1	Park	11	385	813	50	50	50	250	500	50	2800
WA1	State	4	5	4	3	3	3	7	11	3	11
WA2	Park	11	201	241	50	50	50	280	320	50	850
WA2	State	4	4	2	3	3	3	5	7	3	7
WC1	Park	3	1400	2338	50	50	50	4100	4100	50	4100
WR1	Park	11	771	1236	50	50	200	1000	2100	50	4000
WS1	Park	9	194	65	50	200	200	200	300	50	300
WS1	State	4	221	239	12	61	155	380	560	12	560

* Values of 3 for the state data and 50 for the park data represent values below detection and are ½ the detection limits of 5 μg/l for the state data and 100 μg/l for the park data

SAS NPAR1WAY PROCEDURE FOR MANGANESE

Analysis of Variance for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Mean	Among MS	Within MS
			3313299.91	965689.012
Park	365	339.589041		
State	125	150.952000	F Value	Prob > F
			3.431	0.0646

Average Scores were used for Ties

Wilcoxon Scores (Rank Sums) for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	365	100552.0	89607.5000	1338.25012	275.484932
State	125	19743.0	30687.5000	1338.25012	157.944000

Average Scores were used for Ties

Wilcoxon 2-Sample Test (Normal Approximation)
(with Continuity Correction of .5)

S= 19743.0 Z= -8.17784 Prob > |Z| = 0.0001

T-Test approx. Significance = 0.0001

Kruskal-Wallis Test (Chi-Square Approximation)
CHISQ= 66.883 DF= 1 Prob > CHISQ= 0.0001

Median Scores (Number of Points above Median) for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	365	200.0	182.500000	4.82966506	0.547945205
State	125	45.0	62.500000	4.82966506	0.360000000

Average Scores were used for Ties

Median 2-Sample Test (Normal Approximation)
S= 45.0000 Z= -3.62344 Prob > |Z| = 0.0003

Median 1-Way Analysis (Chi-Square Approximation)
CHISQ= 13.129 DF= 1 Prob > CHISQ= 0.0003

Van der Waerden Scores (Normal) for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	365	84.8861061	0.0	9.39715792	0.232564674
State	125	-84.8861061	0.0	9.39715792	-.679088849

Average Scores were used for Ties

Van der Waerden 2-Sample Test (Normal Approximation)
S= -84.8861 Z= -9.03317 Prob > |Z| = 0.0001

Van der Waerden 1-Way (Chi-Square Approximation)
CHISQ= 81.598 DF= 1 Prob > CHISQ= 0.0001

SAS NPAR1WAY PROCEDUR FOR MANGANESEE

Savage Scores (Exponential) for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Park	365	50.2573702	0.0	9.54695802	0.137691425
State	125	-50.2573702	0.0	9.54695802	-.402058962

Average Scores were used for Ties

Savage 2-Sample Test (Normal Approximation)
S= -50.2574 Z= -5.26423 Prob > |Z| = 0.0001

Savage 1-Way (Chi-Square Approximation)
CHISQ= 27.712 DF= 1 Prob > CHISQ= 0.0001

Kolmogorov-Smirnov Test for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	EDF at maximum	Deviation from Mean at maximum
Park	365	0.0	-2.72928188
State	125	0.6	4.66379892
--------	----	----------	
	490	0.1	

Maximum Deviation occurred at Observation 405
Value of MANGANT at maximum 44.0000000

Kolmogorov-Smirnov 2-Sample Test (Asymptotic)
KS = 0.244114 D = 0.560000
KSa = 5.40370 Prob > KSa = 0.0001

Cramer-von Mises Test for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Summed Deviation from Mean
Park	365	0.84405082
State	125	2.46462841

Cramer-von Mises Statistic (Asymptotic)
CM = 0.006752 CMa = 3.30868

Kuiper Test for Variable MANGANT, Classified by Variable AGENCY

AGENCY	N	Deviation from Mean
Park	365	0.000000000
State	125	0.560000000

Kuiper 2-Sample Test (Asymptotic)
K = 0.560000 Ka = 5.40370 Prob > Ka = 0.0001

Appendix H

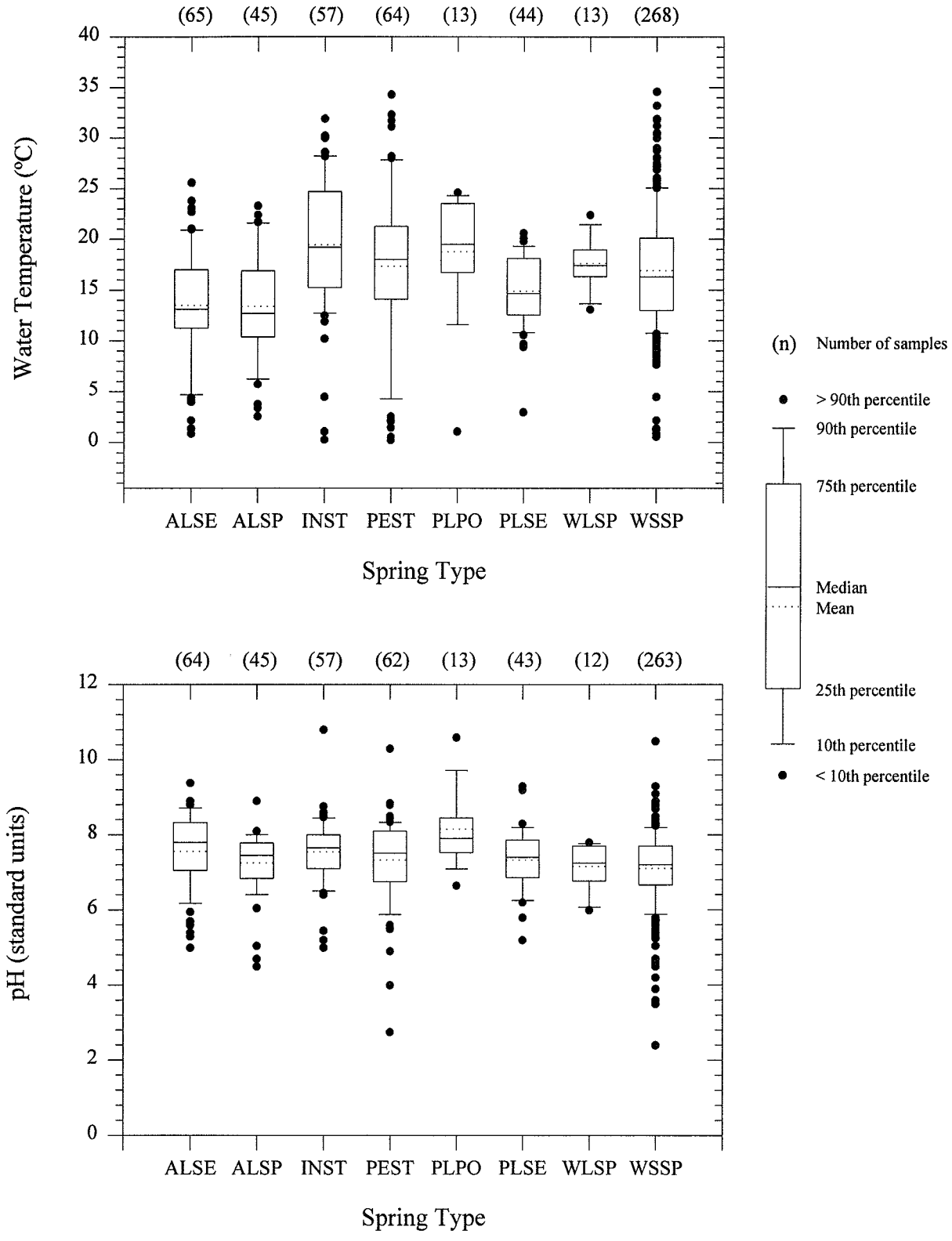
Box and Whisker Plots by Spring Type

The following abbreviations for spring types are used in this appendix:

ALSE = Alcove Seep
ALSP = Alcove Spring
INST = Intermittent Stream
PEST = Perennial Stream
PLPO = Plunge Pool
PLSE = Plunge Seep
WLSP = Wall Spring
WSSP = Wash Spring

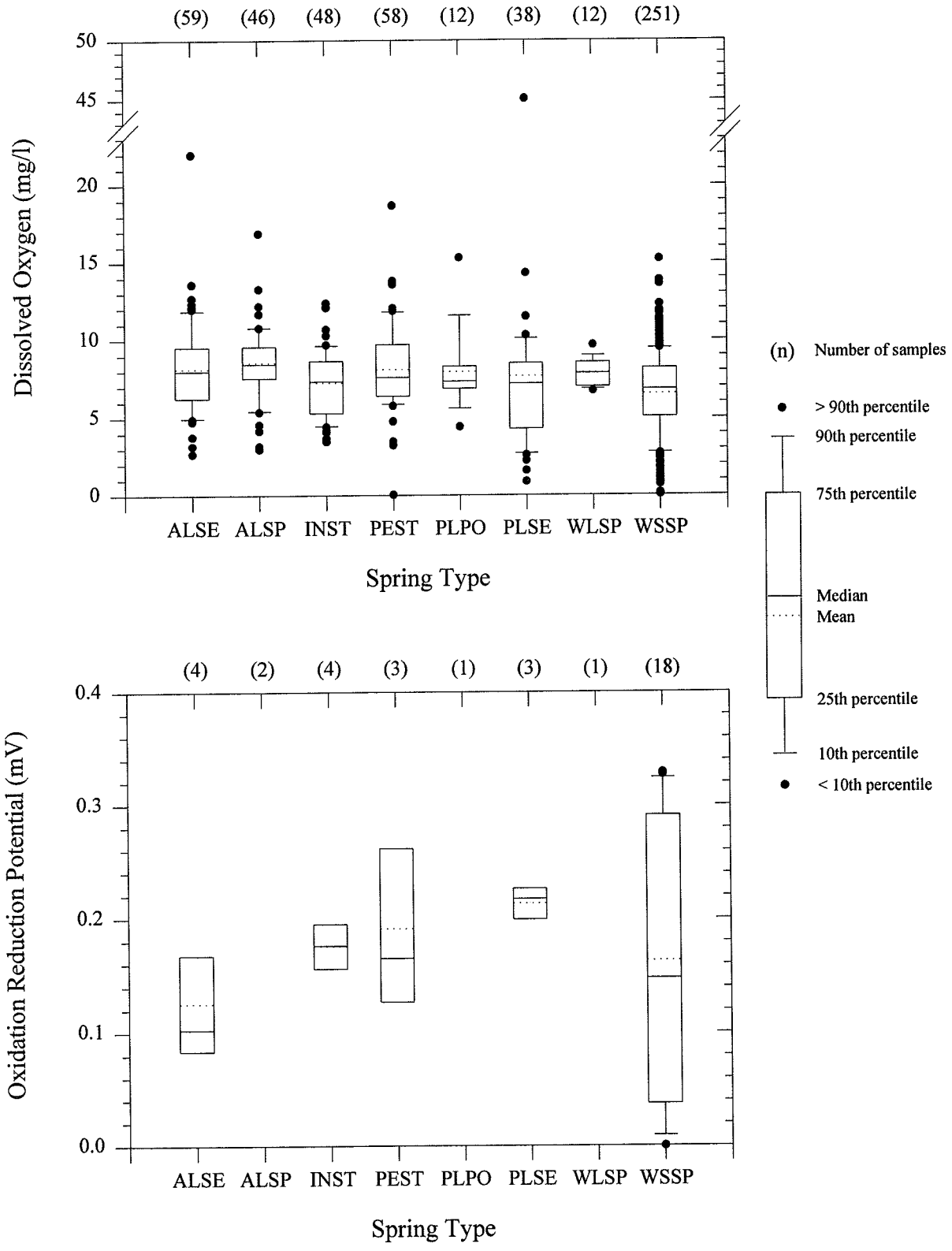
Water Quality by Spring Type

Southeast Utah Group



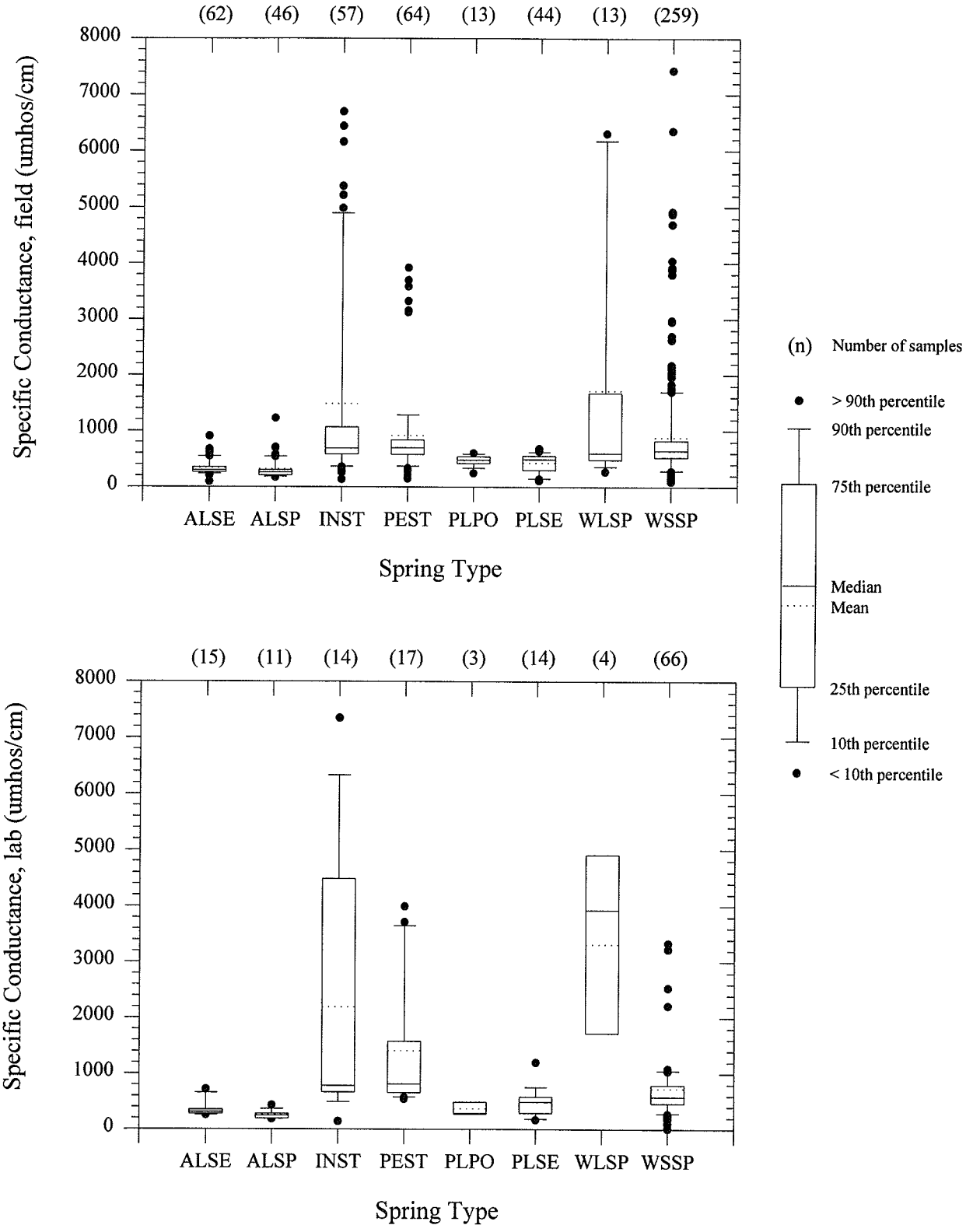
Water Quality by Spring Type

Southeast Utah Group



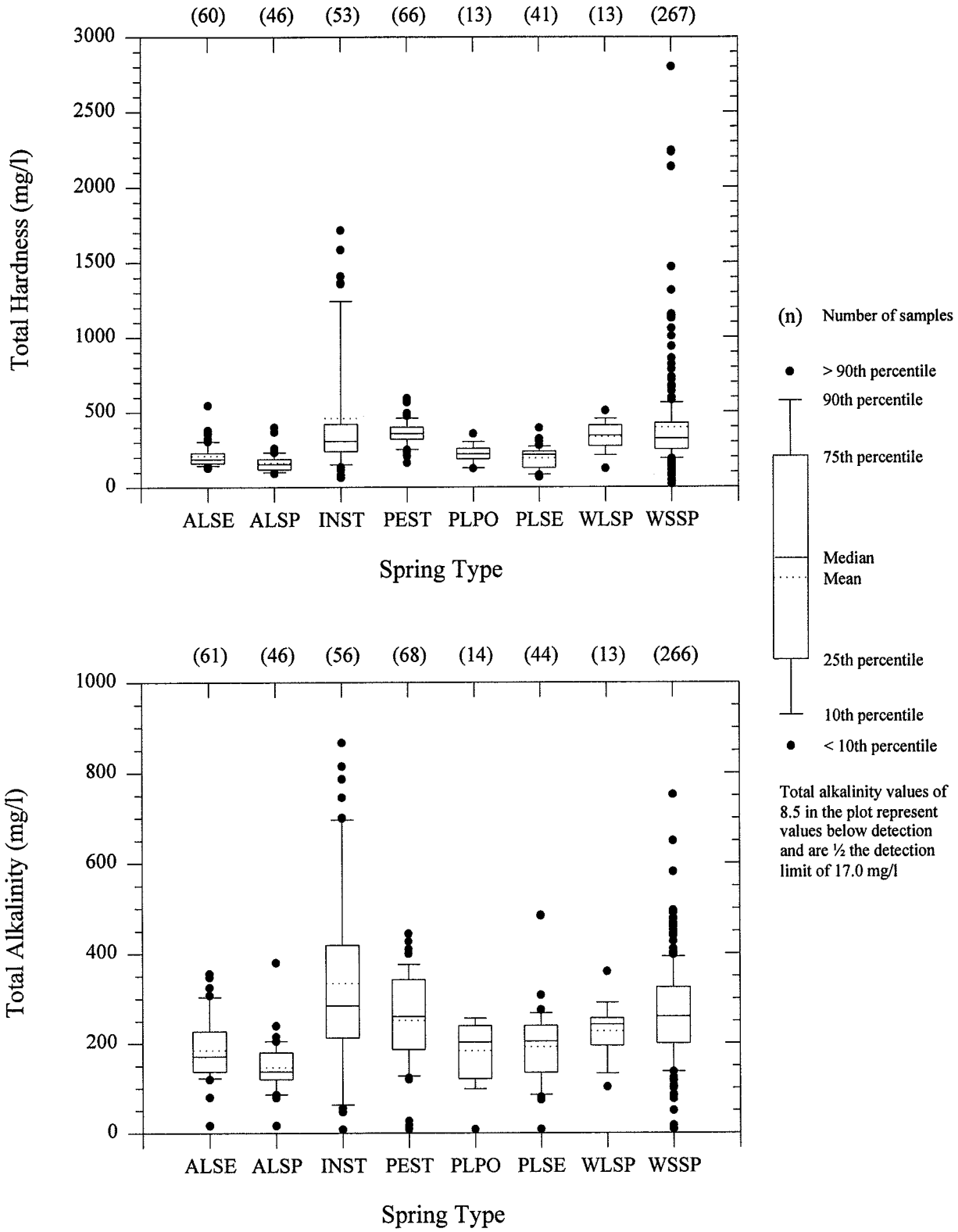
Water Quality by Spring Type

Southeast Utah Group



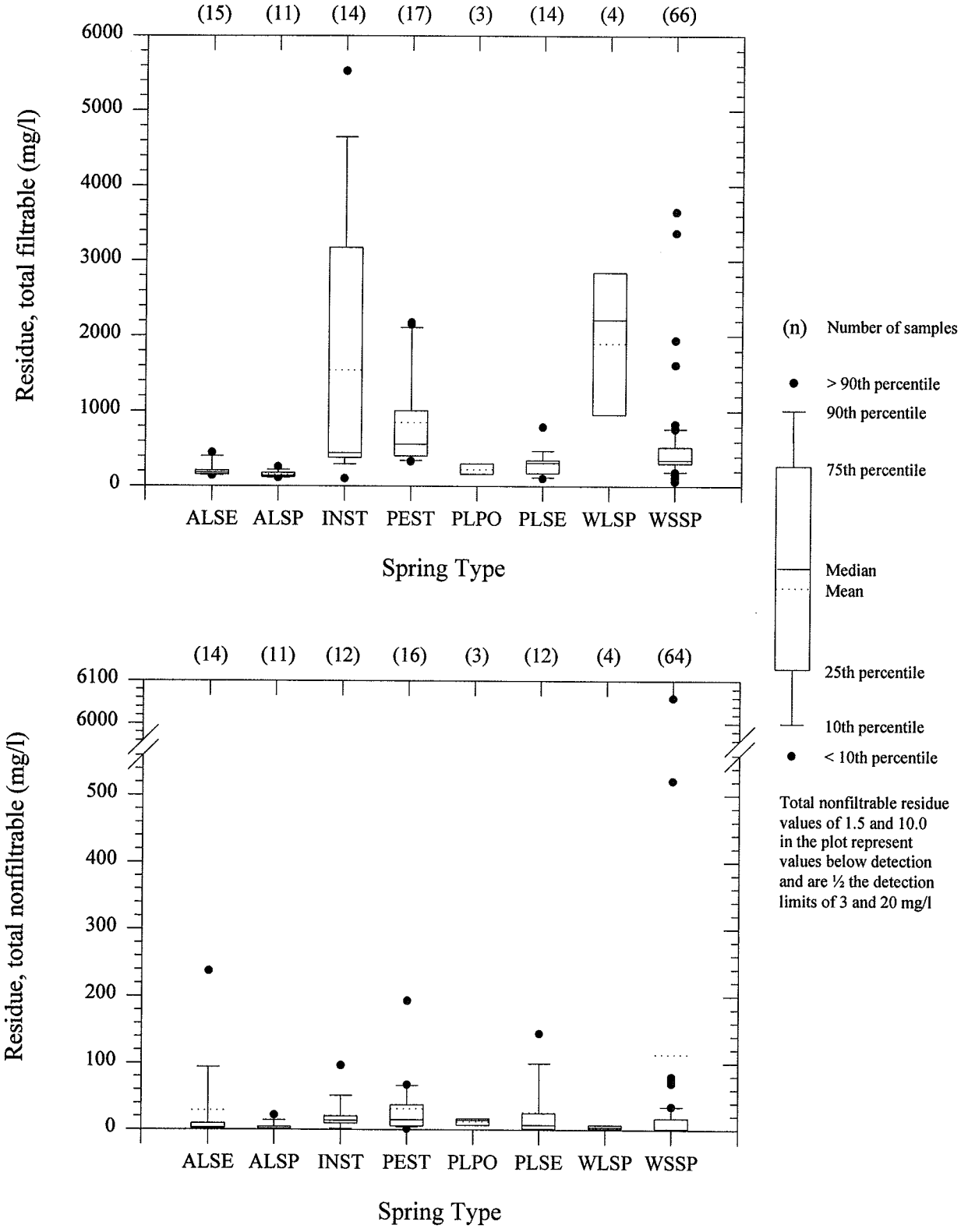
Water Quality by Spring Type

Southeast Utah Group



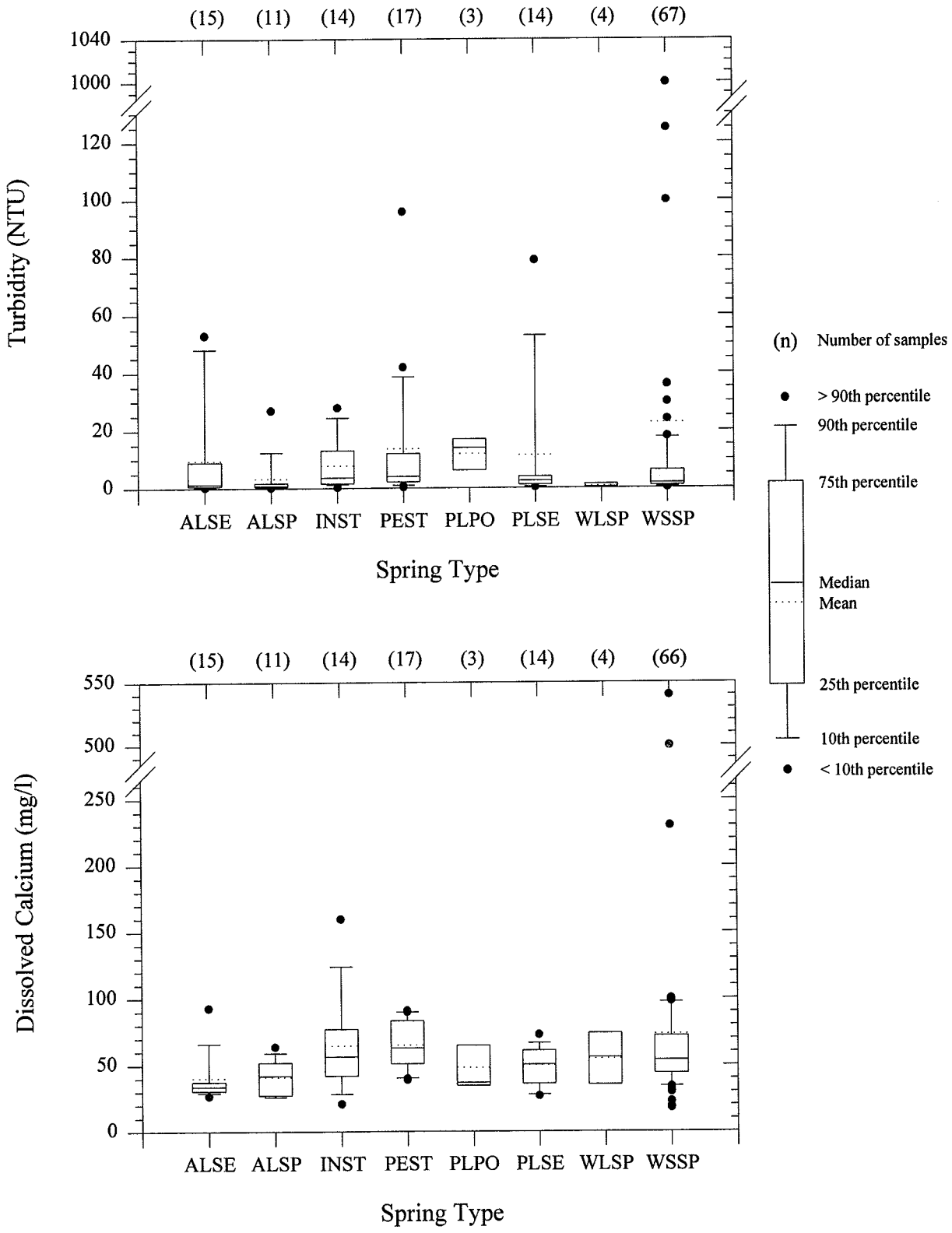
Water Quality by Spring Type

Southeast Utah Group



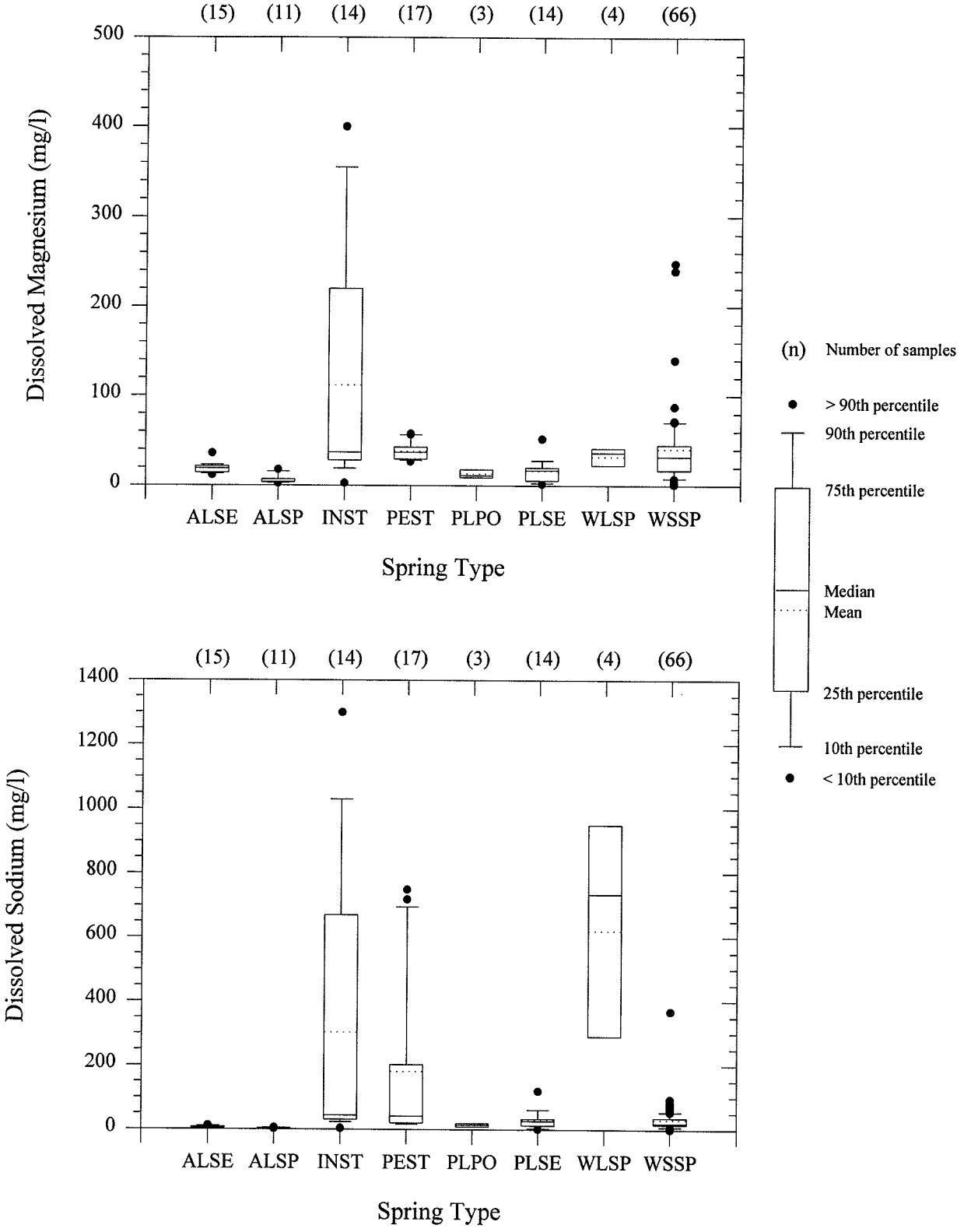
Water Quality by Spring Type

Southeast Utah Group



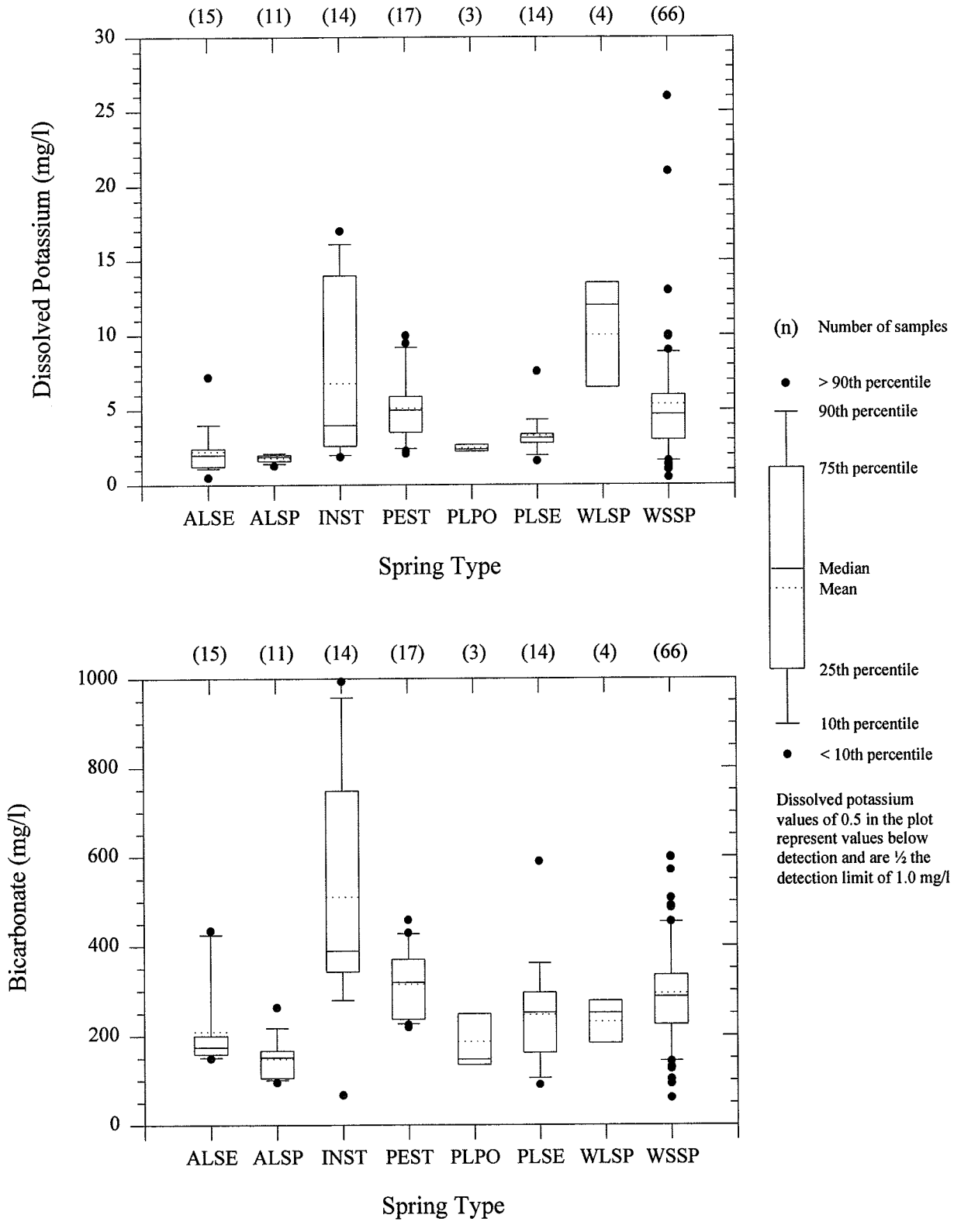
Water Quality by Spring Type

Southeast Utah Group



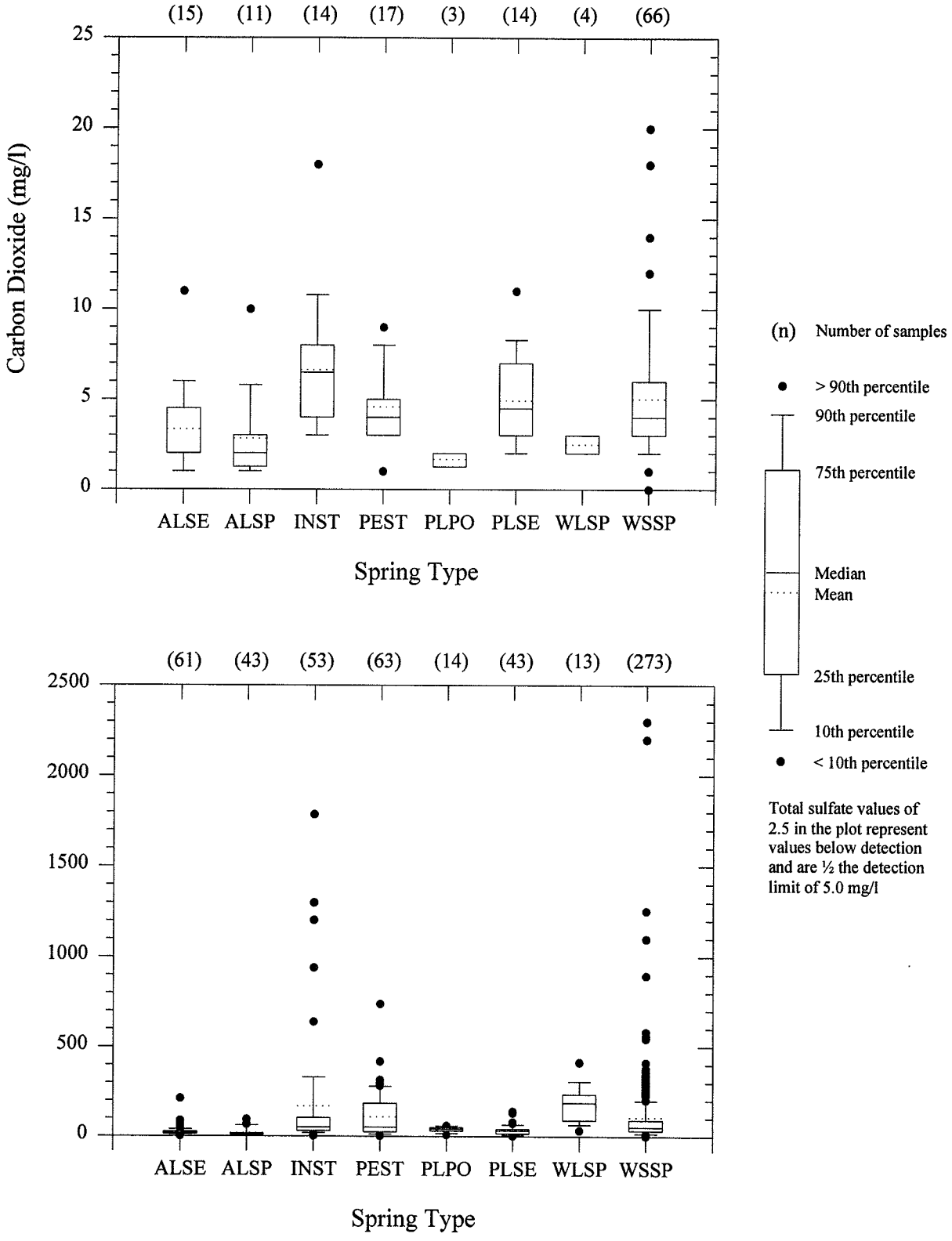
Water Quality by Spring Type

Southeast Utah Group



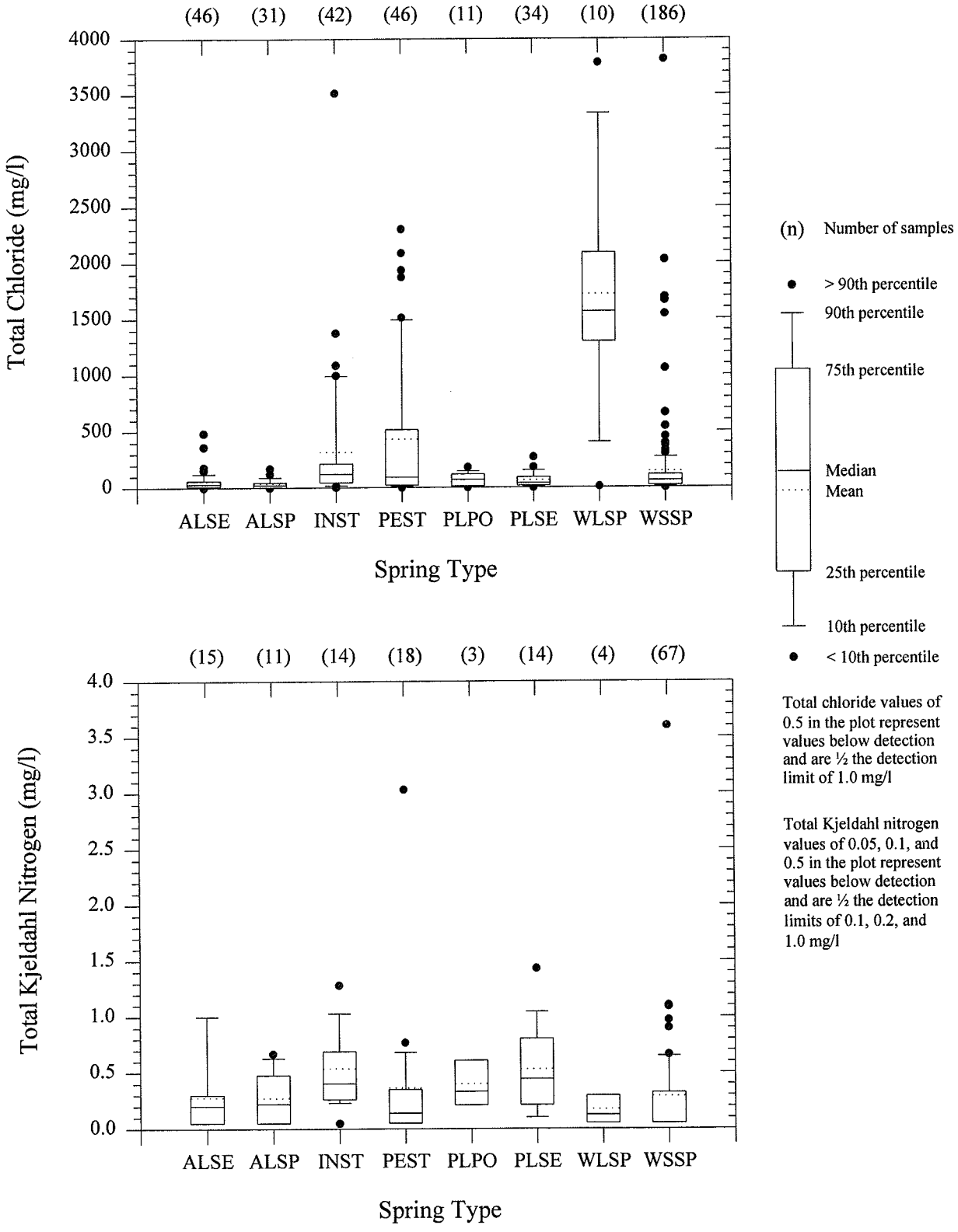
Water Quality by Spring Type

Southeast Utah Group



Water Quality by Spring Type

Southeast Utah Group

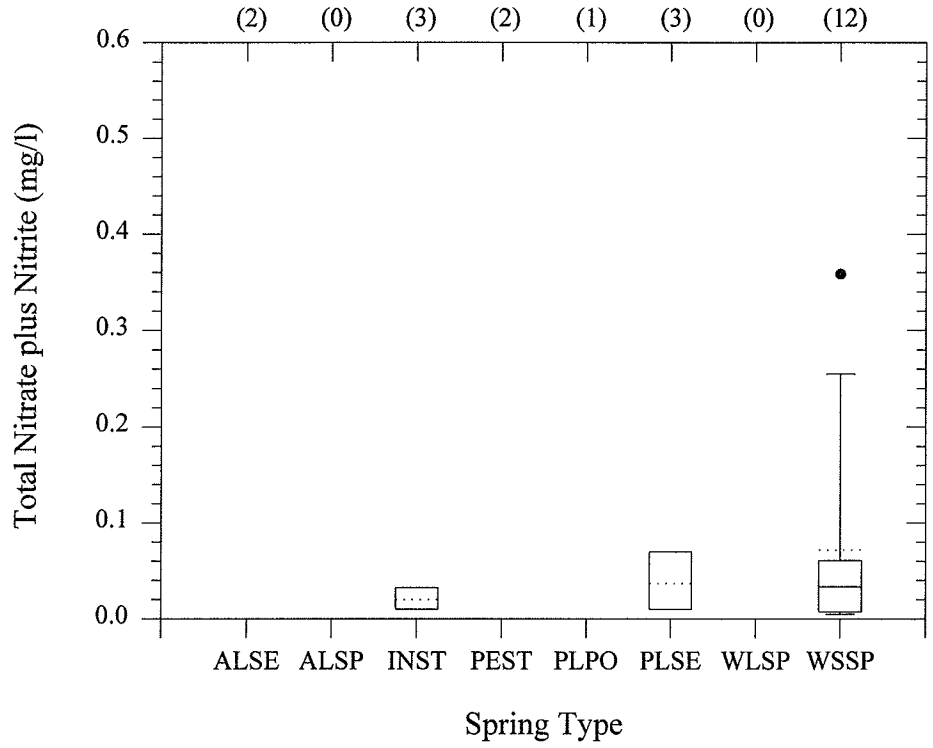


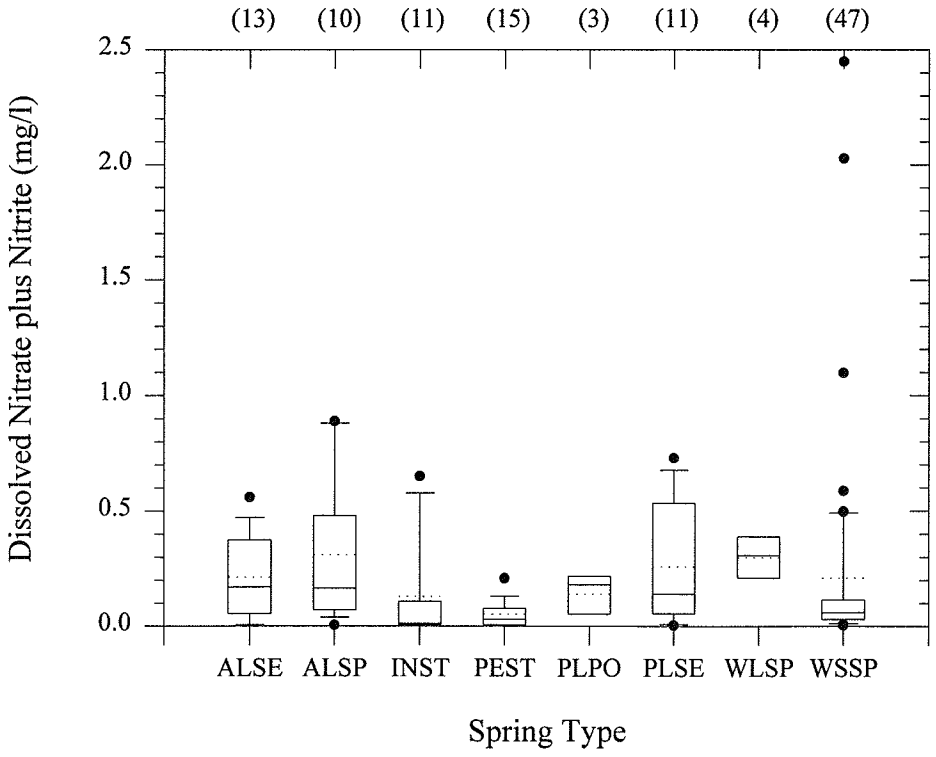
Total chloride values of 0.5 in the plot represent values below detection and are ½ the detection limit of 1.0 mg/l

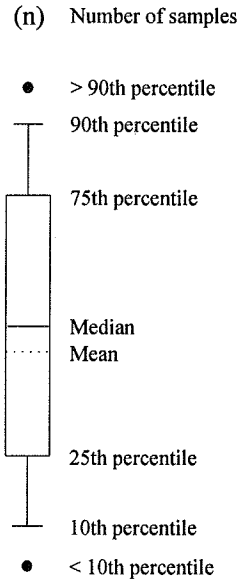
Total Kjeldahl nitrogen values of 0.05, 0.1, and 0.5 in the plot represent values below detection and are ½ the detection limits of 0.1, 0.2, and 1.0 mg/l

Water Quality by Spring Type

Southeast Utah Group





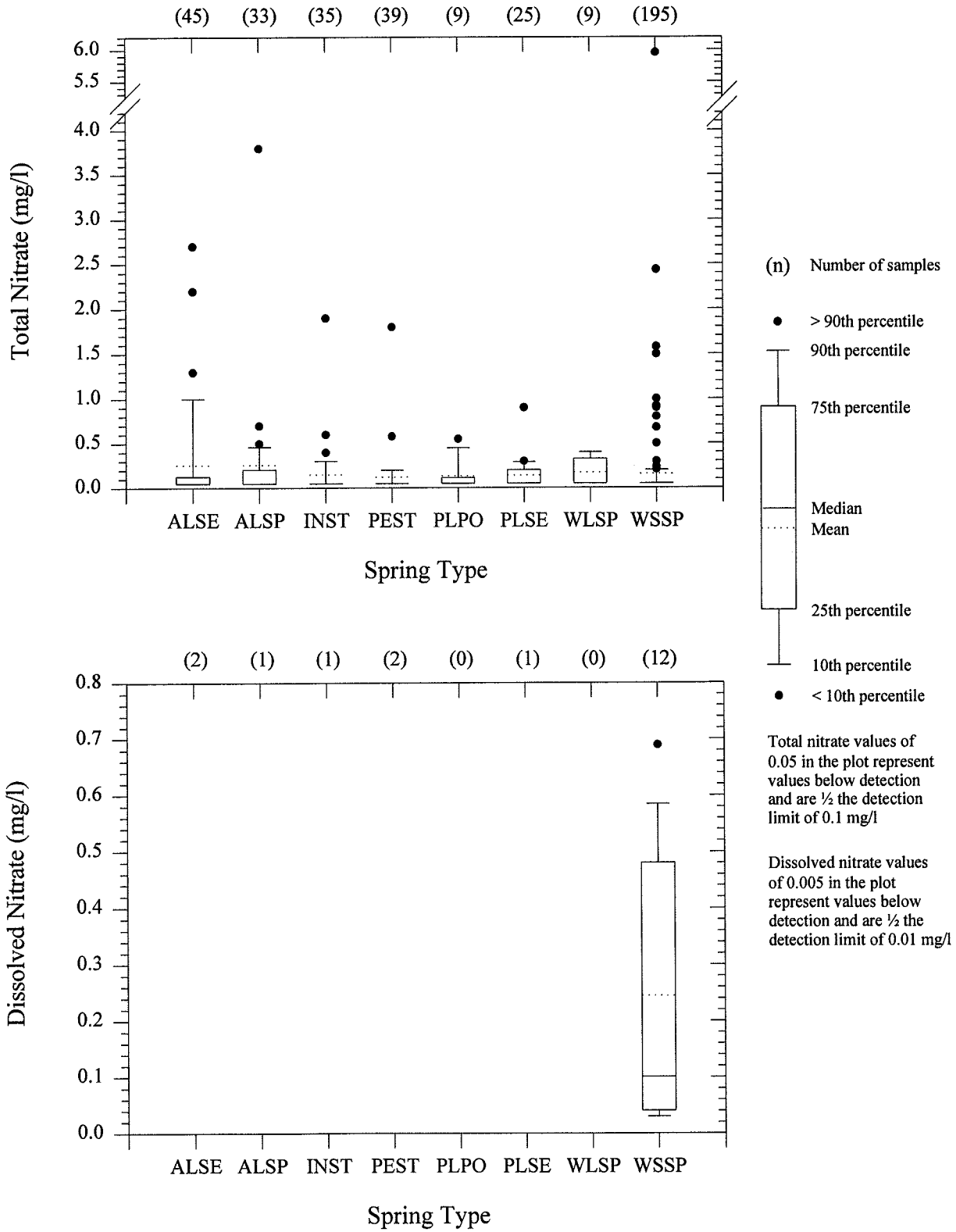


Total nitrate plus nitrite values of 0.005 and 0.01 in the plot represent values below detection and are ½ the detection limits of 0.01 and 0.02 mg/l

Dissolved nitrate plus nitrite values of 0.005 and 0.01 in the plot represent values below detection and are ½ the detection limits of 0.01 and 0.02 mg/l

Water Quality by Spring Type

Southeast Utah Group

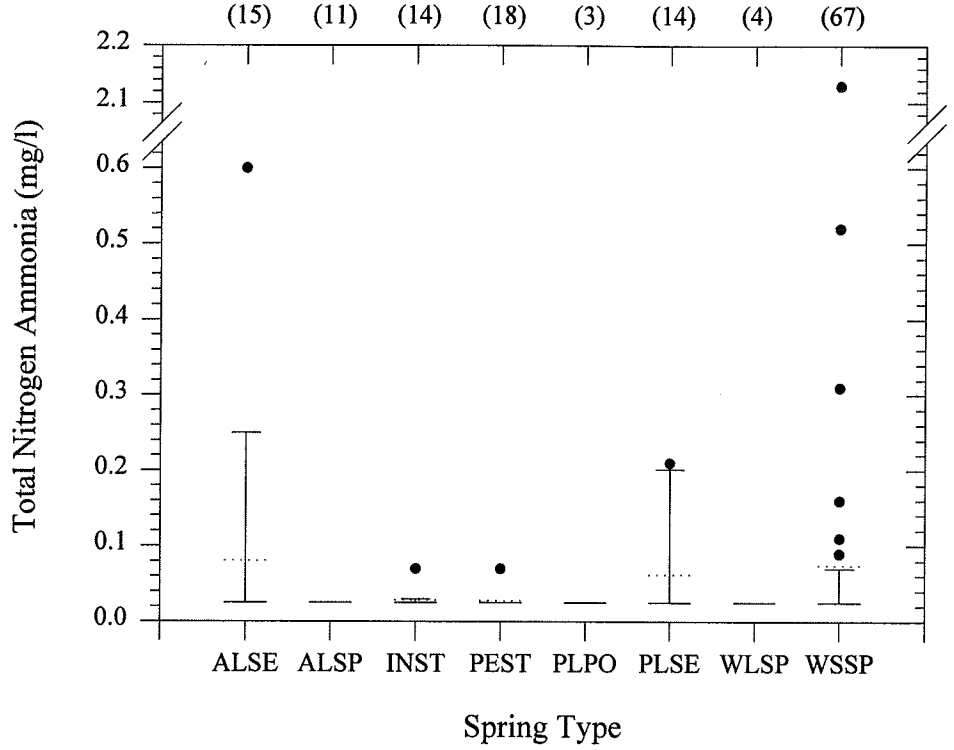


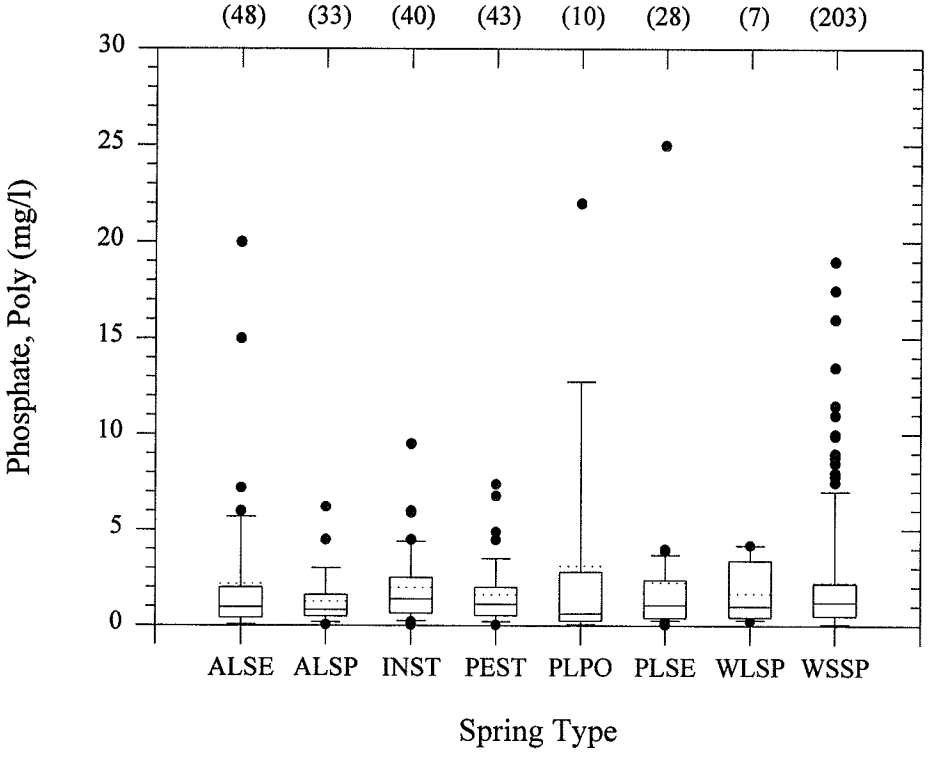
Total nitrate values of 0.05 in the plot represent values below detection and are ½ the detection limit of 0.1 mg/l

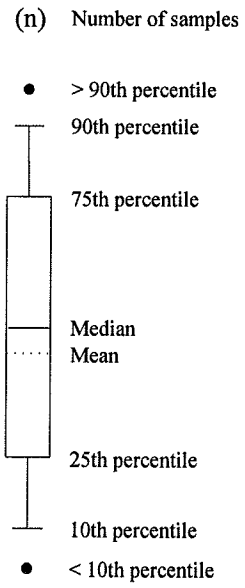
Dissolved nitrate values of 0.005 in the plot represent values below detection and are ½ the detection limit of 0.01 mg/l

Water Quality by Spring Type

Southeast Utah Group





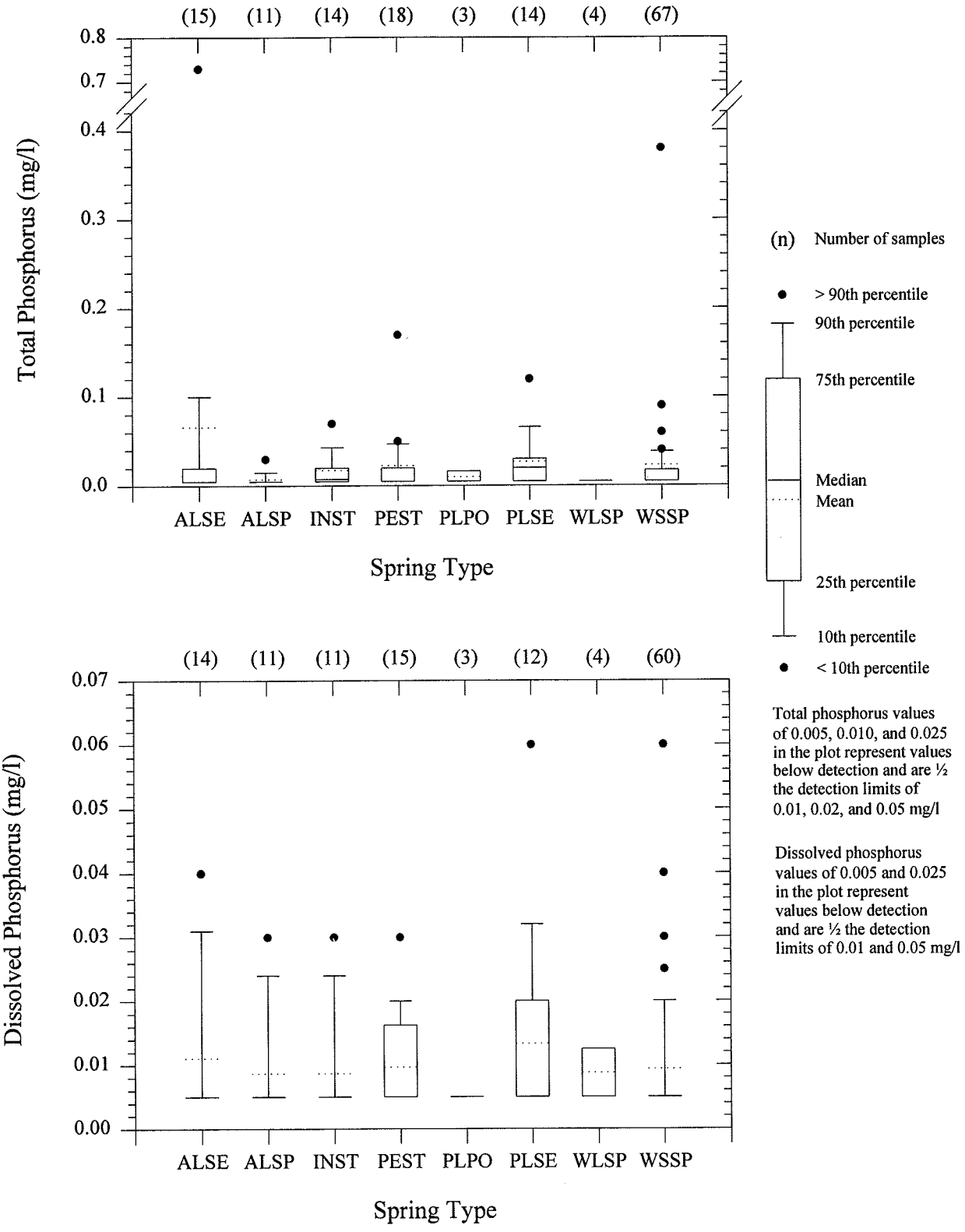


Total nitrogen ammonia values of 0.025 in the plot represent values below detection and are ½ the detection limit of 0.05 mg/l

Polyphosphate values of 0.05 in the plot represent values below detection and are ½ the detection limit of 0.1 mg/l

Water Quality by Spring Type

Southeast Utah Group

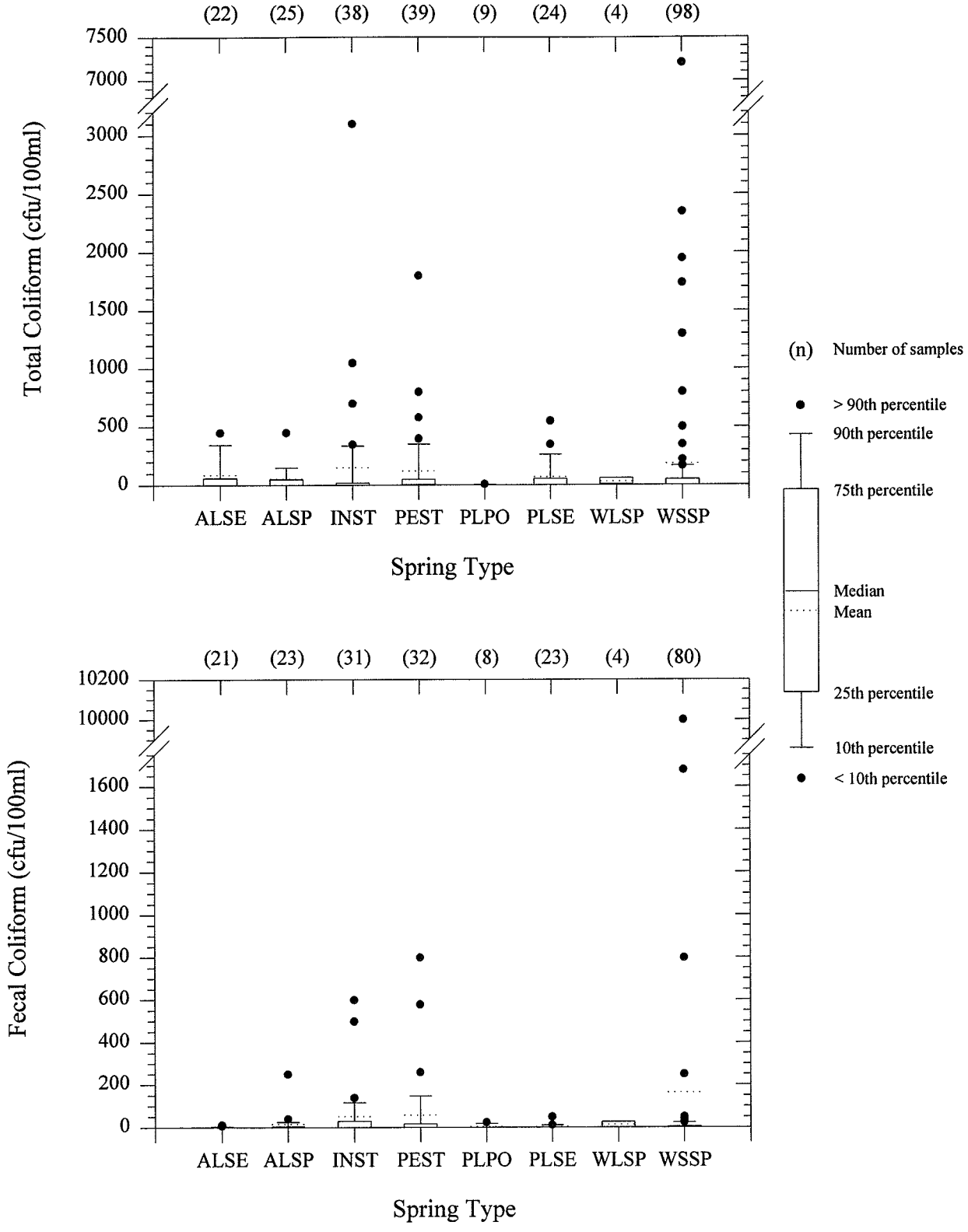


Total phosphorus values of 0.005, 0.010, and 0.025 in the plot represent values below detection and are ½ the detection limits of 0.01, 0.02, and 0.05 mg/l

Dissolved phosphorus values of 0.005 and 0.025 in the plot represent values below detection and are ½ the detection limits of 0.01 and 0.05 mg/l

Water Quality by Spring Type

Southeast Utah Group



Appendix I

Utah Water Quality Standards

Utah Stream Classifications and Water Quality Standards
Affecting Stream Segments in Southeast Utah Group National Parks

Colorado River and tributaries from Lake Powell (north) to state line except as listed separately are classified as 1C, 2B, 3B, 4 [Canyonlands, Arches, Natural Bridges].

Indian Creek and tributaries from confluence with Colorado River to Newspaper Rock State Park are classified as 2B, 3B, 4 [Canyonlands]. Indian Creek and tributaries, through Newspaper Rock State Park to headwaters are also classified as High Quality Waters - Category 1.

Green River and tributaries from confluence with Colorado River to state line except as listed separately are classified as 1C, 2B, 3B, 4 [Canyonlands].

These classifications are defined as follows:

Class 1C: Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health.
Class 2B: Protected for secondary contact recreation such as boating, wading, or similar uses.
Class 3B: Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.
Class 4: Protected for agricultural uses including irrigation of crops and stock watering.

The water quality standards for parameters measured at parks in the Southeast Utah Group are as follows:

Parameter	Class			
	1C	2B	3B	4
Maximum water temperature			27°C	
Maximum water temperature change			4°C	
pH range	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0
Minimum dissolved oxygen	5.5 mg/l	5.5 mg/l	5.0 mg/l[1]	
Maximum residue, total filtrable (TDS)				1200 mg/l
Maximum turbidity increase		10 NTU	10 NTU	
Maximum ammonia as N (un-ionized)[2]			***	
Maximum nitrates as N	10 mg/l	4 mg/l[3]	4 mg/l[3]	

Parameter	Class			
	1C	2B	3B	4
Maximum phosphate as P		0.05 mg/l[3]	0.05 mg/l[3]	
Maximum total coliforms	5000/100ml[4]	5000/100ml[4]		
Maximum fecal coliforms	2000/100ml[4]	200/100ml[4]		
Maximum dissolved arsenic	50 µg/l		360 µg/l[5]	100 µg/l
Maximum dissolved barium	1000 µg/l			
Maximum dissolved cadmium	10 µg/l		3.9 µg/l[5]	10 µg/l
Maximum dissolved trivalent chromium	50 µg/l		1700 µg/l[5]	100 µg/l
Maximum dissolved copper			18 µg/l[5]	200 µg/l
Maximum dissolved iron			1000 µg/l	
Maximum dissolved lead	50 µg/l		82 µg/l[5]	100 µg/l
Maximum dissolved mercury	2 µg/l		2.4 µg/l[5]	
Maximum dissolved selenium	10 µg/l		20 µg/l[5]	50 µg/l
Maximum dissolved silver	50 µg/l		4.1 µg/l[5]	
Maximum dissolved zinc			120 µg/l[5]	

[1] Based on a 1-day average concentration
[2] Ammonia standard for class 3B dependent on temperature and pH of waterbody
[3] Investigations should be conducted if pollution indicators are exceeded
[4] Based on a 30-day geometric mean calculation
[5] Based on a 1-hour average concentration

Appendix J

Utah Water Quality Standards Analysis

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
2.4 MILE LOOP POOL (BS2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	11	6	0.55
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	13	2	0.15
00666 Phosphorus (as P), dissolved: mg/L[3]	2B, 3B	.05	4	1	0.25
SODA SPRING (BS3)					
01042 Copper, Total: µg/L[4]	3B	18	3	2	0.67
31501 Total Coliform, MF, Endo AGAR: cfu/100mL	1C, 2B	5000	2	1	0.50
BIG SPRING UPPER (BS4)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	5	0.42
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	14	4	0.29
01042 Copper, Total: µg/L[4]	3B	18	13	2	0.15
BIG SPRING LOWER (BS6)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	13	3	0.23
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	2	0.13
	1C, 2B, 3B, 4	9	15	1	0.07
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	4	2	0.50
01042 Copper, Total: µg/L[4]	3B	18	13	1	0.08
01045 Iron, Total: µg/L[4]	3B	1000	13	1	0.08
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	1	0.25

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
BIG WATER CANYON (BWC1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	8	1	0.13
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	9	4	0.44
01042 Copper, Total: $\mu g/L$[4]	3B	18	10	8	0.80
01045 Iron, Total: $\mu g/L$[4]	3B	1000	9	1	0.11
70300 Residue, total filtrable: mg/L	4	1200	1	1	1.00
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	1	1	1.00
COURTHOUSE WASH (CW1)					
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	17	2	0.12
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	6	2	0.33
01042 Copper, Total: $\mu g/L$[4]	3B	18	14	1	0.07
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	8	3	0.38
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	6	3	0.50
DAVIS CANYON (DC8)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	9	0.75
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	13	6	0.46
01042 Copper, Total: $\mu g/L$[4]	3B	18	12	3	0.25
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	5	1	0.20
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	2	0.50

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
FRENCH'S SPRING (FS1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	8	1	0.13
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	8	4	0.50
	1C, 2B, 3B, 4	9	8	1	0.13
00620 Nitrate (as N), total: mg/L	1C, 2B, 3B	4	7	1	0.14
01042 Copper, Total: $\mu g/L^4$	3B	18	9	3	0.33
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	3	1	0.33
FRESHWATER CANYON (FW1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	17	2	0.12
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	18	2	0.11
	1C, 2B, 3B, 4	9	18	1	0.06
01042 Copper, Total: $\mu g/L^4$	3B	18	14	2	0.14
JUNCTION SPRING (HC1)					
01042 Copper, Total: $\mu g/L^4$	3B	18	13	3	0.23
HOLEMAN SPRING (HSB1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	13	1	0.08
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	13	1	0.08
HORSESHOE UPPER (HSC1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	10	2	0.20
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	10	3	0.30
00666 Phosphorus (as P), dissolved: mg/L^3	2B, 3B	.05	4	1	0.25
01042 Copper, Total: $\mu g/L^4$	3B	18	13	2	0.15

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
HORSESHOE LOWER (HSC2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	7	3	0.43
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	7	1	0.14
01042 Copper, Total: $\mu g/L^4$	3B	18	8	1	0.13
01045 Iron, Total: $\mu g/L^4$	3B	1000	7	3	0.43
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	2	1	0.50
INDIAN CREEK (IC15)					
01042 Copper, Total: $\mu g/L^4$	3B	18	1	1	1.00
01045 Iron, Total: $\mu g/L^4$	3B	1000	1	1	1.00
KACHINA BRIDGE POOL (KB1)					
00300 Oxygen, dissolved: mg/L	1C, 2B 3B	5.5	14	3	0.21
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	4	0.27
	1C, 2B, 3B, 4	9	15	1	0.07
01045 Iron, Total: $\mu g/L^4$	3B	1000	11	1	0.10
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	5	1	0.20
LOST CANYON (LO2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	14	4	0.29
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	16	6	0.38
01042 Copper, Total: $\mu g/L^4$	3B	18	14	3	0.21
01045 Iron, Total: $\mu g/L^4$	3B	1000	13	1	0.07

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
LITTLE SPRING CANYON (LS1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	13	3	0.23
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	14	4	0.29
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	4	1	0.25
01042 Copper, Total: µg/L[4]	3B	18	11	6	0.55
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	6	1	0.17
OWACHOMO BRIDGE (OB1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	1	0.08
00400 pH, field: standard units	1C, 2B, 3B, 4	9	13	2	0.15
01042 Copper, Total: µg/L[4]	3B	18	12	1	0.08
01045 Iron, Total: µg/L[4]	3B	1000	12	1	0.08
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	3	2	0.67
SIPAPU BRIDGE (SB1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	4	0.33
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	14	1	0.07
	1C, 2B, 3B, 4	9	14	1	0.07
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	5	1	0.20
HORSECOLLAR SEEP (SB2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	6	1	0.17
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	6	2	0.33
01042 Copper, Total: µg/L[4]	3B	18	6	2	0.33

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
SALT CREEK LOWER JUMP (SC21)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	3	0.25
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	2	0.13
01042 Copper, Total: $\mu g/L^4$	3B	18	14	2	0.14
01045 Iron, Total: $\mu g/L^4$	3B	1000	13	1	0.07
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	7	1	0.14
70300 Residue, total filtrable: mg/L	4	1200	4	4	1.00
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	1	0.25
SHAFER SPRING (SHS1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	10	3	0.30
00400 pH, field: standard units	1C, 2B, 3B, 4	9	10	1	0.10
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	1	1	1.00
01042 Copper, Total: $\mu g/L^4$	3B	18	10	3	0.30
70300 Residue, total filtrable: mg/L	4	1200	1	1	1.00
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	1	1	1.00
PLUG SPRING (SF1)					
00300 Oxygen, dissolved: mg/l	1C, 2B, 3B	5.5	12	3	0.25
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	14	4	0.29
01042 Copper, Total: $\mu g/L^4$	3B	18	15	3	0.20
01045 Iron, Total: $\mu g/L^4$	3B	1000	15	4	0.27

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
HARVEST SCENE (SF2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	14	7	0.50
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	4	0.27
01042 Copper, Total: $\mu g/L$[4]	3B	18	15	2	0.13
01045 Iron, Total: $\mu g/L$[4]	3B	1000	15	1	0.07
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	3	0.75
MAZE OVERLOOK (SF3)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	15	1	0.07
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	16	2	0.13
01042 Copper, Total: $\mu g/L$[4]	3B	18	15	1	0.07
CHOCOLATE DROPS (SF4)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	14	6	0.43
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	3	0.20
01042 Copper, Total: $\mu g/L$[4]	3B	18	13	1	0.08
GAP DOWNSTREAM (SF5)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	14	6	0.43
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	14	3	0.21
01042 Copper, Total: $\mu g/L$[4]	3B	18	14	2	0.14
GAP UPPER SPRING (SF6)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	10	4	0.40
01042 Copper, Total: $\mu g/L$[4]	3B	18	12	4	0.33

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
LOWER SOUTH FORK (SF7)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	9	7	0.78
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	9	3	0.33
01042 Copper, Total: $\mu g/L$[4]	3B	18	10	2	0.20
SLEEPY HOLLOW (SH1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	16	2	0.13
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	6	1	0.17
SEVEN MILE CANYON (SM1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	11	5	0.45
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	10	4	0.40
01042 Copper, Total: $\mu g/L$[4]	3B	18	10	7	0.70
SQUAW CANYON UPPER (SQ1A)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	8	2	0.25
01042 Copper, Total: $\mu g/L$[4]	3B	18	8	2	0.25
SQUAW CANYON LOWER (SQ2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	13	4	0.31
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	15	4	0.27
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	3	1	0.33
01042 Copper, Total: $\mu g/L$[4]	3B	18	13	1	0.08
01045 Iron, Total: $\mu g/L$[4]	3B	1000	12	1	0.08
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	8	1	0.13
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	3	2	0.67

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
CAVE SPRING (SQ3)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	14	4	0.29
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	17	5	0.29
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	4	3	0.75
01042 Copper, Total: µg/L[4]	3B	18	14	1	0.07
01045 Iron, Total: µg/L[4]	3B	1000	14	1	0.07
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	3	0.75
SALT VALLEY WASH (SVW1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	4	2	0.50
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	4	1	0.25
00665 Phosphorus (as P), total: mg/L[3]	2B, 3B	.05	2	2	1.00
01042 Copper, Total: µg/L[4]	3B	18	4	4	1.00
01045 Iron, Total: µg/L[4]	3B	1000	4	3	0.75
01051 Lead, Total: µg/L[4]	1C	60	2	1	0.50
01092 Zinc, Total: µg/L[4]	3B	120	2	1	0.50
70300 Residue, total filtrable: mg/L	4	1200	2	2	1.00
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	2	2	1.00
SALT WASH (SW3)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	17	1	0.06
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	18	2	0.11
	1C, 2B, 3B, 4	9	18	1	0.06
01042 Copper, Total: µg/L[4]	3B	18	15	2	0.13
01077 Silver, Total: µg/L[4]	3B	4.1	4	1	0.25
70300 Residue, total filtrable: mg/L	4	1200	4	4	1.00
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	4	2	0.50

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
SALT SPRING (SW5)					
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	11	2	0.18
01042 Copper, Total: $\mu g/L$[4]	3B	18	9	1	0.11
70300 Residue, total filtrable: mg/L	4	1200	3	3	1.00
THE NECK SPRING (TC1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	9	2	0.22
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	9	3	0.33
01042 Copper, Total: $\mu g/L$[4]	3B	18	10	1	0.10
CABIN SPRING (TC2)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	17	2	0.12
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	17	4	0.24
01042 Copper, Total: $\mu g/L$[4]	3B	18	15	1	0.07
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	2B	200	9	1	0.11
TAYLOR CANYON SPIGOT (TC3)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	1	1	1.00
01042 Copper, Total: $\mu g/L$[4]	3B	18	1	1	1.00
TO-KO-CHI CANYON (TKC1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	9	2	0.22
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	9	4	0.44
01042 Copper, Total: $\mu g/L$[4]	3B	18	7	3	0.43
01045 Iron, Total: $\mu g/L$[4]	3B	1000	8	2	0.25
82079 Turbidity, lab: Nephelometric Turbidity Units (NTU)[5]	2B, 3B	10	3	1	0.33

	Use Designations[1]	Standard Value[2]	Total Obs.	Exceed Standard	Prop. Exceeding
ERNIE'S COUNTRY WEST (WA1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	15	1	0.07
01042 Copper, Total: $\mu g/L^4$	3B	18	15	2	0.13
ERNIE'S COUNTRY EAST (WA2)					
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	16	1	0.06
	1C, 2B, 3B, 4	9	16	1	0.06
01042 Copper, Total: $\mu g/L^4$	3B	18	15	2	0.13
WATER CANYON (WC1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	4	1	0.25
01042 Copper, Total: $\mu g/L^4$	3B	18	3	1	0.33
LATHROP CANYON (WR1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	12	4	0.33
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	12	1	0.08
01042 Copper, Total: $\mu g/L^4$	3B	18	11	7	0.64
WILLOW SPRING (WS1)					
00300 Oxygen, dissolved: mg/L	1C, 2B, 3B	5.5	13	2	0.15
00400 pH, field: standard units	1C, 2B, 3B, 4	6.5	13	2	0.15
01042 Copper, Total: $\mu g/L^4$	3B	18	15	5	0.33
31501 Total Coliform, MF, Endo AGAR: cfu/100mL	1C, 2B	5000	12	1	0.08
31616 Fecal coliform, MF, M-FC BROTH, 0.45mm filter: cfu/100mL	1C, 2B	200	9	1	0.11

[1]All of the SEUG water sampling sites are classified as 1C, 2B, 3B, and 4 with the exception of the Indian Creek watershed (IC15) in Canyonlands which is classified as 2B, 3B, and 4. These classifications are as follows:

1C: Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Department of Health.

2B: Protected for secondary contact recreation such as boating, wading, or similar uses.

3B: Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.

4: Protected for agricultural uses including irrigation of crops and stock watering.

[2]The standard value used is the most stringent standard of the use designations listed for each parameter.

[3]The State of Utah standard is actually for a maximum *phosphate* as phosphorus concentration of 0.05 mg/l.

[4]The State of Utah standards for copper, iron, lead, and silver are actually for dissolved metal fractions.

[5]The State of Utah standard is actually for a maximum turbidity *increase* of 10 NTU.

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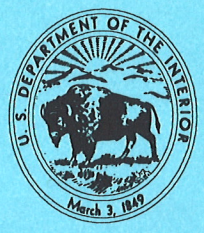

As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-90

August 1996