RESULTS OF THE U.S. GEOLOGICAL SURVEY'S ANALYTICAL EVALUATION PROGRAM FOR STANDARD REFERENCE SAMPLES: T-151 (TRACE CONSTITUENTS), M-144 (MAJOR CONSTITUENTS), N-55 (NUTRIENT CONSTITUENTS), N-56 (NUTRIENT CONSTITUENTS), P-29 (LOW IONIC STRENGTH CONSTITUENTS), GWT-2 (GROUND-WATER TRACE CONSTITUENTS), GWM-2 (GROUND-WATER MAJOR CONSTITUENTS), AMW-4 (ACID MINE WATER CONSTITUENTS), AND Hg-25 (MERCURY) DISTRIBUTED IN SEPTEMBER 1997

by Jerry W. Farrar

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ABSTRACT

This report presents the results of the U.S. Geological Survey's analytical evaluation program for nine standard reference samples -- T-151 (trace constituents), M-144 (major constituents), N-55 (nutrient constituents), N-56 (nutrient constituents), P-29 (low ionic strength constituents), GWT-2 (ground-water trace constituents), GWM-2 (ground-water major constituents), AMW-4 (acid mine water constituents), and Hg-25 (mercury) -- which were distributed in September 1997 to 170 laboratories enrolled in the U.S. Geological Survey sponsored interlaboratory testing program Analytical data that were received from 146 of the laboratories were evaluated with respect to overall laboratory performance and relative laboratory performance for each analyte in the nine reference samples. Results of these evaluations are presented in tabular form. Also presented are tables and graphs summarizing the analytical data provided by each laboratory for each analyte in the nine standard reference samples. The most probable value for each analyte was determined using nonparametric statistics.

INTRODUCTION

The U.S. Geological Survey (USGS) conducts an interlaboratory analytical evaluation program semiannually. This program provides a variety of standard reference samples (SRSs) to accomplish quality assurance testing of laboratories and to provide an adequate supply of samples that contribute to quality control programs of participating laboratories. Natural-matrix reference materials are preferred for use in this interlaboratory evaluation program. A series of samples are prepared and distributed each spring and fall.

The program began in 1962 with a single sample containing major constituents that was prepared from distilled water and reagent grade chemicals. Twenty-three USGS laboratories participated in the first analytical evaluation program. Since that time, objectives of the program have been to:

(1) evaluate and improve the performance of USGS and other participating laboratories;
(2) provide a library of carefully prepared, homogeneous, stable reference materials for use in the quality control programs of laboratories;
(3) identify analytical problem areas;
(4) identify quality assurance needs with respect to environmental analyses and develop new reference materials to meet these needs; and
(5) evaluate the accuracy and precision of analytical methods.

A total of 235 USGS and non-USGS laboratories are enrolled in the program, which can currently provide nine different types of SRSs:

1. Trace constituents.
2. Major constituents.
3. Nutrient constituents.
4. Low ionic strength constituents.
5. Mercury.
6. Whole water (water with suspended sediment).
7. Acid mine water constituents.
8. Ground-water trace constituents.
9. Ground-water major constituents.

Though this is not a laboratory certification program, participation in this continuing quality assurance program is mandatory for all laboratories providing water-quality data for USGS sponsored reports or storage in the USGS national data bases. Federal, State, municipal, and university laboratories can participate even though they do not provide data to the USGS. SRS results can be used to alert participating laboratories of possible deficiencies in their analytical operations and provide reference materials for laboratory quality-control programs. Participating laboratories are identified only by a confidential laboratory code number.

A library of SRSs, from previous evaluations, is available. USGS offices and participating laboratories can request these SRSs for further testing, continuing quality assurance, and quality-control programs by contacting:

U.S. Geological Survey
Branch of Quality Systems
Denver Federal Center, Bldg. 53
P. O. Box 25046 MS 401
Denver, Colorado 80225-0046
(303) 236-1870

PURPOSE AND SCOPE

This report summarizes the analytical results submitted by 146 of the 170 laboratories that requested and were shipped SRSs for the January 1998 evaluation (table 1). Not all SRSs are requested or necessarily analyzed by all the laboratories; nor do all laboratories enrolled in the program participate in each evaluation. Analytical results for the following, which were mailed the week of September 29, 1997, are presented in this report

T-151	Trace constituents	GWT-2	Ground-water trace constituents
M-144	Major constituents	GWM-2	Ground-water major constituents
N-55	Nutrient constituents	AMW-4	Acid mine water constituents
N-56	Nutrient constituents	Hg-25	Mercury
P-29	Low ionic strength constituents		

The USGS requested that analytical results be returned by October 31, 1997 for evaluation and preparation of this report. Laboratories that are providing analytical services to USGS offices are requested to analyze the appropriate SRSs for the same analytes requested by the USGS offices. All laboratories are requested to include the analytical methods used to determine the concentration of each analyte. When analytical-method information was provided, it has been included in tables 14 - 22.

Table 1.-*Laboratory participants in the analyses of standard reference samples distributed in September 1997*

	City	Participating Laboratory
Alabama	Tuscaloosa	Geological Survey of Alabama
Arizona	Yuma	Burns and Roe Services Corporation
Arkansas	Arkadelphia	Ouachita Baptist University, Department of Biology
	Fayetteville	University of Arkansas, Arkansas Water Resources Center
	Little Rock	Arkansas Department of Pollution Control and Ecology
California	Davis	University of California, Davis, Division of Environmental Studies
	Los Angeles	Metropolitan Water District, Water Quality Laboratory
	Menlo Park	U.S. Geological Survey, Branch of Regional Research, Western Region
	Oakland	East Bay Municipal Utility District
	Sacramento	Anlab
	San Diego	U.S. Geological Survey, Water Resources Division
	Santa Fe Springs	West Coast Analytical Service, Inc.
	Tahoe City	Tahoe Research Group
	West Sacramento	Quanterra Environmental Services
Colorado	Alamosa	Bureau of Reclamation
	Arvada	Quanterra Environmental Services
	Arvada	U.S. Geological Survey, National Water Quality Laboratory
	Aurora	Core Laboratories, Inc.
	Boulder	U.S. Geological Survey, Branch of Regional Research, Central Region
	Colorado Springs	City of Colorado Springs, Environmental Quality Laboratory
	Denver	U.S. Geological Survey, Water Resources Division, Acid Rain Global Climate
	Denver	Bureau of Reclamation
	Denver	Denver Water Department
	Denver	Metro Wastewater Reclamation
	Denver	U.S.Geological Survey, Earth Science Investment Program
	Denver	U.S. Geological Survey, Colorado District, Upper Arkansas Toxic Project
	Fort Collins	City of Fort Collins - Water Quality
	Fort Collins	U.S. Department of Agriculture, Forest Service
	Golden	Huffman Laboratories
	Greeley	Central Colorado Water Conservatory District
	Lakewood	U.S. Environmental Protection Agency
	Loveland	Northern Colorado Water Conservation
	Westminster	City of Westminster, Semper Water Treatment Plant
	Wheat Ridge	ACTLABS, Inc.
Delaware	Dover	Delaware Department of Natural Resources
Florida	Bradenton	Manatee County Environmental Management Department
	Brooksville	Southwest Florida Water Management District
	Ocala	U.S. Geological Survey Water Resources Division, Quality Water Service Unit
	Orlando	Post, Bucklye, Schuh, and Jernigan, Inc.
	Palatka	St. John's River Water Management District
	Tallahassee	City of Tallahassee, Water Quality Division
	Tallahassee	Florida Department of Environmental Protection
	Tallahassee	Savannah Laboratories and Environmental Services
	Tampa	Hillsborough County Environmental Protection Commission
	West Palm Beach	South Florida Water Management District
Georgia	Athens	University of Georgia
	Atlanta	Georgia Department of Natural Resources, Environmental Protection Division
	Atlanta	U.S. Geological Survey, Water Resources Division
	Stone Mountain	Dekalb County Public Works Department
	Tifton	U.S. Department of Agriculture, Agricultural Research Service
Hawaii	Honolulu	University of Hawaii, SOEST Analytical Services
Idaho	Boise	U.S. Bureau of Reclamation, Pacific Northwest Regional Lab
	Pocatello	Idaho State University, Department of Chemistry
Illinois	Champaign	Illinois Department of Natural Resources, Waste Management and Research Center

Table 1-*Laboratory participants in the analyses of standard reference samples distributed in September 1997 --continued*

State	City	Participating Laboratory
Illinois	Champaign	Illinois Environmental Protection Agency
Iowa	Des Moines	University of Iowa Hygienic Laboratory, Des Moines Branch
Kansas	Lawrence	Kansas Geological Survey
	Topeka	City of Topeka, Water Pollution Control Division
	Wichita	City of Wichita, Water and Sewer Department
Kentucky	Frankfort	Kentucky State University, Division of Environmental Studies
	Lexington	Kentucky Geological Survey
Michigan	Detroit	Detroit Water and Sewerage Department, Analytical Laboratory
Minnesota	Minneapolis	University of Minnesota, Department of Geology and Geophysics
	St. Paul	Metropolitan Council Environmental Services
	St. Paul	University of Minnesota, Department of Soil Science
Missouri	Columbia	University of Missouri
	Jefferson City	Missouri Department of Health
Montana	Butte	Montana Bureau of Mines & Geology
	Helena	State of Montana, Laboratory Services Bureau
	Jefferson City	Montana Tunnels Laboratory
	Missoula	University of Montana, Department of Geology
Nebraska	McCook	Olsen Laboratory
Nevada	Las Vegas	University of Nevada, Las Vegas, Harry Reid Center for Environmental Studies
	Reno	Desert Research Institute
	Reno	Nevada State Health Laboratory
	Reno	Reno-Sparks Wastewater Treatment, Truckee Meadows Reclamation Facility
	Sparks	American Assay Laboratories Environmental
New York	Brewster	New York City Department of Environmental Protection, Brewster Laboratory
	Buffalo	Erie County Public Health Laboratory
	Grahamsville	New York City Department of Environmental Protection, Grahamsville Laboratory
	Hauppauge	Suffolk County Water Authority Laboratory
	Hempstead	Nassau County Department of Health
	Milbrook	Institute of Ecosystem Studies
	North Babylon	EcoTest Laboratories
	Rochester	Monroe County Department of Health
	Shokan	New York City Department of Environmental Protection, Ben Nessin Laboratory
	Syracuse	Onondaga County Department of Drainage and Sanitation
	Syracuse	State University of New York, College of Environmental Science and Forestry
	Troy	U.S. Geological Survey, Water Resources Division
	Valhalla	New York City Department of Environmental Protection, Kensico Laboratory
	Wantagh	Cedar Creek Special Projects Laboratory
	Yorktown	New York City Department of Environmental Protection, Croton Gatehouse Lab
North Carolina	Chapel Hill	City of Durham Water Resources Department
	Charlotte	Mecklenburg County Department of Environmental Protection
	Durham	Duke University, Duke Wetland Center
North Dakota	Bismarck	North Dakota Department of Health, East Laboratory
	Bismarck	North Dakota State Water Commission
	Bismarck	U.S. Bureau of Reclamation
Ohio	Cincinnati	U.S. Environmental Protection Agency
	Cuyahoga Heights	Northeast Ohio Regional Sewer District
	Tiffin	Heidelberg College
	Wooster	Ohio State University, Ohio Agricultural Research and Developmental Center
Oklahoma	Norman	Oklahoma Geological Survey
	Oklahoma City	Oklahoma Department of Environmental Quality
Oregon	Corvallis	U.S. Department of Agriculture, Agricultural Research Service
	Corvallis	U.S. Department of Agriculture, Forestry Services Laboratory
	Hillsboro	Unified Sewerage Agency of Washington County

Table 1. *-Laboratory participants in the analyses of standard reference samples distributed in September 1997 --continued*

State	City	Participating Laboratory
Pennsylvania	Harrisburg	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
	Somerset	Geochemical Testing, Energy Center, Inc.
Puerto Rico	San Juan	Department of Natural Resources
South Carolina	Cayce	Shealy Environmental Services, Inc.
	Columbia	Columbia Analytical Laboratories
South Dakota	Brookings	Northern Great Plains Water Resources Research Center
Tennessee	Knoxville	University of Tennessee, Department of Forestry, Wildlife, and Fisheries
Texas	Austin	Lower Colorado River Authority, Environmental Laboratories Services
	College Station	Texas A & M, Department of Oceanography
	College Station	Intermountain Labs
	Laredo	City of Laredo
Vermont	Waterbury	Vermont Agency of Natural Resources, Department of Environmental Conservation
Virginia	Chesapeake	City of Chesapeake, Department of Public Utilities
	Manassas	Occoquan Watershed Monitoring Laboratory
	Richmond	Commonwealth of Virginia, Division of Consolidated Laboratory Services
Washington	Seattle	Brooks-Rand, Ltd., Environmental Research and Development
West Virginia	Morgantown	West Virginia University, National Research Center for Coal and Energy
Wisconsin	Madison	University of Wisconsin, Wisconsin State Laboratory of Hygiene
	Madison	Madison Department of Public Health
	Middleton	U.S.Geological Survey, Wisconsin District Mercury Laboratory
	Milwaukee	Milwaukee Metropolitan Sewerage District
Wyoming	Laramie	Wyoming Department of Agriculture

European Laboratory

Location		Participating Laboratory
Norway	Oslo	Norwegian Institute for Water Research

Middle East Laboratories

Location	Participating Laboratory
Israel	Geological Survey of Israel Laboratory
	Mekeroth Water Company, Ashqelon Laboratory
	Mekeroth Water Company, Central Laboratory
	Mekeroth Water Company, Dan Sewage Treatment Plant
	Mekeroth Water Company, Eylat Laboratory
	Mekeroth Water Company, Lake Kinneret Laboratory
	Mekeroth Water Company, Rosh Ha'ayn Laboratory
	Water Resources Research Center, Institute for Desert Research
Jordan	Royal Scientific Society of Jordan, Environmental Research Center Laboratory
	Water Authority of Jordan, Central Laboratory
West Bank	Al-Quds University, College of Science and Technology, Water Research Center

PREPARATION OF STANDARD REFERENCE SAMPLES

All of the SRSs used in this evaluation were prepared by USGS personnel located in Lakewood, Colorado, and were analyzed for analyte concentrations and physical property values prior to mailing. A library of these SRSs is maintained and can be requested by participating laboratories and USGS offices for use in their quality-control programs.

Trace constituents sample T-151 was prepared using water collected from the South Platte River near Lake George, Colorado. The water was pumped through 0.45-, 0.2-, and 0.1-micron (μm) filters, in series, into a 1200-liter (L) polypropylene drum. The water was continuously circulated and passed through a 0.1-μm filter and ultraviolet sterilizer for 24 hours. Following this circulation, the water was acidified to pH 1.3 with nitric acid and chlorinated to 5 parts per million (ppm) free chlorine with sodium hypochlorite. The trace constituent concentrations were adjusted by adding reagent grade chemicals. The sample was circulated an additional 24 hours prior to bottling. During bottling, the sample was pumped through an ultraviolet sterilizer and a 0.1- μm filter. The polypropylene and fluorinated ethylene propylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Major constituents sample M-144 was prepared using water collected from the Colorado River near Loma, Colorado. The water was pumped through 0.45- 0.2- and 0.1-μm filters, in series, into a 1200-L polypropylene drum. The water was chlorinated to 5-ppm free chlorine with sodium hypochlorite, continuously circulated, and passed through a 0.1-μm filter and ultraviolet sterilizer for 24 hours prior to bottling. During bottling, the sample was pumped through an ultraviolet sterilizer and a 0.1-μm filter. The polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Nutrient constituents sample N-55 was prepared using deionized water. These samples were prepared the week prior to the mailing for this SRS evaluation. The water was pumped through 0.45-, 0.2-, and 0.1-μm filters, in series, into a 25-L polypropylene drum and continuously circulated and passed through a 0.1-μm filter for 24 hours. The desired nutrient concentrations were obtained by adding reagent-grade chemicals. The sample was continuously circulated for 24 hours prior to being bottled. The 30-milliliter (mL) glass vials used were new, amber, acid leached, deionized-water rinsed, and autoclave sterilized.

Nutrient constituents sample N-56 was prepared using water collected from the Fall River near Idaho Springs, Colorado. These samples were prepared the week prior to the mailing for this SRS evaluation. The water was pumped through 0.45- 0.2- and 0.1-μm filters, in series, into a 200-L polypropylene drum and continuously circulated and passed through a 0.1-μm filter for 24 hours. The desired nutrient concentrations were obtained by adding reagent-grade chemicals. The sample was continuously circulated for 24 hours prior to being bottled. The 250-mL polyethylene bottles used were new, amber, acid leached, deionized-water rinsed, and autoclave sterilized.

Low ionic strength constituents sample P-29 was prepared in a 400-L polypropylene drum using water collected from the Fall River near Idaho Springs, Colorado. The water was pumped into the drum through 0.45- 0.2- and 0.1-μm filters in series. Desired phosphate and fluoride concentrations were obtained by adding reagent-grade chemicals. Prior to bottling, the sample was continuously mixed for 24 hours while being circulated through a 0.1-μm filter and an ultraviolet sterilizer. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1-μm filter. The 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Ground-water trace constituents sample GWT-2 was prepared using water collected from a monitoring well completed in alluvial deposits and located in Adams County, Colorado. The water was pumped through 0.45-, 0.2-, and 0.1-μm filters, in series, into a 600-L polypropylene drum. The water was chlorinated to 5-ppm free chlorine with sodium hypochlorite. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1-μm filter. The 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Ground-water major constituents sample GWM-2 was prepared using water collected from a monitoring well completed in alluvial deposits and located in Adams County, Colorado. The water was pumped through 0.45-, 0.2-, and 0.1-μm filters, in series, into a 600-L polypropylene drum. The water was acidified to a pH of about 1.0 with nitric acid. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1-μm filter. The 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Acid mine water constituents sample AMW-4 was prepared using water collected from drainage from a mine located in Idaho Springs, Colorado. The water was pumped through 0.45-, 0.2-, and 0.1-μm filters, in series, into a 200-L polypropylene drum. The water was acidified to a pH of about 1.0 with nitric acid. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1-μm filter. The 250-mL polyethylene bottles used were acid leached, and deionized-water rinsed.

Mercury sample Hg-25 was prepared using water collected from the Fall River near Idaho Springs, Colorado. The sample was prepared in a 200-L polypropylene drum. The river water was pumped into this drum through 0.45-, 0.2-, and 0.1-μm filters in series. The water was continuously circulated and passed through a 0.1-μm filter and ultraviolet sterilizer for 48 hours. Nitric acid (5-percent, by volume) and dichromate compound (0.05-percent, by weight) were added to stabilize the sample. The desired mercury concentration was obtained by adding a mercury standard solution. Following an additional 24 hours of circulation, the sample was bottled. The 250-mL glass bottles and tetrafluoroethylene fluorocarbon resin caps used were new, acid leached, and deionized-water rinsed.

LABORATORY ANALYSES

The participating laboratories were asked to determine constituents that are summarized in table 2. The number of analytes varied from 28 in T-151(trace constituents) to 1 in Hg-25 (mercury).

Table 2. *-Constituents determined in standard reference samples distributed in September 1997*

(mg/L, milligrams per liter; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter at 25 degrees Celsius)

Constituent or property		Units	T-151	M-144	N-55, N-56	P-29	GWT-2	GWM-2	AMW-4	Hg-25
Acidity	Acidity as $CaCO_3$	mg/L				X				
Alk	Alkalinity as $CaCO_3$	mg/L		X				X		
Ag	Silver	µg/L	X				X		X	
Al	Aluminum	µg/L	X				X		X	
As	Arsenic	µg/L	X				X		X	
B	Boron	µg/L	X	X			X	X	X	
Ba	Barium	µg/L	X				X		X	
Be	Beryllium	µg/L	X				X		X	
Ca	Calcium	mg/L	X	X		X	X	X	X	
Cd	Cadmium	µg/L	X				X		X	
Cl	Chloride	mg/L		X		X		X		
Co	Cobalt	µg/L	X				X		X	
Cr	Chromium	µg/L	X				X		X	
Cu	Copper	µg/L	X				X		X	
DSRD	Dissolved solids	mg/L		X				X		
F	Fluoride	mg/L		X		X		X		
Fe	Iron	µg/L	X				X		X	
Hg	Mercury	µg/L								X
K	Potassium	mg/L	X	X		X	X	X	X	
Li	Lithium	µg/L	X				X		X	
Mg	Magnesium	mg/L	X	X		X	X	X	X	
Mn	Manganese	µg/L	X				X		X	
Mo	Molybdenum	µg/L	X				X		X	
Na	Sodium	mg/L	X	X		X	X	X	X	
NH_3 as N	Ammonia	mg/L			X					
NH_3+Org N as N	Ammonia + Organic N	mg/L			X					
Ni	Nickel	µg/L	X				X		X	
NO_3+NO_2 as N	Nitrate + Nitrite	mg/L			X					
Pb	Lead	µg/L	X				X		X	
pH		unit		X		X				
PO_4 as P	Orthophosphate	mg/L			X	X				
total P as P	Phosphorus	mg/L		X	X			X		
Sb	Antimony	µg/L	X				X		X	
Se	Selenium	µg/L	X				X		X	
SiO_2	Silica	µg/L	X	X			X	X	X	
SO_4	Sulfate	mg/L		X		X		X		
Sp Cond	Specific conductance	µS/cm		X		X		X		
Sr	Strontium	µg/L	X	X			X		X	
Tl	Thallium	µg/L	X							
U	Uranium	µg/L	X							
V	Vanadium	µg/L	X	X			X		X	
Zn	Zinc	µg/L	X				X		X	

Laboratories were requested to identify the method used for each constituent according to table 3 analytical method codes.

Table 3. *Analytical method codes*

Code	Method
0	Other
1	Atomic absorption: direct, air
2	Atomic absorption: direct, nitrous oxide
3	Atomic absorption: graphite furnace
4	Inductively coupled plasma
5	Direct current plasma
6	Inductively coupled plasma/mass spectrometry
7	Ion chromatography
8	Atomic absorption: cold vapor
9	Atomic fluoresence
10	Atomic absorption: extraction [*specify chelating agents*]
11	Atomic absorption: hydride [*specify reducing agent*]
12	Flame emission
20	Titration: colorimetric [*specify color reagent*]
21	Titration: electrometric [*specify reducing or oxidizing agent/color reagent*]
22	Colorimetric: [*specify reducing or oxidizing agent/color reagent*]
40	Ion selective electrode
41	Electrometric [*pH and specific conductance*]
50	Gravimetric: [*specify filtration, evaporation,and so forth*]
51	Turbidimetric

Participating laboratories were also asked to identify the method used, such as those references listed next, to further define the methods.

1. American Public Health Association, American Water Works Association, and Water Environment Federation, 1995, Standard methods for the examination of water and wastewater (19th ed.): Washington, D.C., American Public Health Association, variable pagination.

2. American Society for Testing and Materials, 1995, Annual book of ASTM standards: Philadelphia, v. 11.0, and v. 11.02.

3. Kopp, J.F., and McKee, G.F., 1979, Methods for chemical analysis of water and wastes: Cincinnati, U.S. Environmental Protection Agency, EPA 600/4-79-020, rev. 1983, 460 p.

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

5. Miscellaneous manufacturer's instrument manuals or references.

LABORATORY PERFORMANCE RATINGS

To facilitate laboratory intercomparison, laboratory performance ratings, based on the analyses reported for each SRS, are included in tables 4 through 13 in this report. For each SRS, averages of all the analyte ratings and the number of analyte values reported are given for each participating laboratory. In some cases, laboratory reported values in tables 4 - 13 may have been reformatted in terms of significant figures to meet publication criteria. For example, a reported value of 15 may have been changed to 15.0 or a value of 102.86 may have been changed to 102.9 in these tables. However, the actual reported values by all the laboratories were used to calculate the statistical results and performance ratings presented in the report.

Laboratory performance for each analyte is rated on a scale 4 to 0, based on the absolute Z-value, as listed below:

Rating	Absolute Z-value
4 (Excellent)	0.00 to 0.50
3 (Good)	0.51 to 1.00
2 (Satisfactory)	1.01 to 1.50
1 (Marginal)	1.51 to 2.00
0 (Unsatisfactory)	Greater than 2.00

Overall laboratory performance ratings greater than 2.4 are considered satisfactory. Ratings between 2.0 and 2.39 are considered marginal and those less than 2.0 are considered unsatisfactory. Ratings are based on the relative performance of laboratories on specific samples and should be reviewed and evaluated on a case-by-case basis for each laboratory considering such factors as methods used and data needs of specific USGS projects using the laboratory data.

STATISTICAL PRESENTATION OF DATA

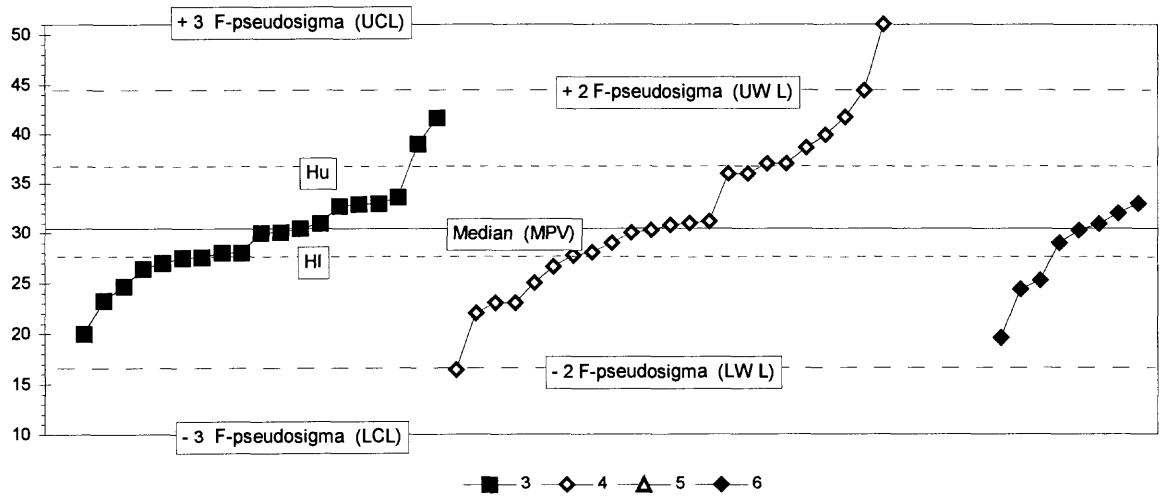
Data in this report have been evaluated using nonparametric statistics as described by Hoaglin and others (1983). This statistical approach is a resistant statistic because the median is not influenced by outliers as is the mean in traditional statistics. Analytical data for each analyte are presented in tabular and graphical forms in tables 14 through 22. Tabulated data for each analyte include the laboratory code number; reported values; analytical method; most probable value (MPV); number of reported analyses, excluding less than values (N); data range; Z-value; and the F-pseudosigma. The Z-value is equivalent to the Z-score of traditional statistics, being the number of deviations the reported value is from the MPV. The F-pseudosigma is equivalent to the standard deviation (σ) of traditional statistics when the data has a Gaussian distribution. If an analyte has a sufficient number of analyses by a given method, usually 7, the F-pseudosigma for that analytical method is reported in the block of data listed for each analyte.

The median value is considered the MPV. The median (midpoint) divides the ordered data into halves and is designated the MPV. The hinges include the middle 50-percent of the data and are the mid-values of the upper and lower halves of the data. The hinges are similar to quartiles, but are not mathematically equivalent. The range of data between the upper hinge (Hu) and the lower hinge (Hl) and the hinge spread (H-spr), is used to calculate the F-pseudosigma, the laboratory performance rating, the upper warning level (UWL), lower warning level (LWL), the upper control level (UCL) and the lower control level (LCL). The F-pseudosigma is calculated by comparison of the H-spr value to the Gaussian distribution relation; 67.45 percent of the data "hinges" between plus and minus 1σ, resulting in a H-spr of $2 \times 0.6745 = 1.349\sigma$. This relation allows the calculation of the F-pseudosigma = (H-spr)/1.349. Laboratories reporting "less than" values are not performance rated unless their reported "less than" values are greater than two Z-values from the MPV.

The graphical plot of the reported data is shown in figure 1. The upper and lower boundaries of the graphical plots generally are +3 and -3 F-pseudosigma deviations from the median. Computer-program scaling constraints do not permit these boundaries to always be graphed at exactly these values as shown in the graphical plot. Reported values are grouped by analytical method in ascending order of value. Lines designate the MPV, Hu, Hl, and the UWL and LWL at +2 and -2 F-pseudosigma, respectively. "Less than" values are not plotted.

In some cases, if the F-pseudosigma is less than five percent of the MPV, the rating criterion is five percent of the MPV. All rating criterion values are denoted in the statistical summary tables by double asterisks (**).

The term "insufficient data" is included in some of the tables and is used when the number of analyses is less than 7 or the calculated F-pseudosigma is greater than the MPV.



NOTE: vertical scale is the concentration value of the individual analyte in appropriate units (see table 2.) Horizontal scale is the laboratory reported values separated by method (different symbols) and plotted by increasing values. Numbers next to each symbol at the bottom of the figure are analytical method codes that are described in table 3.

Figure 1.-Statistical parameters shown on reported-data graphs in tables 14 - 22

REFERENCE

Hoaglin, D.C., Mosteller, F., and Tukey, J.W., eds., 1983, Understanding robust and exploratory data analysis: New York, NY, John Wiley, Inc., p. 38-41.

Table 4. *Overall laboratory performance ratings for standard reference samples distributed in September 1997*

(SRS, standard reference sample; Lab, laboratory number; OWR, overall weighted rating for all sample types; OLR, overall laboratory rating for reported values of a sample type; V/130, number of reported values of 130 total possible values from all sample types; V/28,V/16,V/5,V/5,V/11,V/26,V13 and V/26 are number of reported values possible for T-151, M-144, N-55, N-56, P-29, GWT-2, GWM-2 and AMW-4 respectively; NR, not rated.)

		SRS =	T-151		M-144		N-55		N-56		P-29		GWT-2		GWM-2		AMW-4		Hg-25
Lab	OWR	V/130	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/26	OLR	V/13	OLR	V/26	OLR
1	3.5	120	3.7	25	3.6	15	3.0	5	3.2	5	3.7	10	3.4	24	3.5	13	3.3	22	4
2	2.9	9									2.9	9							
3	2.6	52	2.4	23	3.1	15			1.2	5	3.0	8							4
4	1.7	38	0.9	17													2.2	21	
5	2.9	106	2.9	22	3.1	13	2.7	3	2.7	3	2.4	9	3.0	23	2.7	11	3.2	22	
8	2.4	101	2.6	19	2.8	15					3.1	10	2.1	21	1.9	13	2.3	22	1
9	3.4	10					3.6	5	3.2	5									
10	3.5	30	3.2	6	3.6	13	3.8	5	3.6	5									2
11	2.7	96	3.4	20	2.4	14	2.6	5	2.8	5			2.5	17	3.0	13	1.9	21	4
12	2.0	37	2.0	4	2.9	7	1.8	4	2.4	5			2.3	4	1.3	6	1.8	6	0
13	3.0	66	3.0	16	3.3	12	3.3	4	2.8	4			2.8	17	3.0	12			4
15	3.1	15			3.0	14													4
16	2.7	105	2.6	24	2.7	14	2.2	5	2.6	5			2.7	22	2.8	12	3.0	22	4
18	2.8	83	3.2	18	2.4	14							2.9	20	2.6	8	3.0	22	0
19	3.0	28	2.4	10	3.4	10	3.0	4	3.8	4									
21	3.2	6	3.0	1			3.2	5											
22	4.0	2					4.0	1	4.0	1									
23	2.5	45	2.1	10	2.5	6	1.8	4	3.4	5	2.7	10	2.5	10					
24	2.3	78	3.1	16	3.4	13							2.8	17	3.4	11			
25	1.7	97	1.8	15	2.1	14	3.0	4	0.8	4	3.1	7	1.2	19	1.5	13	1.5	21	
26	3.3	77	3.7	22	3.5	12					2.5	8	3.2	23	3.4	11			4
30.1	2.7	85	3.0	23	2.5	8			2.0	2	3.7	3	2.3	21	1.8	6	3.2	22	
30.2	2.2	14	2.0	3	3.3	3							0.7	3	3.0	1	2.5	4	
32	2.8	61	3.3	23	2.5	14							2.6	23					0
33	2.5	51	1.3	10	2.9	11	4.0	1	4.0	1	3.7	10	1.4	11	3.3	7			
34.1	2.6	14	2.0	3	2.5	2					NR	0	3.3	3	2.0	2	3.0	3	2
34.2	2.0	1																	2
38	3.3	27			3.2	9	3.4	5	3.0	5	3.4	8							
39	2.9	51	2.9	20	2.8	12	2.5	4	2.8	4	3.7	10							0
40	2.5	32	2.6	19	2.3	13													
42	2.3	65	3.0	16	2.9	7	1.0	1	0.0	1	1.0	4	2.4	16	1.8	5	1.8	15	
43	3.5	39	3.7	6	4.0	10							3.0	7	3.7	9	2.9	7	
45	3.0	2					3.0	1	3.0	1									
46	3.2	101	3.2	18	3.4	14	3.5	4	2.4	5	3.1	8	3.2	19	3.2	13	3.7	19	0
48	2.1	107	2.5	21	2.2	12	1.6	5	2.0	5	1.1	9	2.2	21	1.8	12	2.1	21	2
51	3.1	20	3.8	4	2.8	10	3.4	5											1
53	1.5	4					2.0	2	1.0	2									
57	1.9	18			2.1	13	1.6	5											
59	3.0	96	3.2	18	2.9	11	4.0	5	3.6	5	1.9	10	2.9	18	3.0	10	3.2	18	1
64	3.6	35	3.4	5	3.9	10					3.5	8	2.8	5	3.6	8			
68	2.6	45	2.8	24	2.5	13									2.1	7			2
69	2.9	64	2.0	12	3.2	10	4.0	1	4.0	1			2.8	13	3.4	9	3.1	17	4
70	3.0	38	3.3	15	2.7	13	3.0	4	3.6	5									0
76	3.4	22	3.0	5	3.8	4	4.0	1	4.0	1			3.7	6	3.8	4			0
83	3.1	55	3.3	14	3.2	10					3.8	6	2.6	15	2.8	10			
84	2.5	17	2.7	3	3.6	9	0.0	2	0.7	3									
85	3.1	68	2.7	11	3.5	15							2.2	14	3.7	13	3.5	15	
86	3.0	78	3.3	13	2.8	12	1.5	4	1.8	4	3.8	5	3.2	15	2.9	10	3.1	14	3
87	2.5	37	2.1	14	2.8	12	2.6	5	2.4	5									4
88	0.3	6					0.7	3	0.0	3									
89	2.7	102	1.7	17	3.2	13	3.8	5	3.6	5	3.2	11	2.1	19	3.3	12	2.8	19	3
90	3.7	6					3.7	3	3.7	3									
91	2.9	7	3.0	1			2.7	3	3.0	3									
96	2.9	30	1.8	8	3.4	7	2.6	5	3.4	5	4.0	4							3
97	2.9	45	2.6	21	3.1	13	3.6	5	3.8	5									0
100	2.6	101	2.4	22	2.6	14					2.3	6	2.4	22	2.4	12	3.1	24	0
102	2.1	70	1.6	21	2.0	10	3.4	5	3.0	5			1.8	20	3.0	9			
105	3.0	91	3.2	20	2.8	12	2.8	4	2.8	4	1.7	6	3.0	20			3.3	24	4
107	2.9	44	2.2	16	2.9	11	3.8	4	3.8	4	3.4	8							3
109	3.1	14											2.5	6	3.5	8			
110	3.7	13	3.5	4			3.0	1			3.9	8							
113	2.9	10					2.8	5	3.0	5									
114	2.0	4					3.5	2	0.5	2									
118	2.5	17	4.0	1	3.2	6	2.6	5	1.4	5									
119	3.0	75	3.1	20	3.2	12					1.9	9	3.1	20	3.2	13			4
121	3.1	29	3.3	15	3.6	5							2.7	9					
126	1.7	11	1.6	5									1.7	6					
127	2.9	73	3.3	23	3.2	15	3.2	5	3.0	5							2.4	24	4
134	3.5	122	3.7	25	3.7	15	3.4	5	3.2	5	3.7	10	3.2	24	3.5	13	3.5	24	3
136	1.2	61	1.1	18	1.0	7					4.0	3	1.2	17	1.0	5	0.8	10	3
138	3.6	91	3.7	22	3.8	15	3.8	5	3.0	5	3.4	8	3.6	22	3.4	13			4
140	2.7	87	2.5	15	2.8	12	2.2	5	3.2	5	2.8	9	2.5	15	3.0	11	2.7	15	
141.1	1.6	100	1.1	19	1.5	13	2.2	5			3.3	11	1.3	18	1.8	12	1.3	21	2
141.2	1.3	6			1.3	3									1.3	3			
142	2.7	86	2.7	23	3.1	15	2.8	5	2.4	5			2.7	24	2.5	13			4

Table 4. *Overall laboratory performance ratings for standard reference samples distributed in September 1997--Continued*

(SRS, standard reference sample; Lab, laboratory number; OWR, overall weighted rating for all sample types; OLR, overall laboratory rating for reported values of a sample type; V/130, number of reported values of 130 total possible values from all sample types; V/28,V/16,V/5,V/5,V/11,V/26,V13 and V/26 are number of reported values possible for T-151, M-144, N-55, N-56, P-29, GWT-2, GWM-2 and AMW-4 respectively; NR, not rated.)

		SRS =	T-151		M-144		N-55		N-56		P-29		GWT-2		GWM-2		AMW-4		Hg-25
Lab	OWR	V/130	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/26	OLR	V/13	OLR	V/26	OLR
143	3.3	8					2.5	4	4.0	4									
145	2.3	85	2.1	21	3.2	13	2.6	5	1.4	5	1.8	6	1.7	22	3.3	12			4
146	2.8	88	3.0	15	2.3	12	3.2	5	3.2	5	1.4	5	2.8	15	2.0	11	3.3	19	4
147	3.5	28	3.8	22	2.4	5													2
149	2.5	44	2.9	10	2.5	12							2.6	11			1.9	10	3
151	3.2	52	3.5	18	3.5	8							2.6	18	3.7	7			2
154	2.3	36	2.2	22	2.4	14													
158	2.5	41	2.8	13	2.3	12	2.5	4	2.8	4	1.4	5			3.3	3			
180	2.8	76	2.7	16	2.8	12	3.6	5	2.4	5	3.1	8	2.4	19	3.0	11			
185	1.9	8					1.8	4	2.0	4									
190	2.8	42	2.9	12	2.7	13	3.2	5	3.4	5	1.9	7							
191	3.1	54	3.3	16	3.6	9	3.0	2	3.0	2			2.7	17	3.1	8			
193	2.6	14	2.5	12							3.0	1							4
196	2.9	30	2.5	4	2.8	10			3.5	2	3.1	10	2.8	4					
200	2.3	3					2.3	3											
203	2.8	34	3.0	8	3.1	11	2.8	4	3.0	4	2.0	7							
204	2.9	71	2.9	16	3.2	11	4.0	5	3.6	5	2.9	7	2.3	16	2.8	10			2
205	2.3	4					2.0	2	2.5	2									
208	3.1	9			3.5	2	4.0	2	3.0	2					2.3	3			
209	1.5	20	0.8	4	0.8	5	2.0	2	2.0	2	2.0	7							
212	2.8	87	3.6	16	3.0	12	1.8	4	1.6	5			2.6	17	3.2	12	2.5	20	3
213	3.2	15	2.3	6	4.0	4	4.0	2	3.0	2									4
215	2.1	109	1.8	21	1.6	14	2.0	4	2.8	5	2.9	9	1.9	21	1.5	13	2.6	22	4
217	2.9	37	3.0	18	2.6	13			3.0	5									4
218	0.7	21	0.0	7	1.0	8									1.0	6			
220	2.3	61	1.7	17	2.7	9					2.5	6	2.1	19	3.0	9			4
221	2.9	66	3.2	15	3.0	9	1.4	5	2.2	5	3.1	8	2.8	15	3.1	8			4
224	3.3	22			3.3	7	3.4	5	2.8	5	3.6	5							
227	1.2	10					2.0	5	0.4	5									
228	2.3	9									2.3	9							
230	2.4	7			2.4	7													
234	3.4	86	3.6	25	3.7	15	3.0	4	2.5	4			3.2	24	3.6	13			1
235	2.7	49	3.3	13	1.5	4							3.0	15	2.0	3	2.3	13	3
236	2.8	72	2.6	22	3.1	15							2.8	22	3.0	13			
237	2.2	45	1.5	17	4.0	2					3.0	8					2.3	18	
241	2.3	104	2.2	19	2.5	13	3.4	5	2.2	5	2.5	10	1.9	19	2.7	12	2.1	21	
243	3.5	11			4.0	3	3.7	3	2.7	3	4.0	2							
244	3.8	5			4.0	3					3.5	2							
246	2.8	89	2.6	19	3.0	11					3.3	6	2.7	21	3.0	10	2.7	22	
247	2.7	107	2.5	23	2.3	14					1.7	10	3.0	23	2.9	12	3.1	24	4
248	1.3	4					1.3	4											
253	1.8	23	1.3	3	2.2	6	2.3	4	2.3	4							1.0	6	
254	3.4	58	3.1	13	3.9	7							3.2	16	3.3	7	3.8	15	
255	2.9	66	3.2	19	3.3	11					2.3	7	2.8	18	2.7	10			0
256	2.2	24	2.0	14	2.4	10													
257	1.8	28	1.3	16	2.5	12													
259	3.7	29	3.8	14	3.7	15													
263	2.8	10			2.8	10													
264	3.2	11			3.2	11													
265	3.5	36	3.5	26	3.7	10													
266	3.3	12			3.3	12													
267	3.3	6			3.3	6													
268	2.1	27	2.1	18	2.1	9													
269	3.4	7			3.4	7													
270	3.0	5			3.0	5													
273	2.6	32	2.5	19	2.7	13													
283	2.0	109	2.4	22	1.6	15					1.3	11	1.9	23	1.5	13	2.7	24	0
284	1.3	111	1.1	22	1.5	13	1.6	5	1.4	5	0.9	8	1.2	22	1.3	12	1.7	23	0
285	1.8	10					2.0	5	1.6	5									
286	2.0	8			2.0	8													
287	1.4	56	1.6	12	1.7	10	0.0	2	0.0	2	1.1	7	1.2	13	1.8	10			
289	4.0	5							4.0	5									
290	1.5	10					1.8	5	1.2	5									
291	0.0	2					0.0	1	0.0	1									
292	2.5	65	2.1	16	2.8	12	2.8	4	1.8	4			2.4	17	3.0	11			4
294	2.6	28			3.4	8	1.5	4	2.3	4	3.2	5			2.3	7			
297	1.8	56	2.1	7	3.0	9			0.2	5	1.9	8	2.1	7	1.7	9	1.2	10	3
298	4.0	1																	4
300	1.0	32											1.2	23	0.6	9			
302	1.3	3							1.3	3									
304	3.3	39	3.6	19									3.0	19					4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Ag (Silver)		Al (Aluminum)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)		Ca (Calcium)	
			MPV =	11.1	µg/L	insuff data		1.01	µg/L	36.3	µg/L	40.7	µg/L	25.6	µg/L	37.9	mg/L
			F-pseudosigma =	1.0				0.39		4.6		1.7		1.6		1.4	
Lab	OLR	V/28		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.7	25		11.6	3	6.30	NR	1.60	2	36.4	4	40.8	4	25.5	4	37.9	4
3	2.4	23		13.0	1	< 30	NR	< 10	NR	41.0	2	41.0	4	26.0	4	40.0	1
4	0.9	17								32.0	3	35.1	0	18.3	0	40.0	1
5	2.9	22		9.0	0	< 30	NR	1.37	3	38.0	4	41.8	3	26.0	4	38.8	3
8	2.6	19		12.0	3	< 50	NR	0.70	3	28.0	1	38.0	1	27.0	3	38.3	4
10	3.2	6						< 2	NR								
11	3.4	20		10.8	4					35.5	4	384.0	0	25.4	4	38.3	4
12	2.0	4		15.0	0												
13	3.0	16		12.4	2	6.30	NR	< 5	NR			41.2	4	27.0	3	38.1	4
16	2.6	24		9.5	1	13.40	NR	1.30	3	151.0	0	41.4	4	28.4	1	38.0	4
18	3.2	18		11.0	4	< 100	NR	< 1	NR	< 50	NR	39.0	3	25.0	4	35.4	1
19	2.4	10										40.0	4			37.3	4
21	3.0	1															
23	2.1	10		11.9	3	< 50	NR	< 10	NR			< 100	NR			36.0	2
24	3.1	16								38.0	4	42.3	3			37.4	4
25	1.8	15		< 6	0	< 19	NR	< 50	NR	< 23	0	40.7	4	23.7	2	40.6	1
26	3.7	22		10.9	4	4.19	NR	0.72	3	34.9	4	41.2	4	27.1	3	37.2	4
30.1	3.0	23		11.0	4	< 10	NR	1.30	3	36.0	4	40.0	4	25.0	4	33.0	0
30.2	2.0	3														37.0	3
32	3.3	23		11.4	4	7.00	NR	< 0.3	NR	38.0	4	41.0	4	28.0	1	37.5	4
33	1.3	10				65.00	NR					45.4	0			40.2	1
34	2.0	3		11.4	4												
39	2.9	20		10.0	2	88.00	NR	0.60	2	41.0	2	41.0	4	25.0	4	35.8	2
40	2.6	19		11.6	3					26.6	0	39.2	3	24.8	4	36.6	3
42	3.0	16		10.6	3	< 10	NR	1.18	4	39.2	3	41.3	4	27.8	2		
43	3.7	6														37.9	4
46	3.2	18		9.9	2			1.30	3	29.6	2	39.7	3	26.2	4	37.7	4
48	2.5	21		10.6	3	16.00	NR	0.50	2	39.0	3	38.0	1	24.0	3	40.4	1
51	3.8	4														38.6	3
59	3.2	18		10.7	4	6.70	NR	0.80	3			42.8	2	24.5	3	36.5	3
64	3.4	5														38.4	4
68	2.8	24		10.4	3	20.50	NR	1.95	0	56.7	0	39.0	3	25.1	4	38.6	3
69	2.0	12		8.4	0	< 50	NR	< 5	NR					23.9	2	36.3	2
70	3.3	15		11.7	3	< 100	NR	< 10	NR	< 100	NR	< 50	NR	25.7	4	38.6	3
76	3.0	5										42.2	3				
83	3.3	14										39.6	3	25.2	4	36.7	3
84	2.7	3														36.0	2
85	2.7	11		12.0	3	< 100	NR			40.0	3	36.0	0	25.0	4	35.9	2
86	3.3	13								34.8	4	41.9	3	25.6	4	37.4	4
87	2.1	14		10.3	3			< 2	NR			36.8	0			38.8	3
89	1.7	17		11.6	3	18.10	NR	< 2	NR			< 50	NR	22.3	0	44.6	0
91	3.0	1															
96	1.8	8		12.7	1			< 1	NR			< 100	NR	23.0	1		
97	2.6	21		8.3	0	9.75	NR					48.8	0	25.8	4	37.7	4
100	2.4	22		11.4	4	17.00	NR	< 2	NR	120.0	0	42.8	2	27.4	2	38.6	3
102	1.6	21		< 1	0	5.00	NR	< 15	NR			39.0	3	23.0	1	36.0	2
105	3.2	20		11.8	3	< 10	NR	< 4	NR			41.0	4	29.0	0	37.0	3
107	2.2	16		12.9	1	13.50	NR	< 5	NR			49.3	0			37.4	4
110	3.5	4														38.1	4
118	4.0	1															
119	3.1	20		9.8	2	5.60	NR	< 2	NR	< 50	NR	40.0	4	24.7	3	38.0	4
121	3.3	15		11.3	4							40.0	4			37.4	4
126	1.6	5		10.0	2												
127	3.3	23		11.6	3	< 30	NR	< 2	NR	33.0	3	39.3	3	25.0	4	38.1	4
134	3.7	25		10.7	4	3.63	NR	0.43	2	36.3	4	41.3	4	25.6	4	37.6	4
136	1.1	18				749.00	NR	44.40	0	54.0	0	49.6	0			36.1	2
138	3.7	22		11.1	4	7.44	NR	< 2	NR	38.8	3	41.8	3	25.9	4	38.2	4
140	2.5	15		10.0	2							55.0	0			37.0	3
141	1.1	19		12.3	2	< 100	NR	< 50	NR	46.6	0	36.7	0	22.9	1	33.0	0
142	2.7	23		10.8	4	< 50	NR	1.02	4	< 50	NR	40.7	4	23.8	2	38.1	4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Ag (Silver)		Al (Aluminum)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)		Ca (Calcium)	
		MPV =	11.1	µg/L	insuff data		1.01	µg/L	36.3	µg/L	40.7	µg/L	25.6	µg/L	37.9	mg/L
		F-pseudosigma =	1.0				0.39		4.6		1.7		1.6		1.4	
Lab	OLR	V/28	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
145	2.1	21			67.00	NR	14.00	0	34.0	4	42.0	3	27.0	3	38.4	4
146	3.0	15	13.3	0	< 200	NR	< 10	NR			40.7	4	26.0	4	36.4	2
147	3.8	22	11.0	4	6.50	NR	0.85	4	34.0	4	40.0	4	26.0	4	36.0	2
149	2.9	10									40.0	4			36.9	3
151	3.5	18	11.1	4	6.00	NR	0.77	3			40.0	4	27.5	2		
154	2.2	22					1.27	3	36.2	4	35.5	0	23.9	2	36.3	2
158	2.8	13							30.0	2	43.0	2	26.0	4	42.0	0
180	2.7	16	11.2	4	45.50	NR	< 40.1	NR	51.6	0	41.8	3	24.9	4	38.1	4
190	2.9	12	11.3	4	6.19	NR	0.73	3								
191	3.3	16			5.00	NR	1.07	4			40.7	4			36.6	3
193	2.5	12	10.2	3			< 5	NR					23.7	2	36.6	3
196	2.5	4													41.2	0
203	3.0	8													35.8	2
204	2.9	16			6.66	NR	1.42	2			37.7	1			36.4	2
209	0.8	4													64.4	0
212	3.6	16	11.0	4	< 100	NR	< 5	NR	< 100	NR	40.0	4	26.0	4	36.9	3
213	2.3	6	9.4	1									25.1	4		
215	1.8	21	13.0	1	< 50	NR	< 5	NR	30.0	2	40.0	4	25.0	4	35.2	1
217	3.0	18	10.9	4	< 100	NR	< 2	NR	< 100	NR	41.4	4	25.5	4	36.2	2
218	0.0	7			170.00	NR									42.0	0
220	1.7	17					< 1	NR	36.0	4	41.0	4	27.2	2	37.8	4
221	3.2	15	10.8	4	7.67	NR	1.00	4							35.5	1
234	3.6	25	10.8	4	8.64	NR	0.87	4	36.4	4	40.8	4	24.8	4	38.0	4
235	3.3	13	11.1	4	6.90	NR	1.10	4			39.0	3	28.0	1	39.3	2
236	2.6	22	10.0	2	23.00	NR	< 35	NR	33.0	3	38.0	1	26.0	4	36.2	2
237	1.5	17			142.00	NR			44.0	1	47.0	0	32.0	0	38.3	4
241	2.2	19	10.4	3	8.70	NR	< 5	NR			62.0	0	6.2	0	39.7	2
246	2.6	19	13.2	0	< 35	NR	< 65	NR	36.7	4	42.4	3	26.7	3	37.5	4
247	2.5	23	11.9	3	7.60	NR	< 2	NR	37.6	4	43.4	1	29.4	0	38.3	4
253	1.3	3														
254	3.1	13			< 20	NR	< 110	NR	30.0	2					37.1	3
255	3.2	19	11.3	4	< 34	NR	< 2	NR	38.3	4	42.2	3	25.3	4	38.4	4
256	2.0	14	9.5	1	16.88	NR	2.45	0	27.2	1	39.1	3				
257	1.3	16	6.0	0	5.04	NR	0.66	3							33.3	0
259	3.8	14	11.6	3					36.0	4	40.1	4				
265	3.5	26	11.2	4	6.20	NR	1.00	4	35.7	4	40.0	4	26.0	4	38.4	4
268	2.1	18	10.0	2	5.00	NR	< 10	NR	40.0	3	46.0	0	21.0	0	39.0	3
273	2.5	19	11.2	4	6.60	NR			30.1	2	38.9	2			37.4	4
283	2.4	22	10.0	2	8.00	NR	< 5	NR	20.0	0	40.0	4	26.7	3	39.1	3
284	1.1	22	13.0	1	15.00	NR	1.00	4			34.0	0	36.0	0	46.1	0
287	1.6	12			7.70	NR									38.0	4
292	2.1	16	13.0	1	< 100	NR	< 3	NR			41.0	4	23.0	1	41.7	0
297	2.1	7													38.0	4
304	3.6	19	11.5	4	6.80	NR	0.78	3			39.8	3	27.1	3	38.0	4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginel)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)		Li (Lithium)	
MPV =	26.8	µg/L	insuff data		30.1	µg/L	33.0	µg/L	10.0	µg/L	1.95	mg/L	27.6	µg/L
F-pseudosigma =	1.6				2.2		2.5		4.4		0.13		2.1	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	26.6	4	< 1	NR	29.8	4	32.7	4	7.5	3	1.87	3	28.8	3
3	25.8	3	< 5	NR	32.0	3	33.0	4	80.0	0	1.99	4	10.0	0
4	19.5	0			23.0	0	22.0	0			2.20	1	16.1	0
5	26.0	3	< 3	NR	28.7	3	34.3	4	9.7	4	1.42	0	26.4	3
8	27.0	4	< 10	NR	27.0	2	31.0	3	< 20	NR	2.00	4	< 20	0
10	26.5	4			31.9	3	35.0	3	< 20	NR				
11	26.1	4			29.7	4	34.3	4			1.65	0	27.3	4
12	26.8	4					32.0	3						
13	25.8	3	< 5	NR	32.4	2	36.8	2	< 10	NR	1.98	4		
16	26.0	3	0.46	NR	29.0	4	33.7	4	8.8	4	2.20	1		
18	26.0	3	< 5	NR	28.0	3	32.0	3	< 50	NR	1.97	4		
19	24.0	1			32.0	3	28.0	0			1.76	2		
21									14.0	3				
23	24.0	1			28.4	3	31.2	3	< 500	NR	2.07	3		
24	26.8	4			32.0	3	35.7	3			1.71	1	31.9	0
25	25.0	2	< 12	NR	31.0	4	33.0	4	< 6	NR	< 1.12	NR	30.0	2
26	28.5	2	< 6	NR	31.1	4	33.2	4	6.7	3	1.93	4	27.5	4
30.1	27.0	4	0.10	NR	33.0	2	34.0	4	175.0	0			25.0	2
30.2									< 500	NR				
32	27.0	4	< 0.1	NR	30.0	4	33.0	4			2.00	4	28.0	4
33									0.0	0	2.00	4		
34	29.0	2			24.1	0								
39	24.0	1			27.0	2	37.0	2					25.5	2
40	25.8	3					32.2	4	6.3	3	1.84	3	27.6	4
42	28.1	3	< 2	NR	29.3	4	30.0	2						
43									< 10	NR	2.00	4		
46	26.2	4			29.3	4	34.3	4			2.00	4		
48	26.0	3	0.10	NR	29.0	4	29.0	1	13.0	3	2.23	0		
51											1.94	4		
59	27.5	4			28.6	3	34.2	4			2.20	1		
64											2.05	3		
68	27.0	4	0.20	NR	29.2	4	38.3	1	11.6	4	2.02	3	27.1	4
69	22.5	0			29.1	4	< 50	NR	< 50	NR	2.09	2	< 50	NR
70	26.5	4	< 50	NR	32.6	2	35.7	3	< 20	NR	2.01	3		
76					32.6	2	36.9	2						
83	26.9	4			28.9	3	33.7	4	18.4	1	1.90	4		
84														
85			< 10	NR	30.0	4	38.0	1	< 10	NR	1.84	3		
86	28.0	3			27.9	3	33.5	4			1.95	4		
87	29.0	2			44.0	0	34.0	4	< 40	NR	1.59	0		
89	30.8	0	< 5	NR	32.0	3	31.2	3	< 50	NR	1.82	3		
91									< 20	NR				
96	25.2	2			35.4	0	34.2	4	< 50	NR				
97	26.0	3			34.2	1	35.2	3	8.2	4	1.88	3		
100	32.4	0	0.40	NR	31.9	3	31.9	3	< 10	NR	1.78	2	28.0	4
102	25.0	2	< 1	NR	24.0	0	28.0	0	8.0	4	1.90	4		
105	27.0	4	< 1	NR	29.0	4	31.0	3	< 20	NR	1.72	1	< 50	NR
107	26.7	4			30.9	4	36.0	2	20.0	0	2.55	0		
110											1.82	3		
118														
119	27.1	4	0.08	NR	28.3	3	33.0	4	10.0	4	2.00	4		
121	26.8	4	0.11	NR			31.2	3	14.0	3				
126	29.1	2					38.0	1	< 50	NR				
127	28.9	2	< 6	NR	29.4	4	32.3	4	11.0	4	2.12	2	23.4	1
134	26.4	4	< 1	NR	29.0	4	33.9	4	8.0	4	1.91	4	25.3	2
136	24.6	2	8.30	NR	30.7	4	45.3	0	24.4	0				
138	27.0	4	0.20	NR	29.7	4	33.6	4	7.0	3	1.85	3		
140	26.0	3			34.0	1	33.0	4	8.0	4	1.94	4		
141	25.0	2	< 10	NR	28.0	3	29.5	1	< 50	NR	1.73	1		
142	28.2	3	< 1	NR	30.3	4	33.3	4	< 2	NR	1.78	2	28.6	4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)		Li (Lithium)	
MPV =	26.8	µg/L	insuff data		30.1	µg/L	33.0	µg/L	10.0	µg/L	1.95	mg/L	27.6	µg/L
F-pseudosigma =	1.6				2.2		2.5		4.4		0.13		2.1	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
145	29.0	2	4.00	NR	38.0	0	44.0	0	6.0	3	1.92	4	31.0	1
146	27.0	4	< 10	NR	31.0	4	36.4	2	< 50	NR	2.08	2		
147	27.0	4			31.0	4	32.0	3	< 40	NR			27.0	4
149	29.0	2			37.0	0	34.0	4			1.90	4		
151	28.0	3			29.9	4	33.0	4	5.2	2			28.1	4
154	25.7	3	2.00	NR	33.9	1	30.5	2	5.5	2	2.50	0		
158			3.90	NR			37.0	2	4.8	2	2.00	4		
180	29.6	1	< 5.22	NR	28.8	3	33.6	4	< 3.33	NR	1.56	0		
190	26.6	4			34.7	0	34.2	4	17.2	1				
191	26.3	4	0.10	NR	27.4	2	28.5	1	< 50	NR	1.98	4		
193	25.0	2			30.2	4	< 50	NR			1.88	3		
196											1.87	3		
203							38.0	1	< 10	NR	2.13	2		
204	25.3	3			28.1	3	31.0	3	< 0.02	0	1.96	4		
209											7.43	0		
212	27.0	4	< 1	NR	29.0	4	31.0	3	< 100	NR	< 5	NR		
213			< 0.7	NR	29.8	4	34.8	3	137.0	0				
215	23.0	0	< 5	NR	28.0	3	29.0	1	10.0	4	< 1	0		
217	26.4	4	< 10	NR	32.0	3	32.5	4	< 100	NR	< 5	NR	< 50	NR
218									50.0	0	2.30	0		
220	31.0	0			46.0	0	43.1	0	11.0	4	3.80	0		
221	26.4	4	1.00	NR	31.5	3	34.7	3	12.8	3	1.94	4		
234	28.5	2	0.50	NR	30.7	4	32.2	4	8.6	4	1.95	4	26.6	4
235	26.2	4			29.0	4	32.8	4						
236	26.0	3	< 6	NR	28.0	3	33.0	4	8.0	4	1.93	4	24.0	1
237	31.0	0	< 6	NR	32.0	3	45.0	0	< 50	NR			29.0	3
241	28.0	3			4.0	0	29.5	1	12.0	4	1.70	1		
246	26.8	4	< 10	NR	33.5	1	34.3	4	< 15	NR	2.09	2	28.0	4
247	29.7	1	< 1	NR	31.8	3	34.8	3	12.0	4	2.25	0	30.9	1
253	313.0	0					36.9	2						
254	30.0	0	< 5	NR	30.0	4	34.0	4	< 8	NR	1.80	2	30.0	2
255	27.1	4	23.20	NR	31.4	3	34.1	4	< 14.2	NR	2.00	4		
256	25.6	3	1.97	NR			30.0	2	4.4	2	1.48	0	26.8	4
257	29.0	2	0.51	NR	45.0	0	29.0	1	39.9	0			29.0	3
259	27.8	3			29.9	4	33.0	4			1.88	3	28.3	4
265	27.2	4	< 0.5	NR	31.0	4	32.0	3	13.0	3	1.88	3	26.0	3
268	29.0	2	< 20	NR	32.0	3	37.0	2	9.0	4	2.00	4	29.0	3
273	27.5	4	5.08	NR	26.6	1	21.0	0	10.0	4	2.00	4	28.3	4
283	26.5	4	0.10	NR	30.8	4	26.8	0	< 20	NR	1.73	1	26.0	3
284	31.0	0	< 100	NR	34.0	1	44.0	0	< 50	NR	1.06	0		
287	36.0	0			32.0	3	41.0	0	10.0	4	3.00	0		
292	23.2	0			30.0	4	29.0	1	< 10	NR	1.90	4		
297									35.0	0	1.98	4		
304	27.1	4	0.08	NR	32.0	3	32.4	4			1.90	4		

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Mg (Magnesium)		Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)		Sb (Antimony)	
MPV =	17.5	mg/L	13.0	µg/L	29.6	µg/L	55.0	mg/L	10.0	µg/L	19.8	µg/L	26.8	µg/L
F-pseudosigma =	0.6		1.1		1.9		1.6		1.7		2.3		2.0	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	17.5	4	12.8	4	29.2	4	55.4	4	10.0	4	20.0	4	28.7	3
3	18.7	0	13.0	4	31.0	3	56.1	4	10.0	4	21.0	3	23.0	1
4	18.9	0	4.3	0	14.2	0	52.9	3			2.1	0		
5	17.7	4	17.4	0	27.2	2	57.5	3	< 10	NR	20.2	4	29.6	2
8	17.7	4	14.0	3	< 20	NR	55.0	4	< 20	NR	< 30	NR	2.3	0
10			14.5	2		NR					19.0	4		
11	17.5	4	13.1	4	28.4	4	49.4	0	10.1	4	19.7	4	25.9	4
12											16.0	1		
13	17.4	4	10.2	0	< 50	NR	54.0	4	< 20	NR	22.6	2	26.4	4
16	18.0	3	13.0	4	27.3	3	56.0	4	14.5	0	29.0	0	26.7	4
18	16.0	0	13.0	4	28.8	4	54.7	4	9.6	4	20.0	4	26.0	4
19	17.3	4	14.0	3			53.0	3	22.0	0				
21														
23	17.0	3	15.5	0	< 100	NR	47.1	0	< 20	NR	17.5	3		
24	17.9	3	13.6	3	29.8	4	55.5	4						
25	18.6	1	< 2	0			58.4	2	< 49	NR	< 71	NR	< 51	NR
26	17.9	3	13.4	4	28.8	4	56.0	4	9.8	4	20.9	4	27.3	4
30.1	18.0	3	14.0	3	32.4	2	55.0	4	10.5	4	19.0	4	29.0	2
30.2	18.0	3					62.0	0						
32	18.6	1	13.0	4	31.0	3	57.8	2	12.0	2	20.0	4	26.0	4
33	17.8	3	20.0	0			55.4	4			78.4	0		
34														
39	17.5	4	13.3	4	30.5	4	53.9	4	12.0	2	21.0	3	28.0	3
40	16.2	0	12.3	3	32.5	2	56.2	4	11.3	3				
42			11.9	3	28.9	4			13.3	1	21.7	3	28.0	3
43	17.4	4	14.0	3			53.5	3						
46	17.4	4	12.4	3	34.3	0	56.2	4			22.0	3	25.3	3
48	19.1	0	12.9	4	30.0	4	60.1	1	9.3	4	19.5	4	28.0	3
51	17.6	4					54.0	4						
59	17.3	4	13.0	4			52.0	2	10.4	4	20.1	4	27.8	4
64	17.0	3					55.6	4						
68	18.2	2	13.8	3	27.3	3	55.0	4	9.5	4	17.8	3	23.5	1
69	17.2	3	21	0			54.4	4	< 50	NR	19.1	4	23.4	1
70	17.9	3	< 20	NR	< 50	NR	56.2	4	< 50	NR	20.1	4	23.3	1
76	17.5	4											27.3	4
83	17.3	4	12.4	3			56.5	3			21.8	3		
84	16.9	2					53.7	4						
85	17.2	3					53.0	3	< 10	NR				
86	18.3	2	13.2	4			57.4	3						
87	16.9	2	11.0	1	29.8	4	54.0	4	18.0	0	< 20	NR		
89	17.9	3	11.2	1			53.0	3	10.2	4	14.4	0	30.9	1
91			12.4	3										
96			< 20	NR					8.1	2	19.4	4	14.4	0
97	17.4	4	13.6	3	31.7	2	53.8	4	11.8	2	18.7	4	29.5	2
100	18.5	1	13.5	4	31.6	3	58.5	2	12.9	1	21.4	3	27.6	4
102	19.0	0	12.0	3			44.0	0	< 1	0	25.0	0	25.0	3
105	17.0	3	12.8	4	30.0	4	54.5	4	10.0	4	19.5	4	26.7	4
107	16.9	2	10.0	0			54.7	4	8.4	3	15.1	1		
110	17.2	3					55.7	4						
118														
119	17.3	4	10.0	0	30.9	3	57.0	3	9.7	4	18.6	4	22.1	0
121	17.6	4					55.0	4	9.8	4	18.1	3		
126									30.0	0	21.0	3		
127	17.5	4	12.5	4	30.5	4	55.9	4	9.3	4	18.4	3	24.1	2
134	17.7	4	13.1	4	29.6	4	54.5	4	9.9	4	19.1	4	26.1	4
136	16.4	1	13.6	3	41.7	0			18.0	0	39.1	0		
138	17.6	4	13.2	4	28.8	4	54.9	4	11.3	3	19.7	4	27.0	4
140	16.9	2	13.0	4			56.0	4	6.0	0	21.0	3		
141	10.8	0	16.8	0	24.3	0	49.9	2	< 20	NR	15.1	1	34.8	0
142	18.7	0	< 7	0	30.2	4	56.4	3	10.1	4	29.7	0	33.3	0

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Mg (Magnesium)		Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)		Sb (Antimony)	
MPV =	17.5	mg/L	13.0	µg/L	29.6	µg/L	55.0	mg/L	10.0	µg/L	19.8	µg/L	26.8	µg/L
F-pseudosigma =	0.6		1.1		1.9		1.6		1.7		2.3		2.0	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
145	18.2	2	14.0	3	31.0	3	56.3	4	16.0	0	38.0	0		
146	17.2	3	13.4	4	29.3	4	59.2	1	< 40	NR	21.5	3	< 50	NR
147	17.0	3	13.0	4	29.0	4			9.6	4	19.0	4	27.0	4
149	17.2	3	11.0	1			56.0	4			20.0	4		
151			12.8	4	30.5	4			10.2	4	19.5	4	27.9	3
154	16.6	1	11.2	1	25.7	1	52.6	3	9.4	4	19.6	4	25.8	4
158	18.0	3	13.0	4			54.0	4	8.9	3				
180	17.6	4	13.9	3	27.4	3	56.2	4	< 16.3	NR	< 31.9	NR	< 27.8	NR
190			14.0	3					9.8	4	23.6	1		
191	17.7	4	11.8	2			55.1	4	9.6	4	17.9	3		
193	16.5	1					54.4	4	41.0	0	21.3	3	26.8	4
196	17.4	4					57.1	3						
203	17.4	4	14.0	3			54.4	4	< 50	NR				
204	17.2	3	13.3	4			54.3	4	8.7	3	20.7	4		
209	47.2	0					52.4	3						
212	17.7	4	12.0	3			57.1	3	11.0	3	19.0	4	28.0	3
213											16.3	2		
215	15.8	0	15.0	1	28.0	3	51.8	2	9.0	3	18.0	3	29.0	2
217	17.0	3	12.4	3	26.1	1	53.6	3	< 40	NR	18.3	3	25.7	3
218	21.0	0	18.0	0			67.0	0						
220	17.0	3	15.3	0	32.9	1	55.2	4	17.1	0	15.9	1		
221	17.4	4	14.8	1	29.2	4	55.3	4	9.9	4	17.4	2		
234	17.2	3	13.5	4	27.0	2	54.9	4	10.4	4	19.7	4	26.8	4
235			13.0	4					9.5	4	17.5	3		
236	17.2	3	13.0	4	27.0	2	52.3	3	9.0	3	24.0	1	25.0	3
237	17.6	4	9.0	0	26.0	1	54.9	4	22.0	0	23.0	2		
241	17.5	4	12.0	3	37.0	0	51.0	2	< 10	NR	20.9	4	32.5	0
246	18.1	3	13.7	3	30.2	4	56.1	4	< 15	NR	26.3	0	< 85	NR
247	17.7	4	13.4	4	30.1	4	57.6	3	11.6	3	20.3	4	29.8	2
253											16.9	2		
254	17.5	4	13.0	4			56.0	4	< 15	NR	< 100	NR		
255	17.6	4	13.0	4	28.8	4	56.1	4	8.4	3	23.5	1	56.1	0
256			11.7	2					8.8	3				
257	21.4	0	20.6	0	30.0	4			11.7	3	33.0	0	9.6	0
259			12.9	4	28.7	4	54.1	4	10.3	4	19.8	4		
265	17.8	3	13.7	3	30.0	4	53.8	4	9.0	3	17.8	3	28.2	3
268	18.7	0	13.0	4	25.0	1	58.0	2	< 20	NR	< 100	NR		
273	17.4	4	12.4	3			55.0	4	9.7	4	13.5	0		
283	18.6	1	11.6	2	28.0	3	57.8	2	8.8	3	21.0	3	25.5	3
284	17.6	4	14.6	2	68.0	0	55.8	4	13.0	1	20.0	4	20.0	0
287	16.0	0	15.0	1			53.0	3	6.0	0	18.0	3		
292	19.3	0	13.0	4	27.0	2	60.8	0	< 20	NR	18.0	3	28.0	3
297	17.8	3	10.4	0			58.4	2			22.2	2		
304	17.2	3	13.5	4	30.0	4	54.5	4	9.9	4	19.3	4	26.7	4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possibla values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO_2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	1.80	µg/L	1.43	mg/L	387	µg/L	62.0	µg/L	15.0	µg/L	59.0	µg/L	6.57	µg/L
F-pseudosigma =	1.39		0.10		16		6.3		0.6		4.3		2.24	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	< 1	NR	1.40	4	389	4	63.2	4	15.0	4	58.3	4	6.30	4
3	< 10	NR	1.83	0	405	2	57.0	3			60.0	4	11.00	1
4			1.55	2	387	4					53.7	2		
5	< 2	NR	1.44	4	410	2					59.0	4	6.15	4
8	0.10	2	1.30	2	381	4	< 50	NR			55.0	3	< 10	NR
10	< 2	NR											8.50	3
11					380	4	64.1	4			58.0	4		
12														
13	< 5	NR	1.47	4			68.5	2			57.2	4	< 10	NR
16	2.90	3			358	1	67.0	3	20.1	0	59.9	4	6.10	4
18	< 1	NR			366	2	61.0	4			56.0	3	< 100	NR
19														
21														
23	< 1	NR											< 20	NR
24			1.47	4	412	1					59.0	4	5.80	4
25	< 129	NR	4.36	0	416	1	< 68	NR			58.0	4	< 4	NR
26	< 0.5	NR	1.52	3							58.0	4	5.93	4
30.1	< 1	NR			390	4	60.0	4	14.0	2	56.0	3	7.70	3
30.2														
32	< 4	NR	1.47	4	362	1	66.0	3	15.6	3	58.0	4	7.00	4
33			1.62	1	422	0								
34														
39					370	2					58.0	4	6.80	4
40			1.75	0	255	0					55.3	3	5.90	4
42	< 2	NR					74.8	1			60.3	4	6.08	4
43			1.40	4										
46							55.5	2			60.7	4		
48	< 0.4	NR					65.0	4			56.0	3	9.00	2
51														
59	0.89	3					66.8	3					8.70	3
64			1.36	3										
68	1.80	4			384	4	53.7	2			57.0	4	186.00	0
69	< 5	NR					71.0	2					< 50	NR
70	< 10	NR	1.36	3	394	4	58.9	4			59.0	4	< 20	NR
76														
83			1.37	3									6.10	4
84														
85					387	4								
86					408	2					62.5	3		
87	< 2	NR	1.35	3									5.96	4
89	< 2	NR	1.41	4			52.2	1			89.2	0	17.10	0
91														
96	< 1	NR											< 10	NR
97			1.40	4	311	0	65.2	3			66.8	1	5.00	3
100	< 2	NR	1.78	0	387	4	33.5	0			57.4	4	5.26	3
102	6.00	0	1.08	0	396	3	122.0	0			59.0	4	7.00	4
105	< 7	NR	1.57	2	401	3	62.0	4			59.0	4	9.90	2
107	2.50	4	1.38	3									5.00	3
110														
118			1.46	4										
119	0.48	3	1.50	3			63.8	4					10.00	1
121			1.44	4	387	4			12.3	0	49.5	0	6.10	4
126	< 1	NR											< 20	NR
127	< 3	NR	1.35	3	364	2	60.3	4	< 200	NR	55.0	3	6.55	4
134	0.36	2	1.47	4	389	4	64.4	4			58.3	4	5.10	3
136	48.00	0			374	3	151.0	0			57.4	4	20.90	0
138	< 1	NR	1.38	3	392	4	67.0	3			57.9	4	6.58	4
140			1.38	3									10.00	1
141	2.20	4					54.0	2			51.0	1	11.80	0
142	0.94	3			392	4	99.0	0	21.8	0	60.4	4	6.45	4

Table 5. *Laboratory performance ratings for standard reference sample T-151 (trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO_2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	1.80	µg/L	1.43	mg/L	387	µg/L	62.0	µg/L	15.0	µg/L	59.0	µg/L	6.57	µg/L
F-pseudosigma =	1.39		0.10		16		6.3		0.6		4.3		2.24	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
145			1.48	3	397	3					65.0	2	13.00	0
146	< 10	NR					61.9	4			60.2	4	< 20	NR
147			1.40	4	376	3	62.0	4	15.0	4	59.0	4	6.00	4
149														
151			1.50	3	386	4	67.7	3					6.70	4
154	1.26	4			354	0	67.0	3			62.1	3	2.10	1
158											62.0	3	7.10	4
180	< 53.2	NR					60.1	4			69.8	0	4.10	2
190	2.36	4	1.43	4									8.44	3
191	< 2	NR	1.32	2	382	4	58.6	3					7.00	4
193	< 5	NR					51.8	1					< 50	NR
196														
203			1.41	4									6.00	4
204	2.46	4	1.55	2									6.34	4
209														
212	< 5	NR	1.40	4			62.0	4			57.0	4	< 10	NR
213													< 10	NR
215	< 5	NR	1.20	0			31.0	0			89.0	0	6.00	4
217	< 2	NR	1.32	2	37	0	60.8	4	15.0	4	56.5	3	< 20	NR
218					460	0								
220	< 1	NR									70.0	0	9.00	2
221	0.50	3												
234	0.28	2	1.44	4	384	4	55.0	2			55.2	3	6.90	4
235					383	4					63.6	2		
236	< 90	NR	1.10	0	379	3					64.0	2	4.00	2
237			1.77	0	407	2					67.0	1	< 10	NR
241	< 5	NR	1.50	3			67.9	3			59.2	4	6.00	4
246	< 80	NR	1.54	2	397	3	< 0.1	0			65.6	1	< 5	NR
247	< 5	NR	1.01	0	376	3	72.6	1			64.1	2	6.40	4
253														
254			1.37	3	390	4			14.8	4			< 5	NR
255	< 2	NR					< 18.6	0			63.0	3	5.08	3
256	< 1	NR			389	4					9.5	0	5.00	3
257											50.8	1	7.00	4
259					380	4								
265	0.70	3	1.50	3	376	3	58.5	3	15.5	3	59.7	4	5.80	4
268	< 15	NR	1.25	1	400	3					66.0	1	< 20	NR
273			1.61	1	397	3	17.4	0					12.00	0
283	< 5	NR	1.37	3	413	1	67.0	3	15.8	2	65.4	2		
284	3.00	3	< 0.1	0	474	0	84.0	0			40.0	0	14.00	0
287													10.00	1
292	2.00	4					55.0	2					< 10	NR
297														
304							62.0	4			63.0	3	9.50	2

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte = Alkalinity		B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD (Dissolved Solids)	
			MPV = 88.8 mg/L		46.1 µg/L		74.0 mg/L		77.0 mg/L		546 mg/L	
			F-pseudosigma = 3.7		7.3		3.2		3.2		14	
Lab	OLR	V/16	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.6	15	89.9	4	45.7	4	75.0	4	76.2	4	554	3
3	3.1	15	90.0	4	52.0	3	77.7	2	77.6	4	550	4
5	3.1	13	89.3	4	46.9	4	68.3	1	73.9	3	553	4
8	2.8	15	88.0	4	45.0	4	76.4	3	71.0	1	553	4
10	3.6	13	89.3	4	70.0	0	73.4	4	78.1	4	547	4
11	2.4	14	83.5	2	46.5	4	77.0	3	81.0	2	532	3
12	2.9	7	90.0	4					77.0	4	530	2
13	3.3	12	86.0	3			71.3	3	75.2	3	534	3
15	3.0	14	88.0	4	71.4	0	73.9	4	70.2	0	560	3
16	2.7	14	81.0	1	207.0	0	75.0	4	74.7	3	525	2
18	2.4	14	91.7	3	< 50	NR	71.0	3	81.1	2	530	2
19	3.4	10	90.0	4			72.5	4	75.0	3	545	4
23	2.5	6	90.0	4					74.8	3	546	4
24	3.4	13	91.3	3	45.6	4	73.8	4	77.1	4		
25	2.1	14	93.0	3	< 23	0	75.4	4	76.9	4	512	0
26	3.5	12	89.0	4	42.2	3	75.1	4	78.0	4	562	2
30.1	2.5	8			43.0	4	60.0	0	74.9	3		
30.2	3.3	3					71.0	3				
32	2.5	14	91.4	3	48.0	4	79.5	1	76.1	4	559	3
33	2.9	11	88.0	4			80.6	0	74.4	3		
34	2.5	2	93.4	2								
38	3.2	9	88.8	4			73.8	4				
39	2.8	12	82.7	2			70.4	2	82.5	1	540	4
40	2.3	13	143.0	0	34.0	1	74.2	4	73.7	2	548	4
42	2.9	7	88.0	4	46.7	4			80.3	2		
43	4.0	10	91.0	4			74.2	4			550	4
46	3.4	14	88.0	4	39.4	3	72.1	3	77.7	4	548	4
48	2.2	12	74.0	0	43.0	4	77.5	2	71.0	1	550	4
51	2.8	10	91.0	4			77.3	2	86.2	0	540	4
57	2.1	13	84.0	2	< 100	NR	71.6	3	74.0	3	550	4
59	2.9	11	88.5	4			73.8	4	74.8	3	548	4
64	3.9	9					75.5	4	77.7	4	78	0
68	2.5	13	87.7	4	87.3	0	75.0	4	77.9	4		
69	3.2	10	86.0	3			71.5	3	78.0	4	547	4
70	2.7	13	91.0	4	< 100	NR	76.9	3	83.0	1	546	4
76	3.8	4							77.8	4		
83	3.2	10	87.4	4			72.6	4	73.8	3		
84	3.6	9	88.9	4			73.6	4	81.0	2		
85	3.5	15	90.7	4	50.0	3	71.8	3	77.9	4	522	1
86	2.8	12			45.4	4	75.8	3	78.1	4		
87	2.8	12	91.0	4			68.5	1	76.0	4	556	3
89	3.2	13	91.6	3			88.5	0	75.4	4	541	4
96	3.4	7	91.0	4					78.3	4	561	2
97	3.1	13	93.4	2			72.9	4	77.6	4	561	2
100	2.6	14	48.0	0	80.7	0	75.9	3	82.4	1	548	4
102	2.0	10					71.0	3	76.9	4		
105	2.8	12	88.8	4			72.0	3	77.0	4	592	0
107	2.9	11	85.4	3			73.9	4	75.0	3		
118	3.2	6	92.0	3							583	0
119	3.2	12			< 100	NR	73.0	4	74.5	3	529	2
121	3.6	5					74.0	4				
127	3.2	15	91.6	3	44.1	4	76.5	3	80.6	2	578	0
134	3.7	15	91.6	3	46.2	4	74.4	4	77.5	4	556	3
136	1.0	7	88.7	4	10.4	0	19.8	0				
138	3.8	15	92.6	3	49.2	4	75.0	4	76.2	4	535	3
140	2.8	12					71.0	3	78.9	3	549	4
141.1	1.5	13	88.6	4	64.6	0	64.9	0	74.4	3	540	4
141.2	1.3	3							69.3	0		
142	3.1	15	82.0	2	50.0	3	73.6	4	79.2	3	530	2
145	3.2	13	76.0	0	52.0	3	74.5	4	80.4	2		

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte = Alkalinity		B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD (Dissolved Solids)	
			MPV = 88.8 mg/L		46.1 µg/L		74.0 mg/L		77.0 mg/L		546 mg/L	
			F-pseudosigma = 3.7		7.3		3.2		3.2		14	
Lab	OLR	V/16	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
146	2.3	12	91.4	3			69.8	2	79.4	3	538	3
147	2.4	5			42.0	3	70.0	2				
149	2.5	12	67.0	0			75.0	4	71.0	1		
151	3.5	8	89.0	4					77.0	4		
154	2.4	14	88.8	4	40.7	3	68.1	1	76.6	4	548	4
158	2.3	12	87.0	4	40.0	3	81.0	0	83.1	1	547	4
180	2.8	12	88.4	4	58.6	1	75.1	4	75.9	4		
190	2.7	13	83.0	2			68.0	1	71.6	1	534	3
191	3.6	9					72.1	3	77.1	4		
196	2.8	10	85.0	3			74.6	4	71.1	1		
203	3.1	11	85.0	3			71.1	3	76.3	4		
204	3.2	11	93.7	2			72.5	4	74.7	3		
208	3.5	2							74.4	3		
209	0.8	5					137.9	0				
212	3.0	12	87.9	4	< 100	NR	74.6	4	80.4	2	537	3
213	4.0	4	91.0	4					76.0	4		
215	1.6	14	84.0	2	40.0	3	66.6	0	96.0	0	533	3
217	2.6	13	89.9	4	< 0.1	0	71.0	3	75.2	3	543	4
218	1.0	8	70.8	0			76.0	3				
220	2.7	9	89.6	4	44.6	4	72.8	4	81.7	2		
221	3.0	9					70.9	3	76.9	4	570	1
224	3.3	7	90.0	4					78.2	4	538	3
230	2.4	7					65.1	0	78.2	4		
234	3.7	15	91.0	4	46.1	4	76.4	3	78.1	4	542	4
235	1.5	4			74.0	0	79.0	1				
236	3.1	15	91.0	4	40.0	3	71.6	3	81.0	2	540	4
237	4.0	2	86.6	4								
241	2.5	13	90.0	4			83.1	0	78.9	3	539	4
243	4.0	3										
244	4.0	3	91.0	4								
246	3.0	11			46.7	4	74.0	4	74.8	3		
247	2.3	14	84.0	2	45.3	4	79.6	1	77.3	4	531	2
253	2.2	6	86.0	3							583	0
254	3.9	7			41.0	3	73.7	4				
255	3.3	11	88.8	4	48.5	4	75.5	4	79.5	3		
256	2.4	10	258.5	0			75.4	4	76.7	4		
257	2.5	12	88.0	4			75.0	4	77.0	4	558	3
259	3.7	15	85.0	3	46.0	4	73.0	4	80.0	3	553	4
263	2.8	10	87.5	4			76.0	3	81.5	2	524	1
264	3.2	11	87.0	4			76.0	3	80.0	3		
265	3.7	10			46.0	4	75.9	3	76.3	4		
266	3.3	12	92.0	3			74.0	4	79.0	3	545	4
267	3.3	6	87.5	4			73.7	4	77.2	4		
268	2.1	9			60.0	1	77.0	3	78.0	4		
269	3.4	7	85.8	3			72.1	3	80.5	2		
270	3.0	5							77.0	4		
273	2.7	13	89.7	4	63.0	0	73.6	4	69.3	0	522	1
283	1.6	15	91.2	3	35.7	2	77.3	2	71.9	1	496	0
284	1.5	13	95.0	2			69.7	2	88.7	0	1548	0
286	2.0	8	99.7	0					74.0	3		
287	1.7	10	80.0	1			76.0	3	6.0	0		
292	2.8	12	80.6	1			76.7	3	77.6	4	589	0
294	3.4	8	89.6	4					79.3	3		
297	3.0	9	86.0	3			76.7	3	76.0	4		

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	F (Fluoride)		K (Potassium)		Mg (Magnesium)		Na (Sodium)		(total Phosphorus) as P	
MPV =	0.23 mg/L		3.60 mg/L		17.0 mg/L		77.7 mg/L		0.030 mg/L	
F-pseudosigma =	0.04		0.26		0.6		2.8		0.011	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	0.21	3	3.56	4	17.2	4	78.8	4	0.015	2
3	0.21	4	3.64	4	17.8	2	76.2	3	0.020	3
5			3.14	1	16.8	4	79.9	3		
8	0.14	0	4.00	1	17.3	4	79.4	3	0.040	3
10	0.22	4	3.56	4	17.0	4	77.0	4		
11	0.70	0	3.31	2	17.3	4	72.0	0		
12									0.030	4
13	0.14	0	3.77	3	16.8	4	77.7	4	< 0.05	NR
15	0.17	2	3.57	4	17.0	4	78.2	4	0.030	4
16	0.24	4	3.80	3	16.9	4	79.0	4	0.028	4
18	0.23	4	3.80	3	15.5	0	77.8	4	0.023	3
19			3.39	3	16.8	4	72.6	1		
23										
24	0.25	4	3.34	3	16.9	4	77.7	4		
25	0.23	4	3.60	4	18.4	0	84.4	0	< 0.121	NR
26			3.63	4	17.4	3	79.1	4		
30.1					16.0	1	72.0	0		
30.2					17.0	4	80.0	3		
32	0.25	3	3.80	3	18.6	0	84.0	0		
33			3.66	4	17.1	4	76.0	3		
34										
38			3.78	3	17.4	3	72.0	0	0.027	4
39	0.24	4			16.8	4	76.6	4	0.030	4
40	0.20	3	3.43	3	15.9	1	74.7	2		
42	0.29	1								
43			3.60	4	17.0	4	76.7	4		
46	0.20	3	3.42	3	16.3	2	77.0	4	0.030	4
48	0.19	2	3.82	3	18.3	0	84.5	0	0.020	3
51			3.59	4	15.8	1	77.0	4		
57	0.24	4	4.30	0	16.0	1	74.1	2	0.070	0
59	0.27	2	3.90	2	17.0	4	72.9	1		
64			3.86	3	16.7	4	78.1	4		
68			3.73	4	17.8	2	76.1	3	0.038	3
69	0.21	3	3.93	2	16.7	4	76.6	4		
70	0.18	2	3.92	2	17.5	3	80.2	3	< 0.1	NR
76	0.26	3								
83	0.24	4	3.54	4	16.4	3	77.7	4	0.079	0
84	0.25	3			16.4	3	77.6	4		
85	0.21	3	3.62	4	16.7	4	75.4	3	0.028	4
86	0.32	0	3.48	4	17.6	3	80.0	3	0.109	0
87			3.12	1	16.4	3	79.5	3	0.040	3
89	0.22	4	3.38	3	17.3	4	81.1	2	0.020	3
96	0.23	4								
97	0.22	4	3.50	4	16.8	4	75.8	3		
100	0.23	4	3.42	3	17.8	2	80.6	2		
102			3.10	1	18.0	1	62.0	0	0.025	4
105	< 0.2	NR	3.47	4	16.3	2	77.8	4	0.020	3
107	0.19	2	4.53	0	16.5	3	76.9	4	0.017	2
118									0.030	4
119	0.21	3	3.00	0	17.0	4	76.0	3	0.030	4
121					17.1	4	79.0	4		
127	0.21	4	3.66	4	16.5	3	76.8	4	0.020	3
134	0.22	4	3.59	4	17.2	4	76.9	4	0.020	3
136					4.3	0				
138	0.24	4	3.50	4	16.8	4	78.6	4	0.029	4
140	0.22	4	3.40	3	16.3	2	82.0	1	0.070	0
141.1	0.27	2	3.00	0	14.4	0	66.7	0	0.060	0
141.2	0.26	3								
142	0.24	4	3.59	4	17.9	2	81.5	2	0.032	4
145	0.20	3	3.38	3	17.3	4	77.9	4	0.020	3

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	F (Fluoride)		K (Potassium)		Mg (Magnesium)		Na (Sodium)		(total Phosphorus) as P	
MPV =	0.23 mg/L		3.60 mg/L		17.0 mg/L		77.7 mg/L		0.030 mg/L	
F-pseudosigma =	0.04		0.26		0.6		2.8		0.011	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
146	0.23	4	3.76	3	16.2	2	81.0	2	0.103	0
147					16.0	1				
149	0.21	3	3.50	4	16.5	3	75.0	3	0.027	4
151	0.19	2							0.026	4
154	0.28	2	5.12	0	15.5	0	75.8	3	0.024	3
158	0.32	0	4.00	1	18.0	1	78.0	4	< 0.03	NR
180	< 0.05	0	3.42	3	17.0	4	79.2	3	0.037	3
190	0.12	0	3.42	3	16.1	2	76.8	4	0.019	3
191			3.71	4	17.1	4	77.6	4	0.027	4
196	0.15	0	3.51	4	17.0	4	81.6	2		
203			3.89	2	16.6	3	72.8	1	0.030	4
204			3.67	4	16.7	4	76.3	4	0.027	4
208	< 3	NR								
209			1.37	0	35.1	0	71.3	0		
212	0.21	3	< 5	NR	17.4	3	80.2	3	< 0.05	NR
213									0.030	4
215	0.23	4	< 1	0	15.1	0	69.4	0	0.030	4
217	0.19	2	< 5	NR	16.6	3	76.8	4	< 0.05	NR
218			4.00	1	20.0	0	89.0	0		
220			4.80	0	16.5	3	78.7	4	0.064	0
221			3.78	3	17.2	4	77.9	4	0.060	0
224									0.045	2
230	0.18	2	3.34	3	16.3	2	80.6	2		
234	0.21	3	3.61	4	16.8	4	79.6	3	0.033	4
235					18.0	1				
236	0.31	1	3.51	4	16.9	4	74.5	2	0.027	4
237										
241	0.21	3	3.80	3	17.3	4	70.0	0	0.019	3
243									0.030	4
244										
246	< 0.5	NR	3.83	3	17.8	2	77.4	4	< 0.07	NR
247	0.18	2	3.95	2	17.4	3	80.6	2		
253									0.053	0
254			3.50	4	17.0	4	78.0	4	< 0.1	NR
255	0.26	3	3.55	4	16.8	4	80.8	2		
256			4.69	0	17.2	4	72.7	1		
257	0.27	2	5.00	0	17.0	4	73.5	1	0.050	1
259	0.23	4	3.49	4	17.2	4	77.1	4	0.027	4
263	0.22	4			16.3	2				
264			3.60	4	15.3	0	78.0	4	0.025	4
265	0.25	3	3.53	4	17.5	3	77.1	4		
266	0.26	3	3.80	3	17.3	4	79.0	4		
267					18.5	0				
268			3.70	4	18.0	1	82.0	1		
269	0.25	4			17.1	4				
270			3.75	3			78.0	4		
273	0.23	4	3.45	3	17.0	4	81.0	2		
283	0.38	0	3.43	3	18.8	0	82.3	1	0.068	0
284	0.35	0	3.74	3	18.5	0	79.3	3	< 0.1	NR
286	0.45	0					51.1	0	0.040	3
287	0.29	2	5.71	0	17.0	4	75.0	3	< 0.1	NR
292	0.20	3	3.40	3	17.1	4	60.8	0	0.030	4
294	0.28	2							0.032	4
297			3.58	4	16.9	4	80.4	3		

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	pH		SiO_2 (Silica)		SO_4 (Sulfate)		Sp Cond		Sr (Strontium)		V (Vanadium)	
MPV =	8.40		7.43 mg/L		210 mg/L		853 µS/cm		673 µg/L		insuff data	
F-pseudosigma =	0.17		0.50		8		21		27			
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	8.12	3	7.30	4	210	4	857	4	654	3	3.30	NR
3	8.63	3	7.99	2	195	1	856	4	678	4	2.00	NR
5	8.25	4	7.45	4	199	2	868	3	692	3	< 4	NR
8	8.55	4	7.30	4	203	3	806	0	666	4	< 10	NR
10	8.53	4	7.60	4	217	3	861	4				
11	8.34	4	6.16	0	211	4	841	3	648	3		
12	8.20	4			220	2	594	0				
13	8.52	4	7.59	4	211	4	863	4			< 50	NR
15	8.46	4	8.18	2	209	4	864	3			< 0.01	NR
16	8.42	4			182	0	848	4	629	1	4.90	NR
18	8.27	4	6.31	0	209	4	795	0	627	1	< 5	NR
19	8.48	4			204	3	858	4				
23	8.50	4			238	0	662	0				
24	8.40	4	8.03	2	269	0	858	4	682	4		
25	8.45	4	12.10	0	199	2	847	4	726	1	< 4	NR
26	8.30	4	7.95	2	213	4	860	4			< 6	NR
30.1	8.58	4			208	4			681	4	2.20	NR
30.2												
32	8.48	4	7.90	3	210	4	814	1	640	2	< 1	NR
33	8.46	4	7.51	4	206	4	800	0	707	2		
34					203	3						
38	8.50	4	7.29	4			864	3				
39	8.51	4			220	2	810	1	642	2		
40	9.19	1	7.12	3			850	4	637	2		
42	8.97	2			215	3	852	4			< 2	NR
43	8.38	4	7.60	4	209	4	853	4				
46	8.02	3	7.56	4	216	3	856	4			2.80	NR
48	8.20	4					867	3			1.00	NR
51	8.35	4			225	1	853	4				
57	8.10	3	7.84	3	180	0	830	2			< 100	NR
59	8.23	4			193	0	859	4				
64	8.37	4	7.27	4	213	4	860	4				
68	8.77	3	6.86	2	192	0	9	0	650	3	< 1	NR
69	8.48	4			197	1						
70	8.51	4	7.09	3	199	2	781	0	686	4	< 50	NR
76	8.51	4			212	4						
83			6.91	2	210	4						
84	8.43	4			206	4	846	4				
85	8.52	4	7.50	4	211	4	855	4	692	3		
86	8.49	4			215	3	885	2	690	3		
87	8.28	4	7.03	3	207	4	414	0				
89	8.38	4	7.61	4	204	3	847	4			9.74	NR
96	8.66	3			215	3	857	4				
97	8.50	4	7.33	4	225	1	850	4	550	0		
100	8.35	4	8.08	2	210	4	853	4	685	4	< 10	NR
102			6.40	1	250	0	874	3	690	3	2.00	NR
105			7.79	3	191	0	834	3	672	4	< 20	NR
107	8.36	4	7.36	4			842	3				
118	8.30	4	7.47	4			860	4				
119	8.55	4	7.00	3	210	4	858	4				
121			7.16	3					658	3		
127	8.53	4	7.01	3	212	4	862	4	656	3	< 3	NR
134	8.34	4	7.76	3	210	4	850	4	675	4	< 1	NR
136	8.16	3					767	0	158	0	2.60	NR
138	8.44	4	7.39	4	212	4	834	3	675	4	1.23	NR
140	7.80	2	7.25	4	214	4	865	3				
141.1	8.25	4			228	0	870	3			< 10	NR
141.2					197	1						
142	8.50	4	8.37	1	214	4	862	4	681	4	7.16	NR
145			7.48	4	208	4	847	4	674	4	8.00	NR

Table 6. *Laboratory performance ratings for standard reference sample M-144 (major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	pH		SiO_2 (Silica)		SO_4 (Sulfate)		Sp Cond		Sr (Strontium)		V (Vanadium)	
MPV =	8.40		7.43 mg/L		210 mg/L		853 µS/cm		673 µg/L		insuff data	
F-pseudosigma =	0.17		0.50		8		21		27			
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
146	8.42	4			224	1	745	0			< 0.01	NR
147			7.20	4					636	2	1.10	NR
149	8.40	4	6.90	2	220	2	938	0				
151	8.40	4	7.70	3	210	4	835	3				
154	8.55	4			215	3	869	3	599	0	7.70	NR
158	8.38	4			219	2	865	3			2.60	NR
180	8.54	4			216	3	797	0			< 4.67	NR
190	8.20	4	7.68	4	210	4	857	4				
191			8.21	1	212	4			667	4		
196	8.61	4			201	2	845	4				
203	8.20	4	7.26	4	216	3	866	3				
204	8.55	4	8.09	2	55	0	844	4				
208					209	4						
209	8.20	4										
212	8.40	4	7.70	3	203	3	831	2	640	2	< 10	NR
213	8.45	4										
215	8.30	4	5.19	0	220	2	889	1			15.00	NR
217	8.50	4	7.08	3	206	4	800	0	1	0	< 0.01	NR
218	8.50	4					9	0	770	0		
220					215	3					9.90	NR
221	8.51	4			209	4						
224	8.40	4			217	3	840	3				
230					213	4						
234	8.40	4	7.43	4	214	4	865	3	660	4	2.18	NR
235									680	4	2.29	NR
236	8.51	4	5.60	0	213	4	861	4	655	3	3.00	NR
237	8.47	4										
241	8.31	4	6.86	2	216	3	690	0				
243	8.25	4					848	4				
244	8.47	4					852	4				
246	8.13	3	7.78	3	205	3	800	0	681	4	< 10	NR
247	8.51	4	8.77	0	187	0	878	2	679	4	8.00	NR
253	8.00	3			205	3	850	4				
254			7.20	4					680	4		
255	8.50	4	7.44	4			954	0				
256	8.54	4			215	3	904	0	669	4	< 3	NR
257	7.75	1			221	2	851	4				
259	8.25	4	7.00	3	216	3	874	3	660	4		
263	8.15	3	6.60	1	208	4	863	4				
264	8.30	4	6.40	1	209	4	849	4				
265			7.30	4	212	4			677	4	1.60	NR
266	8.50	4	6.60	1	214	4	868	3				
267	8.28	4					860	4				
268			6.65	1	215	3			720	1	< 12	NR
269	8.33	4					857	4				
270	8.30	4					920	0				
273	8.30	4	7.40	4			875	2	647	3		
283	8.90	2	7.71	3	199	2	873	3	706	2	< 20	NR
284	8.29	4	8.33	1	< 5	0	854	4	1001	0	250.00	NR
286	8.02	3			204	3	844	4				
287	8.45	4			165	0	773	0				
292	8.23	4			205	3	853	4				
294	8.22	4	7.71	3	216	3	850	4				
297	8.40	4			103	0	830	2				

Table 7. *Laboratory performance ratings for standard reference sample N-55 (nutrient constituents)*

(MPV, most probable value mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	NH_3 as N (Ammonia)		NH_3 + Org N as N (Ammonia + Organic N)		NO_3 + NO_2 as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO_4 as P (Orthophosphate as P)	
			MPV =	0.240 mg/L		0.300 mg/L		0.443 mg/L		0.602 mg/L		0.580 mg/L	
			F-pseudosigma =	0.024		0.110		0.033		0.032		0.026	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.0	5		0.213	2	0.265	4	0.464	3	0.557	2	0.574	4
5	2.7	3		0.252	3			0.423	3			0.612	2
9	3.6	5		0.217	3	0.300	4	0.457	4	0.610	4	0.563	3
10	3.8	5		0.240	4	0.300	4	0.450	4	0.602	4	0.565	3
11	2.6	5		0.250	4	0.180	2	0.420	3	0.630	3	0.540	1
12	1.8	4		0.200	1	< 0.3	NR	0.380	1	0.560	2	0.560	3
13	3.3	4		0.240	4			0.450	4	0.620	3	0.619	2
16	2.2	5		0.150	0	0.350	4	0.352	0	0.633	3	0.574	4
19	3.0	4		0.200	1			0.460	3	0.590	4	0.570	4
21	3.2	5		0.231	4	0.305	4	0.631	0	0.608	4	0.580	4
22	4.0	1								0.591	4		
23	1.8	4		0.446	0			0.471	3	0.620	3	0.630	1
25	3.0	4		0.210	2	0.210	3	0.425	3			0.580	4
33	4.0	1		0.230	4								
38	3.4	5		0.250	4	0.220	3	0.451	4	0.636	2	0.572	4
39	2.5	4		0.184	0			0.443	4	0.602	4	0.545	2
42	1.0	1						0.495	1				
45	3.0	1						0.466	3				
46	3.5	4		0.217	3	< 0.2	NR	0.431	4	0.600	4	0.600	3
48	1.6	5		0.150	0	0.430	2	0.560	0	0.630	3	0.600	3
51	3.4	5		0.240	4	0.300	4	0.420	3	0.595	4	0.546	2
53	2.0	2						0.315	0			0.587	4
57	1.6	5		0.230	4	6.500	0	0.420	3	0.550	1	0.500	0
59	4.0	5		0.250	4	0.300	4	0.430	4	0.600	4	0.570	4
69	4.0	1						0.450	4				
70	3.0	4		0.245	4	0.293	4	0.330	0	0.607	4		
76	4.0	1		0.234	4								
84	0.0	2						0.550	0			0.716	0
86	1.5	4		0.265	2			0.380	1	0.760	0	0.560	3
87	2.6	5		0.240	4	0.500	1	0.510	1	0.634	3	0.579	4
88	0.7	3		0.172	0			0.599	0			0.609	2
89	3.8	5		0.250	4	0.380	3	0.450	4	0.600	4	0.590	4
90	3.7	3		0.242	4	0.302	4	0.471	3				
91	2.7	3		0.230	4			0.360	0	0.610	4		
96	2.6	5		0.223	3	0.416	2	0.408	2	0.562	2	0.571	4
97	3.6	5		0.248	4	0.330	4	0.460	3	0.590	4	0.566	3
102	3.4	5		0.243	4	0.220	3	0.410	3	0.608	4	0.602	3
105	2.8	4		0.220	3	< 1	NR	0.430	4	0.520	0	0.580	4
107	3.8	4		0.229	4			0.432	4	0.581	3	0.580	4
110	3.0	1		0.223	3								
113	2.8	5		0.236	4	0.603	0	0.420	3	0.593	4	0.561	3
114	3.5	2		0.220	3			0.430	4				
118	2.6	5		0.270	2	0.300	4	0.410	3	0.760	0	0.590	4
127	3.2	5		0.215	3	0.264	4	0.497	1	0.612	4	0.583	4
134	3.4	5		0.255	3	0.281	4	0.438	4	0.568	2	0.592	4
138	3.8	5		0.240	4	0.310	4	0.430	4	0.620	3	0.570	4
140	2.2	5		0.300	0	0.340	4	0.413	3	0.540	1	0.600	3
141	2.2	5		0.278	1	0.465	2	0.324	0	0.590	4	0.590	4
142	2.8	5		0.289	1	0.307	4	0.465	3	0.587	4	0.610	2
143	2.5	4		0.171	0			0.440	4	0.587	4	0.551	2
145	2.6	5		0.260	3	0.260	4	0.460	3	0.640	2	0.530	1
146	3.2	5		0.241	4	0.267	4	0.467	3	0.630	3	0.544	2
158	2.5	4		0.168	0			0.441	4	0.584	3	0.554	3
180	3.6	5		0.226	3	0.293	4	0.445	4	0.632	3	0.575	4
185	1.8	4		0.264	3			0.438	4	0.677	0	0.674	0

Table 7. *Laboratory performance ratings for standard reference water N-55 (nutrient constituents)--Continued*

(MPV, most probable value mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	NH_3 as N (Ammonia)		NH_3 + Org N as N (Ammonia + Organic N)		NO_3 + NO_2 as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO_4 as P (Orthophosphate as P)	
			MPV =	0.240 mg/L		0.300 mg/L		0.443 mg/L		0.602 mg/L		0.580 mg/L	
			F-pseudosigma =	0.024		0.110		0.033		0.032		0.026	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
190	3.2	5		0.249	4	0.572	0	0.436	4	0.586	4	0.573	4
191	3.0	2						0.420	3			0.600	3
200	2.3	3		0.260	3			0.300	0			0.570	4
203	2.8	4		0.224	3			0.466	3	0.568	2	0.556	3
204	4.0	5		0.239	4	0.284	4	0.452	4	0.613	4	0.589	4
205	2.0	2		0.341	0			0.458	4				
208	4.0	2						0.445	4			0.588	4
209	2.0	2		0.243	4			0.204	0				
212	1.8	4		0.360	0	< 0.5	NR	0.510	1	0.560	2	0.590	4
213	4.0	2		< 1	NR	< 1	NR			0.600	4	0.570	4
215	2.0	4		0.220	3	< 0.5	NR	0.430	4	0.660	1	0.640	0
221	1.4	5		0.306	0	0.628	0	0.476	3	0.589	4	0.300	0
224	3.4	5		0.254	3	0.327	4	0.453	4	0.605	4	0.616	2
227	2.0	5		0.130	0	0.190	3	1.054	0	0.619	3	0.580	4
234	3.0	4		0.273	2			0.432	4	0.630	3	0.600	3
241	3.4	5		0.233	4	0.440	2	0.458	4	0.597	4	0.564	3
243	3.7	3		0.230	4			0.450	4	0.570	3		
248	1.3	4		0.400	0			0.189	0	0.642	2	0.596	3
253	2.3	4		0.225	3	0.517	1	0.381	1			0.590	4
284	1.6	5		0.232	4	1.720	0	1.280	0	0.718	0	0.582	4
285	2.0	5		0.275	2	0.284	4	0.572	0	0.709	0	0.579	4
287	0.0	2								0.195	0	1.730	0
290	1.8	5		0.230	4	0.090	1	0.690	0	0.630	3	0.620	1
291	0.0	1						0.100	0				
292	2.8	4		0.220	3			0.430	4	0.750	0	0.594	3
294	1.5	4		0.370	0			0.380	1	0.580	3	0.550	2

Table 8. *Laboratory performance ratings for standard reference sample N-56 (nutrient constituents)*

(MPV, most probable value; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	NH_3 as N (Ammonia)		NH_3 + Org N as N (Ammonia + Organic N)		NO_3 + NO_2 as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO_4 as P (Orthophosphate as P)	
			MPV =	0.498 mg/L		0.750 mg/L		0.747 mg/L		0.715 mg/L		0.658 mg/L	
			F-pseudosigma =	0.034		0.097		0.064		0.035		0.030	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.2	5		0.465	3	0.659	3	0.727	4	0.688	3	0.630	3
3	1.2	5		0.590	0	1.100	0	0.560	0	0.760	2	0.660	4
5	2.7	3		0.425	0			0.730	4			0.656	4
9	3.2	5		0.444	1	0.780	4	0.808	3	0.713	4	0.643	4
10	3.6	5		0.490	4	0.750	4	0.760	4	0.745	3	0.641	3
11	2.8	5		0.520	3	0.800	3	0.720	4	0.730	4	0.560	0
12	2.4	5		0.500	4	0.600	1	0.760	4	0.660	1	0.620	2
13	2.8	4		0.510	4			0.704	3	0.720	4	0.377	0
16	2.6	5		0.398	0	0.750	4	0.681	2	0.749	3	0.659	4
19	3.8	4		0.500	4			0.780	3	0.710	4	0.650	4
22	4.0	1								0.714	4		
23	3.4	5		0.500	4	0.690	3	0.790	3	0.680	3	0.650	4
25	0.8	4		0.840	0	1.560	0	0.800	3			1.007	0
30	2.0	2						0.733	4			0.981	0
33	4.0	1		0.500	4								
38	3.0	5		0.606	0	0.720	4	0.786	3	0.729	4	0.658	4
39	2.8	4		0.344	0			0.733	4	0.690	3	0.650	4
42	0.0	1						0.520	0				
45	3.0	1						0.791	3				
46	2.4	5		0.481	4	0.560	1	0.779	4	0.748	3	0.500	0
48	2.0	5		0.350	0	0.740	4	0.820	2	0.790	0	0.660	4
53	1.0	2						0.918	0			0.690	2
59	3.6	5		0.500	4	0.800	3	0.710	3	0.700	4	0.660	4
69	4.0	1						0.760	4				
70	3.6	5		0.489	4	0.757	4	0.670	2	0.726	4	0.657	4
76	4.0	1		0.508	4								
84	0.7	3		0.450	2			0.895	0			0.795	0
86	1.8	4		0.497	4			0.520	0	1.050	0	0.640	3
87	2.4	5		0.470	3	0.770	4	0.840	2	0.775	1	0.690	2
88	0.0	3		0.427	0			0.968	0			0.766	0
89	3.6	5		0.520	3	0.780	4	0.790	3	0.730	4	0.670	4
90	3.7	3		0.489	4	0.694	3	0.756	4				
91	3.0	3		0.480	3			0.670	2	0.730	4		
96	3.4	5		0.516	3	0.727	4	0.750	4	0.674	2	0.646	4
97	3.8	5		0.527	3	0.710	4	0.770	4	0.720	4	0.663	4
102	3.0	5		0.500	4	0.650	2	0.700	3	0.687	3	0.642	3
105	2.8	4		0.510	4	< 1	NR	0.700	3	0.610	0	0.650	4
107	3.8	4		0.490	4			0.702	3	0.716	4	0.644	4
113	3.0	5		0.479	3	0.987	0	0.736	4	0.712	4	0.649	4
114	0.5	2						1.860	0			0.720	1
118	1.4	5		0.550	1	0.860	2	0.720	4	0.980	0	0.560	0
127	3.0	5		0.443	1	0.812	3	0.747	4	0.706	4	0.682	3
134	3.2	5		0.514	4	0.782	4	0.580	0	0.702	4	0.666	4
138	3.0	5		0.480	3	0.820	3	0.760	4	0.760	2	0.640	3
140	3.2	5		0.520	3	0.730	4	0.626	1	0.700	4	0.650	4
142	2.4	5		0.540	2	0.825	3	0.782	3	0.699	4	0.722	0
143	4.0	4		0.483	4			0.765	4	0.713	4	0.643	4
145	1.4	5		0.540	2	0.670	3	0.570	0	0.780	1	0.610	1
146	3.2	5		0.498	4	0.649	2	0.767	4	0.724	4	0.616	2
158	2.8	4		0.417	0			0.744	4	0.700	4	0.631	3
180	2.4	5		0.488	4	0.754	4	0.708	3	0.658	1	0.744	0
185	2.0	4		0.484	4			0.745	4	0.796	0	0.786	0
190	3.4	5		0.513	4	0.914	1	0.736	4	0.700	4	0.658	4
191	3.0	2						0.710	3			0.630	3
196	3.5	2						0.697	3			0.647	4

Table 8. *Laboratory performance ratings for standard reference sample N-56 (nutrient constituents)--Continued*

(MPV, most probable value; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	NH_3 as N (Ammonia)		NH_3 + Org N as N (Ammonia + Organic N)		NO_3 + NO_2 as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO_4 as P (Orthophosphate as P)	
			MPV =	0.498 mg/L		0.750 mg/L		0.747 mg/L		0.715 mg/L		0.658 mg/L	
			F-pseudosigma =	0.034		0.097		0.064		0.035		0.030	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
203	3.0	4		0.466	3			0.663	2	0.698	4	0.628	3
204	3.6	5		0.520	3	0.713	4	0.765	4	0.722	4	0.675	3
205	2.5	2		0.533	2			0.705	3				
208	3.0	2						0.760	4			0.690	2
209	2.0	2		0.501	4			0.480	0				
212	1.6	5		0.990	0	0.950	0	0.840	2	0.690	3	0.680	3
213	3.0	2		< 1	NR	< 1	NR			0.740	3	0.680	3
215	2.8	5		0.470	3	< 0.5	0	0.720	4	0.700	4	0.640	3
217	3.0	5		0.500	4	0.440	0	0.710	3	0.710	4	0.670	4
221	2.2	5		0.445	1	0.994	0	0.784	3	0.747	3	0.660	4
224	2.8	5		0.508	4	0.773	4	0.972	0	0.700	4	0.702	2
227	0.4	5		0.250	0	0.350	0	1.018	0	0.795	0	0.690	2
234	2.5	4		0.494	4			0.727	4	0.760	2	0.413	0
241	2.2	5		0.543	2	0.700	3	1.230	0	0.712	4	0.613	2
243	2.7	3		0.480	3			0.700	3	0.670	2		
253	2.3	4		0.441	1	1.332	0	0.747	4			0.662	4
284	1.4	5		0.508	4	3.680	0	1.520	0	0.770	1	0.700	2
285	1.6	5		0.440	1	0.579	1	0.812	2	0.807	0	0.670	4
287	0.0	2								0.023	0	0.030	0
289	4.0	5		0.487	4	0.730	4	0.720	4	0.708	4	0.673	4
290	1.2	5		0.470	3	0.500	0	1.080	0	0.740	3	0.520	0
291	0.0	1						0.600	0				
292	1.8	4		0.480	3			0.680	2	0.860	0	0.685	3
294	2.3	4		0.730	0			0.670	2	0.740	3	0.670	4
297	0.2	5		0.745	0	0.927	1	2.640	0	0.489	0	2.100	0
302	1.3	3		0.500	4			3.280	0			1.850	0

Table 9. *Laboratory performance ratings for standard reference sample P-29 (low ionic strength constituents)*

(MPV, most probable value; mg/L, milligrams per liter; µs/cm, microseimens per centimeter at 25 ° C; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/11, number of reported values of 11 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Acidity as $CaCO_3$		Ca (Calcium)		Cl (Chloride)		F (Fluoride)		K (Potassium)		Mg (Magnesium)	
			MPV =	5.70 mg/L		1.84 mg/L		0.20 mg/L		0.056 mg/L		0.37 mg/L		0.57 mg/L	
			F-pseudosigma =	3.85		0.14		0.18		0.028		0.04		0.02	
Lab	OLR	V/11		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.7	10				1.81	4	0.15	4	0.073	3	0.37	4	0.59	3
2	2.9	9				1.87	4	0.16	4	0.032	3	0.35	4	0.59	3
3	3.0	8		< 10	NR	1.96	3	0.53	1	< 0.1	NR	0.31	2	0.58	4
5	2.4	9		8.44	3	1.87	4	1.11	0			< 1	NR	0.56	4
8	3.1	10		6.00	4	1.84	4	0.21	4	0.040	3	< 1	NR	0.57	4
23	2.7	10				4.67	0	0.16	4	0.040	3	0.33	3	0.56	4
25	3.1	7		< 8	NR	1.79	4	< 1	NR	0.100	1	< 1.21	NR	0.57	4
26	2.5	8				2.52	0	0.13	4			0.37	4	0.69	0
30.1	3.7	3						0.15	4						
33	3.7	10				1.81	4	0.13	4	0.030	3	0.36	4	0.57	4
34	NR	0													
38	3.4	8		8.18	3	1.83	4					0.38	4	0.54	2
39	3.7	10		2.16	3	1.91	4	0.20	4	0.065	4			0.57	4
42	1.0	4		16.40	0			< 0.5	NR	0.052	4				
46	3.1	8				1.80	4	0.20	4					0.56	3
48	1.1	9				6.34	0	1.00	0	0.070	3	0.46	1	0.85	0
59	1.9	10		5.00	4	1.70	3	1.70	0	0.120	0	0.39	3	0.57	4
64	3.5	8				1.98	3	0.16	4			0.37	4	0.57	4
83	3.8	6				1.83	4			< 0.1	NR	0.39	4	0.56	4
86	3.8	5				1.82	4							0.55	3
89	3.2	11		3.10	3	1.66	2	0.31	3	0.050	4	0.34	3	0.56	4
96	4.0	4						< 2	NR						
100	2.3	6				1.94	3	< 4	NR	0.075	3	< 1	NR	0.67	0
105	1.7	6				2.14	0	< 0.5	NR	< 0.2	NR	< 0.5	NR	0.62	1
107	3.4	8				1.69	2	< 0.6	NR	0.040	3	0.39	4	0.55	3
110	3.9	8				1.93	3	0.21	4	0.050	4	0.37	4	0.58	4
119	1.9	9		8.00	3	2.00	2	0.00	NR	0.040	3	0.00	NR	1.00	0
134	3.7	10				1.87	4	0.19	4	0.060	4	0.39	4	0.57	4
136	4.0	3		5.40	4										
138	3.4	8				1.86	4	< 0.2	NR	< 0.1	NR	0.37	4	0.56	4
140	2.8	9				1.77	4	0.28	4	0.039	3	0.40	3	0.57	4
141	3.3	11		1.10	2	1.68	2	0.13	4	0.042	4	0.35	4	0.52	1
145	1.8	6				1.81	4	< 0.5	NR	< 0.2	NR	0.20	0	0.56	4
146	1.4	5		< 10	NR	1.72	3	< 1	NR	< 0.2	NR	< 1	NR	0.54	2
158	1.4	5						0.80	0	0.074	3				
180	3.1	8				2.03	2	0.38	2	< 0.05	NR	< .422	NR	0.59	3
190	1.9	7				1.40	0	0.12	4	0.000	NR	0.34	3	0.46	0
193	3.0	1													
196	3.1	10				0.87	0	0.28	4	0.019	2	0.38	4	0.58	4
203	2.0	7				1.48	0	< 2	NR			0.37	4	0.54	2
204	2.9	7				1.73	3	< 1	NR			0.32	2	0.56	3
209	2.0	7				2.36	0	0.17	4			0.31	2	0.76	0
215	2.9	9		2.50	3	1.80	4	6.00	0	0.060	4	< 1	NR	0.55	3
220	2.5	6				1.58	1	0.22	4					0.61	2
221	3.1	8				1.85	4	1.00	0			0.35	4	0.57	4
224	3.6	5						0.22	4						
228	2.3	9		6.39	4	2.58	0	0.09	3			0.37	4	0.67	0
237	3.0	8		6.50	4	1.93	3	0.14	4			0.42	2	0.61	1
241	2.5	10				1.85	4	0.12	4	0.140	0	0.10	0	0.56	4
243	4.0	2													
244	3.5	2													
246	3.3	6		8.00	3	1.75	3	< 1.5	NR	< 0.5	NR	< 0.5	NR	0.57	4
247	1.7	10		3.60	3	1.98	3	1.24	0	0.068	4	0.73	0	0.59	3
255	2.3	7				1.89	4			0.080	3	0.80	0	0.61	1
283	1.3	11		3.33	3	1.89	4	0.57	1	0.220	0	0.24	0	0.64	0
284	0.9	8				1.65	2	< 5	NR	0.180	0	0.41	3	0.49	0
287	1.1	7				2.50	0			0.090	2	0.37	4	0.54	2
294	3.2	5						0.13	4	0.050	4				
297	1.9	8		2.00	3	1.70	3	< 1	NR			0.32	2	0.55	2

Table 9. *Laboratory performance ratings for standard reference sample P-29 (low ionic strength constituents)--Continued*

(MPV, most probable value; mg/L, milligrams per liter; µs/cm, microseimens per centimeter at 25 ° C; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/11, number of reported values of 11 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Merginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsetisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Na (Sodium)		pH		PO_4 as P		SO_4 (Sulfate)		Specific Conductance	
MPV =	0.66 mg/L		6.85		0.046		1.10 mg/L		19.2 µS/cm	
F-pseudosigma =	0.06		0.21		0.012		0.23		0.9	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	0.68	4	6.85	4	0.039	3	1.14	4	19.2	4
2	0.80	0	6.83	4			1.05	4	15.6	0
3	0.63	4	6.85	4	0.048	4	< 10	NR	18.0	2
5	0.73	2	6.35	2	0.039	3	1.18	4	1900.0	0
8	0.65	4	6.96	4	< 0.01	0	1.20	4	16.9	0
23	0.65	4	7.22	2	0.030	2	1.16	4	17.5	1
25	0.68	4	7.06	3	0.028	2	< 5	NR	19.0	4
26	0.63	3	6.38	2			1.02	4	19.8	3
30.1			7.13	3			1.03	4		
33	0.66	4	6.74	4	0.040	4	1.05	4	18.1	2
34							< 1	NR		
38	0.62	3	7.00	4	0.038	3			19.2	4
39	0.65	4	6.83	4	0.036	3	1.00	4	19.7	3
42			7.69	0	< 0.05	NR	< 2.5	NR	22.0	0
46	0.65	4	8.07	0	0.039	3	1.10	4	20.0	3
48	0.78	1	6.50	2	0.062	2	< 1	NR	17.7	1
59	0.56	1	6.45	2			2.88	0	18.2	2
64	0.65	4	6.95	4			1.09	4	17.6	1
83	0.65	4			0.055	3	1.09	4		
86	0.63	4	6.82	4					19.6	4
89	0.58	2	7.27	2	0.050	4	1.20	4	19.5	4
96			6.85	4	0.040	4	1.00	4	19.4	4
100	0.87	0	6.93	4	< 0.5	NR	< 7	NR	18.9	4
105	0.73	2			0.460	0	0.92	3	19.1	4
107	0.68	4	6.93	4	0.044	4			19.8	3
110	0.66	4	6.85	4			1.12	4		
119	2.00	0	6.89	4	0.022	1	2.00	0	19.0	4
134	0.70	3	6.46	2	0.040	4	1.08	4	19.5	4
136			6.87	4					19.2	4
138	0.66	4	6.91	4	0.460	0	1.09	4	18.7	3
140	0.70	3	6.30	1	0.080	0	< 2	NR	19.9	3
141	0.69	4	6.84	4	0.050	4	0.90	3	19.6	4
145	0.60	3					0.50	0	< 1	0
146	< 0.5	0	7.32	2	< 0.05	NR	< 5	NR	23.6	0
158			6.85	4	0.070	0	2.20	0		
180	0.75	2	6.83	4	0.050	4	1.20	4	19.0	4
190	0.62	3	6.60	3	0.430	0				
193									18.6	3
196	0.65	4	6.73	4	0.029	2	1.15	4	19.9	3
203	0.57	2	5.93	0	0.039	3	< 2.5	NR	20.0	3
204	0.64	4	6.84	4	0.049	4	< 2	NR	189.0	0
209	0.64	4	6.84	4			1.82	0		
215	0.59	2	7.00	4	0.030	2			19.5	4
220	0.67	4			0.041	4	2.23	0		
221	0.72	3	6.85	4	0.050	4	0.80	2		
224			7.03	3	0.050	4	1.33	3	19.0	4
228	0.81	0	6.85	4			0.95	3	18.7	3
237	0.74	2	6.98	4			1.08	4		
241	0.70	3	6.05	0	0.047	4	1.00	4	18.0	2
243			6.74	4					19.0	4
244			6.91	4					18.7	3
246	0.70	3	6.82	4	< 0.25	NR	< 2.5	NR	20.0	3
247	0.83	0	8.11	0			2.28	0	19.0	4
255	0.69	4	7.00	4					24.8	0
283	0.78	1	6.61	3	0.060	2	2.93	0	21.7	0
284	0.56	1	6.32	1	< 0.1	NR	20.00	0	26.0	0
287			5.95	0	< 0.1	NR	4.00	0	17.2	0
294			6.50	1	0.044	4	0.92	3		
297	0.78	1			0.168	0	7.44	0	19.0	4

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Ag (Silver)		Al (Aluminum)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)	
			MPV =	34.1 µg/L		50.0	µg/L	1.30	µg/L	242	µg/L	167	µg/L	9.00	µg/L
			F-pseudosigma =	5.2		14.1		0.37		13		8		0.82	
Lab	OLR	V/26		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.4	24		36.2	4	46.3	4	1.70	2	242	4	170	4	8.84	4
5	3.0	23		21.9	0	51.0	4	1.52	3	245	4	169	4	9.14	4
8	2.1	21		15.0	0	37.0	3	1.20	4	222	1	151	0	9.00	4
11	2.5	17		19.9	0					243	4	158	2	9.30	4
12	2.3	4		42.0	1										
13	2.8	17		36.1	4	45.1	4	< 5	NR			164	4	9.40	4
16	2.7	22		34.0	4	56.0	4	1.20	4	354	0	163	3	8.10	2
18	2.9	20		35.0	4	< 100	NR	1.20	4	235	3	160	3	8.90	4
23	2.5	10													
24	2.8	17								251	3	172	3		
25	1.2	19		< 6	0	< 19	0	< 50	NR	328	0	168	4	8.00	2
26	3.2	23		24.1	1	48.9	4	1.12	4	234	3	166	4	9.94	2
30.1	2.3	21		27.7	2			1.30	4	243	4	173	3	11.50	0
30.2	0.7	3													
32	2.6	23		34.0	4	45.0	4	1.20	4	257	2	159	2	9.70	3
33	1.4	11				170.0	0					202	0		
34	3.3	3		36.8	3										
42	2.4	16		33.8	4	42.3	3	2.59	0	242	4	168	4	7.86	1
43	3.0	7													
46	3.2	19		32.7	4	51.4	4			259	2	167	4	9.92	2
48	2.2	21		27.7	2	53.0	4	0.80	2	206	0	153	1	8.10	2
59	2.9	18		32.5	4	37.9	3	1.70	2			162	3	8.20	3
64	2.8	5													
69	2.8	13		32.4	4	< 50	NR	< 5	NR					8.83	4
76	3.7	6										171	4		
83	2.6	15				33.0	2					159	2	8.70	4
85	2.2	14		40.0	2	< 10	0			240	4	149	0	8.00	2
86	3.2	15		34.3	4					242	4	168	4	9.10	4
89	2.1	19		41.0	2	74.1	1	< 2	NR			184	0	8.20	3
100	2.4	22		38.2	3	70.0	2	< 2	NR	261	1	177	2	9.32	4
102	1.8	20		144.0	0	43.0	4	< 15	NR			172	3	8.00	2
105	3.0	20		36.4	4	46.7	4	< 4	NR			167	4	10.00	2
109	2.5	6													
119	3.1	20		34.8	4	43.1	4	< 2	NR	200	0	170	4	8.92	4
121	2.7	9										162	3		
126	1.7	6		29.5	3										
134	3.2	24		35.0	4	43.5	4	0.26	0	250	3	166	4	9.04	4
136	1.2	17				1159	0	45.00	0	231	3	146	0		
138	3.6	22		34.1	4	51.7	4	< 2	NR	255	3	168	4	9.00	4
140	2.5	15		25.0	1							150	0		
141	1.3	18		32.8	4	< 100	NR	2.00	1	236	4	143	0	7.93	2
142	2.7	24		32.9	4	64.0	3	2.88	0	239	4	168	4	8.69	4
145	1.7	22				144.0	0	19.00	0	243	4	170	4	10.00	2
146	2.8	15		32.7	4	< 200	NR	< 10	NR			172	3	9.50	3
149	2.6	11										170	4		
151	2.6	18		29.8	3	33.0	2	1.50	3			162	3	8.00	2
180	2.4	19		34.6	4	83.8	0	< 40.1	NR	256	2	166	4	8.50	3
191	2.7	17				50.0	4	1.27	4			12	0		
196	2.8	4													
204	2.3	16				44.0	4	2.79	0			178	2		
212	2.6	17		20.0	0	< 100	NR	< 5	NR	230	3	160	3	8.40	3
215	1.9	21		39.0	3	50.0	4	< 5	NR	200	0	160	3	9.00	4
220	2.1	19				102.0	0	1.20	4	243	4	171	4	9.67	3
221	2.8	15				63.5	3	1.30	4						
234	3.2	24		34.2	4	45.5	4	0.72	1	240	4	166	4	9.28	4
235	3.0	15		38.8	3	47.7	4			246	4	161	3	10.00	2
236	2.8	22		30.0	3	51.0	4	< 35	NR	231	3	158	2	9.00	4
241	1.9	19		29.2	3	64.7	2	< 5	NR			240	0	7.00	0
246	2.7	21		38.3	3	64.5	2	< 65	NR	253	3	170	4	9.60	3
247	3.0	23		35.4	4	53.7	4	< 2	NR	235	3	173	3	9.40	4

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Ag (Silver)		Al (Aluminum)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)	
			MPV =	34.1	µg/L	50.0	µg/L	1.30	µg/L	242	µg/L	167	µg/L	9.00	µg/L
			F-pseudosigma =	5.2		14.1		0.37		13		8		0.82	
Lab	OLR	V/26		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
254	3.2	16				50.0	4	< 110	NR	240	4				
255	2.8	18		35.8	4	< 34	NR	< 2	NR	256	2	170	4	9.04	4
283	1.9	23		17.0	0	32.0	2	< 5	NR	234	3	134	0	8.89	4
284	1.2	22		39.0	3	74.0	1	1.00	3			190	0	17.00	0
287	1.2	13				46.0	4								
292	2.4	17		42.0	1	< 10	0	< 3	NR			163	3	8.00	2
297	2.1	7													
300	1.2	23		2.2	0	49.7	4	1.56	3	231	3	180	1	8.60	4
304	3.0	19		38.0	3	47.7	4	1.50	3			162	3	8.80	4

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Ca (Calcium)		Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)	
MPV =	72.6	mg/L	13.0	µg/L	insuff. data		27.6	µg/L	28.4	µg/L	0.049	mg/L	4.60	mg/L
F-pseudosigma =	2.7		0.8				3.0		2.7		0.005		0.27	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	72.5	4	12.6	4	< 1	NR	27.3	4	27.3	4	0.047	4	4.45	3
5	67.6	1	11.8	2	< 3	NR	27.0	4	29.5	4	0.050	4	4.66	4
8	73.6	4	13.0	4	< 10	NR	23.0	1	32.0	2	0.035	0	4.70	4
11	74.1	3	12.7	4					30.8	3			4.18	1
12			12.8	4					28.0	4				
13	75.9	2	12.3	3	< 5	NR	30.7	2	20.0	0	0.013	0	4.76	3
16	74.0	3	13.1	4	1.00	NR	24.7	3	29.0	4	0.048	4	4.60	4
18	69.3	2	12.0	2	< 5	NR	27.0	4	27.0	3	< 50	NR	4.80	3
23	74.2	3							27.1	4	0.054	3	4.45	3
24	74.2	3	12.6	4			30.1	3	29.7	4	0.051	4	4.27	2
25	78.5	0	< 6	0	< 12	NR	30.0	3	28.0	4	0.040	1	5.85	0
26	72.6	4	13.5	3	< 6	NR	29.8	3	27.6	4	0.047	4	4.66	4
30.1	59.0	0	15.0	0	0.50	NR	29.0	4	29.0	4	0.300	0		
30.2	69.0	2									< 0.5	NR		
32	77.0	1	14.0	2	0.40	NR	26.9	4	26.2	3			4.70	4
33	79.4	0									0.060	1	4.66	4
34			13.6	3			26.2	4						
42			13.1	4	< 2	NR	24.1	2	24.5	2				
43	72.2	4									0.050	4	4.40	3
46	73.2	4	13.6	3			28.6	4	28.4	4	0.046	3	4.80	3
48	75.4	2	12.7	4	0.40	NR	23.9	2	23.4	1	0.044	3	4.74	3
59	71.6	4	13.0	4			26.7	4	25.0	2	0.048	4	5.00	2
64	73.7	4											4.88	2
69	70.4	3	11.8	2			27.5	4	< 50	NR	0.057	2	4.96	2
76							29.6	3	29.3	4				
83	71.2	3	12.1	2			25.7	3	28.4	4	0.046	3	4.32	2
85	70.8	3			< 10	NR	30.0	3	35.0	0	0.050	4	4.71	4
86	73.6	4	12.7	4			25.2	3	30.0	3	0.047	4	4.48	4
89	87.1	0	15.2	0	< 5	NR	30.3	3	27.1	4	0.049	4	4.38	3
100	73.3	4	16.2	0	1.25	NR	26.1	3	27.9	4	0.063	0	4.74	3
102	69.0	2	12.0	2	10.00	NR	23.0	1	25.0	2	0.048	4	4.20	2
105	70.6	3	12.5	3	< 1	NR	27.7	4	26.0	3	0.048	4	4.33	2
109	72.5	4									0.057	2	4.88	2
119	72.7	4	13.4	4	0.41	NR	26.3	4	30.0	3	0.050	4	4.00	0
121	73.5	4									0.053	3		
126			14.5	1					33.0	1	< 0.05	NR		
134	71.3	4	12.4	3	0.41	NR	26.9	4	30.0	3	0.046	3	4.48	4
136	68.7	2	11.5	1	10.70	NR	33.1	1	41.2	0	0.048	4		
138	73.4	4	12.6	4	0.67	NR	27.6	4	28.2	4	0.048	4	4.30	2
140	71.0	3	13.0	4			33.0	1	30.0	3	0.043	2	4.36	3
141	61.0	0	12.8	4	< 10	NR	23.7	2	25.5	2	0.068	0	3.91	0
142	70.8	3	13.4	4	< 1	NR	27.5	4	28.5	4	0.044	3	4.54	4
145	74.1	3	15.0	0	7.00	NR	37.0	0	42.0	0	0.046	3	4.53	4
146	72.2	4	13.1	4	< 10	NR	28.7	4	32.0	2	0.052	3	5.05	1
149	74.0	3	15.0	0			34.0	0	30.0	3			4.50	4
151			13.1	4			24.1	2	24.6	2	0.025	0		
180	72.8	4	17.0	0	< 5.22	NR	26.2	4	26.1	3	0.004	0	4.45	3
191	69.7	2	12.2	3	0.45	NR	25.4	3	23.2	1	0.060	1	4.63	4
196	71.6	4											4.40	3
204	69.9	2	12.2	3			24.5	2	24.5	2	< 0.02	0	4.71	4
212	72.0	4	13.0	4	< 1	NR	25.0	3	24.0	1	< 0.1	NR	< 5	NR
215	67.0	0	12.0	2	< 5	NR	29.0	4	33.0	1	0.054	3	2.60	0
220	70.0	3	16.4	0			48.0	0	38.3	0	0.052	3	5.70	0
221	67.6	1	12.5	3	1.00	NR	30.6	2	29.5	4	0.062	0	4.85	3
234	74.2	3	13.7	3	0.50	NR	30.1	3	26.6	3	0.048	4	4.55	4
235	76.3	2	12.6	4	0.40	NR	26.0	3	26.6	3				
236	70.2	3	12.0	2	< 6	NR	26.0	3	28.0	4	0.047	4	4.66	4
241	80.2	0	13.0	4			3.2	0	37.0	0	0.050	4	5.30	0
246	72.2	4	12.5	3	< 10	NR	29.9	3	28.4	4	0.064	0	4.76	3
247	73.2	4	13.5	3	< 1	NR	28.2	4	28.4	4	0.058	1	4.76	3

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reportad values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Ca (Calcium)		Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)	
MPV =	72.6	mg/L	13.0	µg/L	insuff. data		27.6	µg/L	28.4	µg/L	0.049	mg/L	4.60	mg/L
F-pseudosigma =	2.7		0.8				3.0		2.7		0.005		0.27	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
254	71.5	4	15.0	0	< 5	NR	30.0	3	30.0	3	0.049	4	4.40	3
255	73.3	4	12.8	4	43.20	NR	30.8	2	28.8	4	0.052	4	4.52	4
283	60.0	0	13.0	4	0.52	NR	29.6	3	22.4	0	0.047	4	4.07	1
284	77.9	1	10.0	0	< 100	NR	31.0	2	33.0	1	0.002	0	4.85	3
287	70.0	3	22.0	0			34.0	0	39.0	0	0.063	0	7.00	0
292	74.6	3	13.0	4			27.0	4	22.0	0	0.050	4	4.50	4
297	73.3	4									0.059	1	4.02	0
300	86.9	0	13.7	3	0.63	NR	36.6	0	27.0	3	0.309	0	5.18	0
304	75.5	2	13.3	4	0.43	NR	30.0	3	27.6	4			4.50	4

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Li (Lithium)		Mg (Magnesium)		Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)	
MPV =	19.2	µg/L	14.2	mg/L	307	µg/L	37.8		115	mg/L	6.92	µg/L	150	µg/L
F-pseudosigma =	1.6		0.3		17		3.5		4		2.08		8	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	20.8	3	14.1	4	293	3	37.8	4	114	4	6.17	4	147	4
5	18.1	3	14.2	4	305	4	34.3	3	120	2	< 10	NR	150	4
8	< 20	NR	14.2	4	313	4	< 20	0	115	4	< 10	NR	133	0
11			14.2	4	309	4	36.7	4	105	0			145	3
12													128	0
13			14.0	3	320	3	< 50	NR	117	4	< 20	NR	153	4
16			14.3	4	277	1	37.2	4	119	3	13.80	0	152	4
18			12.9	0	306	4	35.0	3	112	3	6.00	4	140	2
23			13.2	0	305	4			118	3			138	1
24	30.4	0	14.4	3	323	3	38.9	4	117	4			157	3
25	21.0	2	14.7	1	316	3			120	2	< 49	NR	148	4
26	19.7	4	14.4	3	312	4	36.0	4	118	3	6.17	4	151	4
30.1	19.0	4	13.0	0	350	0	42.0	2	110	2	8.30	3	153	4
30.2			15.0	0					126	0				
32	18.0	3	15.4	0	330	2	43.0	1	123	1	10.00	2	146	3
33			14.4	3	330	2			118	3			274	0
34														
42					262	0	37.0	4			13.30	0	168	0
43			14.0	3	312	4			111	3				
46			14.2	4	310	4	42.2	2	117	4			144	3
48			15.1	0	283	2	38.0	4	124	1	6.00	4	146	3
59			14.1	4	300	4			110	2	8.80	3	150	4
64			13.6	1					116	4				
69	< 50	NR	14.2	4	331	2			114	4	< 50	NR	136	1
76			14.3	4									146	3
83			13.9	2	294	3			117	4	< 15	NR	149	4
85			13.9	2	320	3			111	3	< 10	NR		
86			14.7	1	313	4			119	3				
89			14.4	3	324	2			112	3	5.06	3	117	0
100	20.0	4	14.8	1	327	2	36.2	4	129	0	6.93	4	169	0
102			15.0	0	294	3			94	0	< 1	0	152	4
105	< 50	NR	13.7	1	305	4	39.0	4	114	4	8.00	3	162	1
109			14.0	3	311	4			113	4				
119			14.0	3	317	3	37.7	4	117	4	6.10	4	139	2
121			14.0	3	300	4			115	4				
126											60.00	0	145	3
134	15.4	0	14.3	4	312	4	38.3	4	112	3	5.46	3	148	4
136			13.0	0	279	1	40.9	3			16.70	0	161	2
138			14.1	4	313	4	36.3	4	113	4	7.86	4	154	3
140			14.2	4	300	4			116	4	3.00	1	148	4
141			12.0	0	272	1	31.3	1	100	0	< 20	NR	120	0
142	19.8	4	14.8	1	328	2	39.5	4	123	1	6.71	4	384	0
145	25.0	0	14.8	1	324	2	39.0	4	118	3	13.00	0	182	0
146			14.1	4	311	4	37.1	4	127	0	< 40	NR	160	2
149			14.0	3	306	4			115	4	6.00	4	148	4
151	16.2	1			271	0	39.7	3			6.60	4	152	4
180			14.1	4	307	4	35.0	3	116	4	< 16.3	NR	160	2
191			14.0	3	249	0			114	4	7.00	4	136	1
196			14.1	3					123	1				
204			14.0	3	277	1			113	4	5.15	3	157	3
212			14.2	4	310	4			118	3	8.70	3	140	2
215			13.4	0	290	3	36.0	4	112	3	6.00	4	140	2
220			13.6	1	327	2	40.8	3	114	4	7.20	4	151	4
221			14.3	4	309	4	34.6	3	113	4	6.74	4	144	3
234	19.2	4	13.9	2	264	0	33.5	2	117	4	6.92	4	146	3
235			14.5	2	278	1					6.20	4	146	3
236	15.0	0	14.0	3	305	4	35.0	3	110	2	6.00	4	152	4
241			14.2	4	277	1	40.0	3	102	0	< 10	NR	152	4
246	18.3	3	14.7	1	324	3	39.7	3	107	1	< 15	NR	150	4
247	20.4	3	14.2	4	306	4	38.3	4	121	2	8.90	3	163	1

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Li (Lithium)		Mg (Magnesium)		Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)	
MPV =	19.2	µg/L	14.2	mg/L	307	µg/L	37.8		115	mg/L	6.92	µg/L	150	µg/L
F-pseudosigma =	1.6		0.3		17		3.5		4		2.08		8	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
254	20.0	4	14.1	4	305	4			115	4	< 15	NR	150	4
255			14.1	4	314	4	35.0	3	121	2	< 5.2	NR	171	0
283	18.0	3	12.8	0	273	1	34.8	3	102	0	8.00	3	150	4
284			15.1	0	301	4	94.0	0	108	2	9.00	3	149	4
287			14.0	3	278	1			112	3	2.00	0	16	0
292			14.5	2	298	4	32.0	1	116	4	< 20	NR	115	0
297			14.4	3	305	4			116	4			155	3
300	16.4	1	16.2	0	362	0	44.9	0	81	0	10.10	1	170	0
304			14.6	2	322	3	38.0	4	118	3	4.80	2	151	4

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Sb (Antimony)		Se (Selenium)		SiO_2 (Silica)		Sr (Strontium)		V (Vanadium)		Zn (Zinc)	
MPV =	24.1	µg/L	insuff. data		26.9	mg/L	810	µg/L	6.56	µg/L	363	µg/L
F-pseudosigma =	3.3				1.6		27		3.90		16	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	19.7	2	2.10	NR	25.9	3	794	3	6.56	4	333	1
5	27.2	3	2.62	NR	27.0	4	852	1	4.74	4	365	4
8	2.2	0	1.20	NR	25.2	2	799	4	< 10	NR	363	4
11	22.3	3			22.2	0	804	4			362	4
12												
13	24.2	4	< 5	NR	27.6	4			< 50	NR	382	2
16	13.6	0	11.50	NR			764	1	6.70	4	311	0
18	23.0	4	< 1	NR			761	1	5.80	4	357	4
23					26.4	4			7.85	4		
24					27.8	3	862	1			377	3
25	< 51	NR	< 129	NR	37.7	0	868	0	< 4	NR	< 4	0
26	18.2	1	1.56	NR	28.2	3			5.50	4	365	4
30.1	26.0	3	6.80	NR			810	4	7.80	4	380	2
30.2												
32	24.0	4	< 4	NR	28.2	3	780	2	5.00	4	355	3
33					26.3	4	914	0				
34												
42	24.4	4	8.00	NR					4.20	3	350	3
43					26.4	4						
46	21.0	3							6.69	4	371	3
48	25.0	4	2.20	NR					4.60	4	281	0
59	25.4	4	5.40	NR							409	0
64					26.0	3						
69	19.6	2	< 5	NR							356	4
76	25.1	4										
83					25.0	2					346	2
85							802	4				
86			1.93	NR			845	2			364	4
89	24.6	4	2.22	NR	26.8	4			12.40	2	339	1
100	24.6	4	< 2	NR	29.1	2	832	3	< 10	NR	368	4
102	17.0	0	< 5	NR	25.0	2	861	1	7.00	4	340	2
105	23.6	4	< 7	NR	28.7	2	832	3	< 13	NR	370	4
109												
119	19.5	2	2.26	NR	27.3	4					370	4
121					27.8	3	814	4			420	0
126			< 1	NR							385	2
134	21.1	3	0.58	NR	27.1	4	808	4	5.04	4	368	4
136			59.60	NR			762	1	10.60	2	338	1
138	22.9	4	3.30	NR	26.1	4	818	4	5.96	4	361	4
140					25.6	3					370	4
141	26.5	3	< 2	NR					< 10	NR	318	0
142	31.2	0	6.22	NR	30.1	1	816	4	5.34	4	490	0
145					26.9	4	834	3	16.00	0	378	3
146	< 50	NR	< 10	NR					< 10	NR	365	4
149												
151	24.4	4	4.00	NR	27.4	4	816	4			339	1
180	27.8	2	< 53.2	NR					15.60	0	358	4
191			< 2	NR	26.6	4	800	4			362	4
196												
204			7.52	NR	28.6	2					386	2
212	25.0	4	6.30	NR	26.9	4			5.20	4	330	0
215	30.0	1	< 5	NR	22.5	0			50.00	0	340	2
220			2.20	NR					14.00	1	387	1
221			1.00	NR							365	4
234	23.9	4	2.32	NR	26.4	4	802	4	6.10	4	331	0
235							815	4	6.30	4		
236			< 90	NR	19.9	0	795	3	9.00	3	357	4
241	30.5	1	< 5	NR	25.3	3			6.00	4	363	4
246	< 85	NR	< 80	NR	27.6	4	819	4	13.90	1	366	4
247	25.5	4	< 5	NR	43.7	0	787	3	5.10	4	378	3

Table 10. *Laboratory performance ratings for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; *V/26, number of reported values of 26 possible values; RV, reported value; <, less than.*)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Sb (Antimony)		Se (Selenium)		SiO_2 (Silica)		Sr (Strontium)		V (Vanadium)		Zn (Zinc)	
MPV =	24.1	µg/L	insuff. data		26.9	mg/L	810	µg/L	6.56	µg/L	363	µg/L
F-pseudosigma =	3.3				1.6		27		3.90		16	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
254					25.2	2	800	4			360	4
255	78.1	0	< 2	NR					14.10	1	366	4
283	22.8	4	< 5	NR	31.0	0	726	0	5.20	4	394	1
284	19.0	1	1.00	NR	20.5	0	1242	0	20.00	0	351	3
287											351	3
292	24.0	4	3.00	NR							360	4
297												
300	32.4	0	4.19	NR			1	0	6.82	4	194	0
304	23.6	4							5.50	4	398	0

Table 11. *Laboratory performance ratings for standard reference sample GWM-2 (ground-water major constituents)*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/13, number of reported values of 13 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Alkalinity (as $CaCO_3$)	B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD (Dissolved Solids)		F (Fluoride)	
			MPV =	253 mg/L	238 µg/L		68.4 mg/L		48.9 mg/L		602 mg/L		1.18 mg/L	
			F-pseudosigma =	9	14		2.5		2.0		14		0.09	
Lab	OLR	V/13		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.5	13		257	4	235	4	68.5	4	47.2	3	621	2	1.22	4
5	2.7	11		252	4	244	4	62.8	0	48.2	4	611	3		
8	1.9	13		255	4	202	0	60.7	0	45.0	1	610	3	1.10	3
11	3.0	13		247	3	243	4	71.1	2	50.0	3	604	4	1.09	3
12	1.3	6		264	2					47.0	3	580	1		
13	3.0	12		246	3			68.6	4	47.7	3	588	3	1.04	1
16	2.8	12		238	1	355	0	68.6	4	47.0	3	597	4	1.15	4
18	2.6	8				230	3	65.6	2			588	3	1.21	4
24	3.4	11		259	3	250	3	69.8	3	48.4	4			1.22	4
25	1.5	13		262	3	269	0	74.9	0	47.0	3	560	0	1.24	3
26	3.4	11		246	3	230	3	69.0	4	49.3	4	591	3		
30.1	1.8	6				201	0	57.0	0	46.8	2				
30.2	3.0	1													
33	3.3	7		256	4			73.2	1						
34	2.0	2		257	4										
42	1.8	5		0	0					50.3	3			1.35	1
43	3.7	9		259	3			69.4	4			610	3		
46	3.2	13		252	4	247	3	66.5	3	49.2	4	612	3	1.24	3
48	1.8	12		237	1	226	3	71.9	2	42.0	0	620	2	1.30	2
59	3.0	10		258	3			68.0	4	48.0	4	611	3	1.24	3
64	3.6	8						70.2	3	49.1	4				
68	2.1	7		253	4			71.3	2	52.5	1				
69	3.4	9		248	3			67.8	4	50.0	3	614	3	1.17	4
76	3.8	4								49.5	4	603	4	1.10	3
83	2.8	10		254	4			66.0	3	47.0	3			1.30	2
85	3.7	13		260	3	240	4	66.7	3	49.6	4	589	3	1.16	4
86	2.9	10				237	4	70.4	3	48.7	4			1.28	2
89	3.3	12		258	3			83.4	0	47.3	3	599	4	1.24	3
100	2.4	12		135	0	236	4	69.8	3	55.3	0	608	4	1.12	3
102	3.0	9						67.0	3	49.0	4				
109	3.5	8		255	4			68.3	4			585	2		
119	3.2	13		252	4	200	0	68.0	4	46.4	2	592	3	1.16	4
134	3.5	13		257	4	252	3	68.4	4	49.4	4	612	3	1.17	4
136	1.0	5		252	4	54	0	18.4	0						
138	3.4	13		260	3	250	3	68.9	4	48.2	4	596	4	1.28	2
140	3.0	11						66.5	3	50.0	3	587	2	1.23	3
141.1	1.8	12		260	3	245	4	56.0	0	47.0	3	597	4	1.29	2
141.2	1.3	3								46.8	2			0.92	0
142	2.5	13		230	0	238	4	67.8	4	51.1	2	578	1	1.18	4
145	3.3	12		231	0	244	4	69.2	4	49.3	4			1.14	4
146	2.0	11		259	3			68.2	4	53.0	0	592	3	1.24	3
151	3.7	7		255	4					49.0	4			1.08	2
158	3.3	3		245	3										
180	3.0	11		253	4	262	1	69.0	4	50.0	3			1.33	1
191	3.1	8						66.6	3	48.4	4				
204	2.8	10		268	1			67.0	3	47.7	3				
208	2.3	3								48.5	4			< 0.3	0
212	3.2	12		247	3	230	3	69.9	3	51.0	2	602	4	1.10	3
215	1.5	13		252	4	210	1	62.1	0	62.0	0	601	4	1.16	4
218	1.0	6		200	0			70.0	3						
220	3.0	9		252	4	233	4	66.5	3	51.5	2				
221	3.1	8						67.6	4	48.3	4	608	4		
234	3.6	13		256	4	237	4	70.5	3	48.1	4	612	3	1.12	3
235	2.0	3				255	2	72.8	1						
236	3.0	13		260	3	225	3	66.5	3	49.9	3	602	4	1.10	3
241	2.7	12		257	4			75.1	0	49.9	3	600	4	1.13	3
246	3.0	10				249	3	68.0	4	46.8	2			1.15	4
247	2.9	12		242	2	244	4	69.9	3	48.4	4	711	0	1.18	4
254	3.3	7				230	3	68.0	4						
255	2.7	10		256	4	257	2	69.7	3	49.6	4			1.25	3

Table 11. *Laboratory performance ratings for standard reference sample GWM-2 (ground-water major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/13, number of reported values of 13 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Alkalinity (as $CaCO_3$)		B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD (Dissolved Solids)		F (Fluoride)	
			MPV =	253	mg/L	238	µg/L	68.4	mg/L	48.9	mg/L	602	mg/L	1.18	mg/L
			F-pseudosigma =	9		14		2.5		2.0		14		0.09	
Lab	OLR	V/13		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
283	1.5	13		248	3	225	3	58.5	0	45.1	1	648	0	1.20	4
284	1.3	12		256	4			60.6	0	55.5	0	592	3	1.40	0
287	1.8	10		234	0			67.0	3	4.0	0			1.30	2
292	3.0	11		259	3			71.4	2	47.7	3	646	0	1.07	2
294	2.3	7		254	4					50.3	3			0.97	0
297	1.7	9		237	1			72.2	1	49.0	4				
300	0.6	9		41	0	260	1	138.0	0	68.0	0			1.30	2

Table 11. *Laboratory performance ratings for standard reference sample GWM-2 (ground-water major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/13, number of reported values of 13 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	K (Potassium)		Mg (Magnesium)		Na (Sodium)		total Phosphorus as P		SiO_2 (Silica)		SO_4 (Sulfate)		Sp Cond (Specific Conductance)	
MPV =	4.46	mg/L	14.0	mg/L	117	mg/L	0.20	mg/L	26.7	mg/L	93.6	mg/L	934	µS/cm
F-pseudosigma =	0.40		0.4		5		0.03		1.8		4.0		26	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	4.44	4	13.7	3	116	4	0.18	3	25.6	3	91.4	3	937	4
5	3.53	0	13.8	4	121	3			26.3	4	85.1	0	935	4
8	3.80	1	12.6	0	105	0	0.18	3	26.4	4	93.0	4	883	2
11	4.13	3	14.0	4	108	1	0.19	4	21.9	0	93.0	4	920	4
12							0.16	2			105.0	0	691	0
13	4.84	3	14.1	4	117	4	0.13	0	27.7	3	93.9	4	944	4
16	4.40	4	13.6	3	118	4	0.22	3			78.7	0	942	4
18	4.70	3	12.7	0	117	4							874	2
24	4.01	2	14.1	4	121	3			28.4	3	92.7	4	940	4
25	4.53	4	14.8	1	126	1	< 0.121	0	31.5	0	84.5	0	922	4
26	4.60	4	14.3	3	123	2			28.2	3	94.0	4	950	4
30.1			13.4	2	116	4					91.2	3		
30.2					122	3								
33	4.53	4	14.2	4	118	4			26.1	4			870	2
34											107.0	0		
42											100.6	1	924	4
43	4.40	4	14.0	4	115	4			26.2	4	91.4	3	934	4
46	4.50	4	13.6	3	112	2	0.24	1	27.4	4	97.3	3	930	4
48	4.63	4	15.0	0	126	1	0.24	1			99.0	2	945	4
59	4.90	2	14.0	4	114	3					84.4	0	939	4
64	4.80	3	13.7	3	119	4			26.3	4	93.5	4	940	4
68	4.66	3	14.9	1	118	4					102.0	0		
69	4.89	2	14.0	4	116	4					93.0	4		
76											95.3	4		
83	4.24	3	13.3	1	118	4	0.19	4	24.2	2	88.4	2		
85	4.57	4	13.8	4	114	3	0.21	4	26.6	4	93.4	4	928	4
86	4.34	4	14.5	2	122	3	0.30	0			93.7	4	968	3
89	4.19	3	14.0	4	115	4	0.19	4	26.8	4	92.1	4	935	4
100	4.28	4	14.8	1	121	3			28.7	2	101.0	1	939	4
102	3.90	2	14.0	4	95	0	0.20	4	24.5	2	95.0	4	952	4
109	4.85	3	13.8	4	116	4					95.9	3	929	4
119	4.00	2	14.0	4	113	3	0.20	4	26.0	4	90.8	3	937	4
134	4.39	4	14.4	3	120	3	0.16	2	27.1	4	93.8	4	929	4
136			3.5	0									862	1
138	4.10	3	13.5	2	114	3	0.20	4	26.4	4	93.6	4	911	4
140	4.36	4	13.6	3	118	4	0.19	4	26.9	4	103.0	0	959	3
141.1	3.82	1	11.8	0	102	0	0.26	0			102.0	0	948	4
141.2											87.8	2		
142	4.47	4	14.7	1	127	1	0.21	4	30.4	0	93.0	4	946	4
145	4.08	3	14.2	3	118	4	0.17	2	26.3	4	90.0	3	929	4
146	4.75	3	14.0	4	129	0	0.23	2			105.0	0	828	0
151							0.19	4	27.3	4	93.0	4	924	4
158							0.18	3					944	4
180	4.06	3	13.8	4	119	4	0.19	4			96.6	3	874	2
191	4.47	4	13.9	4	117	4	0.19	4	28.8	2	66.7	0		
204	4.59	4	13.8	4	116	4	0.20	4	28.5	2	80.8	0	906	3
208											91.5	3		
212	< 5	NR	14.3	3	122	3	0.20	4	27.3	4	96.5	3	903	3
215	< 1	0	12.6	0	105	0	0.19	4	19.2	0	412.0	0	998	2
218	4.90	2	16.0	0	127	1							9	0
220	4.90	2	13.5	2	117	4	0.22	3			96.8	3		
221	4.79	3	14.3	3	115	4	0.24	1			88.1	2		
234	4.40	4	13.6	3	120	3	0.20	4	26.0	4	94.1	4	952	4
235			14.3	3										
236	4.24	3	13.9	4	114	3	0.20	4	19.9	0	88.5	2	940	4
241	5.00	2	14.3	3	110	2	0.19	4	25.7	3	95.2	4	790	0
246	4.66	3	14.7	1	111	2			27.3	4	90.0	3	920	4
247	4.72	3	14.3	3	122	3			30.2	1	94.2	4	952	4
254	4.20	3	13.7	3	117	4	0.20	4	24.6	2				
255	4.43	4	14.1	4	124	2			30.1	1			1030	0

Table 11. *Laboratory performance ratings for standard reference sample GWM-2 (ground-water major constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/13, number of reported values of 13 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-valua
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	K (Potassium)		Mg (Magnesium)		Na (Sodium)		total Phosphorus as P		SiO_2 (Silica)		SO_4 (Sulfate)		Sp Cond (Specific Conductance)	
MPV =	4.46	mg/L	14.0	mg/L	117	mg/L	0.20	mg/L	26.7	mg/L	93.6	mg/L	934	µS/cm
F-pseudosigma =	0.40		0.4		5		0.03		1.8		4.0		26	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
283	3.48	0	15.2	0	91	0	0.27	0	29.8	1	89.7	3	947	4
284	4.87	2	15.0	0	121	3	0.65	0	10.9	0	< 5	0	934	4
287	7.40	0	14.0	4	115	4	0.55	0			93.0	4	843	1
292	4.40	4	14.2	4	118	4	0.22	3			93.7	4	936	4
294							0.03	0	29.9	1	93.9	4	930	4
297	4.10	3	14.4	3	132	0	0.62	0			125.9	0	906	3
300	8.20	0	21.6	0	112	2					127.0	0		

Table 12. *Laboratory performance ratings for standard reference sample AMW-4 (acid mine water constituents)*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte = Ag (Silver)		Al (Aluminium)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)	
			MPV = 69.0	µg/L	29200	µg/L	168	µg/L	insuff. data		9.23	µg/L	38.0	µg/L
			F-pseudosigma = 11.3		1760		30				3.60		3.3	
Lab	OLR	V/26	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.3	22	76.3	3	29100	4			< 40	NR	136.60	0	39.9	3
4	2.2	21			28934	4	203	2					35.9	3
5	3.2	22	70.0	4	30100	3	198	2	< 10	NR	< 4	NR	38.9	4
8	2.3	22	22.0	0	28000	3	15	0	< 20	NR	< 20	NR	37.0	4
11	1.9	21	38.8	0	26000	1	164	4					35.3	3
12	1.8	6	88.0	1			159	4						
16	3.0	22	64.0	4	29300	4	166	4	157	NR	10.60	4	32.8	1
18	3.0	22	69.0	4	28000	3	168	4	< 50	NR	8.80	4	40.0	3
25	1.5	21	< 6	0	29400	4	< 50	0	< 23	NR	< 0.7	0	39.6	4
30.1	3.2	22	69.0	4	25000	0	190	3	23	NR	11.00	4	43.0	1
30.2	2.5	4												
34	3.0	3	78.5	3										
42	1.8	15	59.8	3	27226	2	35	0	15	NR	8.30	4	19.7	0
43	2.9	7												
46	3.7	19	66.0	4	29600	4	135	2					39.3	4
48	2.1	21	61.0	3	29600	4	23	0	28	NR	6.60	3	30.0	0
59	3.2	18	70.0	4	13	0	172	4			8.90	4	30.7	0
69	3.1	17	61.1	3	28400	4	191	3					36.5	4
85	3.5	15	77.0	3	29500	4			510	NR	8.00	4	38.0	4
86	3.1	14			30400	3					8.55	4	38.4	4
89	2.8	19	69.0	4	28100	3	215	1			< 50	NR	32.3	1
100	3.1	24	89.0	1	29571	4	168	4	464	NR	9.26	4	< 1	0
105	3.3	24	66.5	4	27800	3	196	3			9.00	4	38.0	4
127	2.4	24	110.0	0	29300	4	172	4	22	NR	8.17	4	34.0	2
134	3.5	24	64.0	4	30600	3	189	3	219	NR	9.23	4	39.2	4
136	0.8	10					884	0	247	NR	13.40	2		
140	2.7	15	70.0	4							260.00	0		
141	1.3	21	86.2	1	24798	0	174	4	192	NR	< 10	NR	35.6	3
148	3.3	19	66.4	4	27000	2	163	4			< 10	NR	39.6	4
149	1.9	10									10.00	4		
212	2.5	20	54.0	2	29200	4	150	3	< 200	NR	7.20	3	26.0	0
215	2.6	22	80.0	3	30000	4	127	2	40	NR	30.00	0	36.0	3
235	2.3	13	83.3	2	30400	3	175	4	91	NR	11.00	4		
237	2.3	18			29500	4			373	NR	14.00	2	47.0	0
241	2.1	21	56.0	2	30900	3	166	4			14.00	2	40.0	3
246	2.7	22	81.2	2	30160	3	192	3	38	NR	9.10	4	45.6	0
247	3.1	24	65.3	4	27100	2	133	2	32	NR	7.96	4	37.0	4
253	1.0	6			24300	0								
254	3.8	15			29800	4	< 1110	NR	< 30	NR				
283	2.7	24	23.0	0	31600	2	155	4	22	NR	8.60	4	39.7	3
284	1.7	23	74.0	4	22000	0	102	0			28.00	0	74.0	0
297	1.2	10												

Table 12. *Laboratory performance ratings for standard reference sample AMW-4 (acid mine water constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reportad values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greatar than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Ca (Calcium)		Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)	
MPV =	338	mg/L	175	µg/L	165	µg/L	120	µg/L	6120	µg/L	188	mg/L	3.58	mg/L
F-pseudosigma =	28		18		13		18		437		12		0.23	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	338	4	186	3	183	2	135	3	6320	4	188	4	3.46	3
4	350	4	188	3	180	2	1995	0	7397	0	172	2	4.80	0
5	312	3	171	4	165	4	144	2	6360	3	182	4	2.22	0
8	307	2	159	3	171	4	120	4	5600	2	169	1	3.80	3
11	290	1	138	0	147	2	110	3	5610	2	143	0	3.04	0
12			161	3					5500	2				
16	335	4	162	3	145	2	101	2	6192	4	174	2	3.60	4
18	317	3	159	3	167	4	114	4	5900	4	180	3	3.30	2
25	374	2	185	3	170	4	116	4	6720	2	19	0	4.35	0
30.1	270	0	185	3	170	4	125	4	6300	4	186	4		
30.2	329	4									193	4		
34			191	3			103	3						
42			156	2	137	1	99	2	5592	2				
43	338	4									193	4	3.20	1
46	342	4	168	4	163	4	121	4	6060	4	188	4	3.60	4
48	354	3	163	3	117	0	86	1	6170	4	215	0	3.78	3
59	339	4	174	4			93	2	6100	4	188	4	3.80	3
69	323	4	186	3			120	4	6450	3	192	4	3.93	1
85	328	4			170	4	160	0	6520	3	188	4	3.57	4
86	353	3	191	3					6220	4	195	3	3.40	3
89	406	0	189	3	158	4	137	3	6420	3	191	4	3.52	4
100	345	4	178	4	171	4	115	4	5770	3	182	4	3.64	4
105	324	4	166	3	167	4	125	4	6050	4	170	2	3.58	4
127	298	2	162	3	161	4	123	4	5390	1	192	4	2.82	0
134	348	4	177	4	190	1	120	4	6425	3	192	4	3.53	4
136			193	3	249	0	194	0	4837	0				
140	310	3	180	4			170	0	6100	4	167	1	3.60	4
141	288	1	152	2	153	3	115	4	5470	2	159	0	3.09	0
146	309	3	170	4	164	4	112	4	5940	4	197	3	3.58	4
149	86	0	180	4			160	0	6400	3			3.50	4
212	339	4	140	1	120	0	86	1	6346	3	191	4	< 10	NR
215	340	4	147	1	170	4	133	3	6550	3	187	4	< 1	0
235	398	0	177	4	136	1			5860	3	209	1		
237	356	3	177	4			136	3	6416	3	205	2		
241	373	2	199	2			8	0	6010	4	194	3	3.10	0
246	314	3	186	3	158	4	110	3	6264	4	172	2	3.73	3
247	350	4	172	4	166	4	120	4	5810	3	195	3	4.04	1
253			300	0					5750	3				
254	340	4	160	3	170	4	130	3	6240	4	190	4	3.50	4
283	295	2	184	4	154	3	135	3	5770	3	0	0	3.65	4
284	324	4	150	2	100	0	350	0	6140	4	179	3	3.70	3
297	368	2									195	3	3.42	3

Table 12. *Laboratory performance ratings for standard reference sample AMW-4 (acid mine water constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per litar; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Li (Lithium)		Mg (Magnesium)		Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)	
MPV =	68.3	µg/L	125	mg/L	106	mg/L	108	µg/L	22.7	mg/L	269	µg/L	33.5	µg/L
F-pseudosigma =	2.0		8		7		19		1.5		22		7.6	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	87.1	0	126	4	104	4	117	4	22.5	4	279	4	31.6	4
4	64.2	2	121	4	92	0	98	3	21.3	3	256	3	41.5	2
5	68.3	4	118	3	102	3	109	4	23.6	3	272	4	32.4	4
8	60.0	0	120	3	102	3	108	4	20.5	2	162	0	< 50	NR
11	69.5	4	113	2	102	3	98	3	21.9	3	233	1		
12									200.0	0			22.0	1
16			127	4	101	3	122	3	16.0	0	264	4	37.0	4
18			115	2	100	3	155	0	22.0	4	268	4	36.0	4
25	82.0	0	141	1	99	3			24.8	2	< 49	0	< 71	NR
30.1	70.0	4	121	4	103	4	138	1	21.0	2	280	4	34.0	4
30.2			134	2					30.0	0				
34														
42					114	2	26	0			48	0	37.9	3
43			125	4	112	3			19.5	0				
46			126	4	109	4	124	3	22.7	4	269	4	37.8	3
48			138	1	116	1	124	3	22.6	4	185	0	35.0	4
59			131	3	108	4			21.3	3	288	3	35.1	4
69	70.0	4	127	4	111	3			21.1	2	344	0	25.6	2
85			126	4	108	4			21.9	3	270	4		
86			133	3	110	3			24.1	3				
89			132	3	106	4			22.4	4	269	4	12.9	0
100	68.0	4	107	0	101	3	103	4	24.2	2	309	1	33.0	4
105	70.0	4	115	2	94	1	118	3	23.5	3	287	3	27.0	3
127	59.0	0	125	4	95	1	72	1	19.6	0	261	4	32.9	4
134	67.3	4	124	4	111	3	91	3	22.7	4	274	4	27.7	3
136							339	0			392	0	475.0	0
140			120	3	106	4			23.2	4	260	4	10.0	0
141	59.5	0	109	1	87	0	92	3	65.5	0	157	0	47.1	1
146			120	3	111	3	108	4	23.9	3	271	4	49.3	0
149			106	0	11	0			22.0	4	400	0		
212			131	3	106	4			25.8	0	293	2	30.0	4
215			129	4	104	4	122	3	23.0	4	267	4	19.0	1
235											209	0	33.0	4
237	76.0	0	116	2	113	2	44	0	22.3	4	310	1	< 25	NR
241			128	4	108	4	134	2	23.0	4	40	0	59.1	0
246	67.5	4	106	0	88	0	105	4	22.3	4	276	4	< 60	NR
247	68.1	4	134	2	97	2	105	4	22.3	4	295	2	36.5	4
253											360	0	14.2	0
254			128	4	108	4			23.1	4	260	4	< 100	NR
283	70.2	3	122	4	106	4	93	3	25.2	1	261	4	38.0	3
284			120	3	105	4	354	0	23.6	3	26	0	30.0	4
297			139	1	112	3			26.0	0			54.6	0

Table 12. *Laboratory performance ratings for standard reference sample AMW-4 (acid mine water constituents)--Continued*

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all raported values; V/26, number of reported values of 26 possible values; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginel)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Sb (Antimony)		Se (Selenium)		SiO_2 (Silica)		Sr (Strontium)		V (Vanadium)		Zn (Zinc)	
MPV =	2.77	µg/L	insuff. data	µg/L	52.3	mg/L	1473	µg/L	116	µg/L	54.0	mg/L
F-pseudosigma =	0.89				3.3		64		15		3.2	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1			< 1	NR	51.1	4	1413	3	109	4	55.2	4
4					51.3	4	1684	0	132	2	53.9	4
5	< 20	NR	< 2	NR	52.4	4	1520	3	108	3	51.9	3
8	2.20	3	0.1	NR	51.9	4	1270	0	106	3	49.3	2
11			40.0	NR	45.7	1	1471	4	108	3	42.1	0
12												
16	4.00	2	63.0	NR			1361	1	105	3	52.5	4
18	1.00	1	< 1	NR			1380	2	124	3	50.7	2
25	< 51	NR	< 129	NR	109.0	0	1600	1	51	0	50.6	2
30.1	2.70	4	5.0	NR			1500	4	122	4	54.0	4
30.2												
34												
42	< 3	NR	2.6	NR					99	2	53.4	4
43					52.1	4						
46									119	4	57.7	2
48	3.00	4	< 0.4	NR					88	1	57.0	3
59	2.60	4	0.0	NR							56.4	3
69	< 5	NR	< 5	NR							55.0	4
85							1480	4				
86							1470	4	192	0	57.1	3
89	< 10	NR	< 2	NR	50.7	4			207	0	54.0	4
100	3.00	4	14.0	NR	58.5	1	1475	4	108	3	52.6	4
105	2.72	4	< 7	NR	54.4	3	1450	4	125	3	51.2	3
127	4.29	1	< 3	NR	50.7	4	1240	0	98	2	53.0	4
134	1.82	2	2.4	NR	55.2	3	1489	4	116	4	55.2	4
136			806.0	NR					131	3		
140					48.6	2					55.0	4
141	265.00	0	< 2	NR					124	3	60.0	1
146	< 50	NR	< 10	NR					120	4	57.6	2
149												
212	2.40	4	9.3	NR	54.0	3			88	1	53.8	4
215	< 7	NR	< 7	NR	48.1	2			330	0	53.0	4
235							1870	0	111	4		
237					53.8	4	1487	4	92	1	58.7	2
241	4.40	1	< 5	NR	49.3	3			13	0	58.6	2
246	< 85	NR	< 80	NR	56.5	2	1401	2	116	4	50.2	2
247	2.96	4	< 5	NR	77.7	0	1430	3	123	4	52.1	3
253											56.0	3
254					53.0	4	1490	4			56.2	3
283	2.82	4	< 5	NR	59.9	0	1420	3	125	3	58.8	1
284	2.00	3	2.0	NR	46.1	1	2596	0	170	0	50.7	2
297												

Table 13. *Laboratory performance ratings for standard reference sample Hg-25 (mercury)*

(MPV, most probable value; ug/L, micrograms per liter; Lab, laboratory number; V/1, number of reported values of 1 value; RV, reported value; <, less than.)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Marginal)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Unsatisfactory)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Hg (Mercury)

MPV = 2.41 µg/L

F-pseudosigma = 0.24

Lab	V/1	RV	Rating
1	1	2.50	4
3	1	2.30	4
8	1	2.00	1
10	1	2.70	2
11	1	2.46	4
12	1	3.50	0
13	1	2.45	4
15	1	2.44	4
16	1	2.35	4
18	1	2.98	0
26	1	2.49	4
32	1	1.83	0
34.1	1	2.06	2
34.2	1	2.67	2
39	1	3.20	0
46	1	3.00	0
48	1	2.10	2
51	1	1.98	1
59	1	2.00	1
68	1	2.06	2
69	1	2.41	4
70	1	3.18	0
76	1	1.77	0
86	1	2.27	3
87	1	2.30	4
89	1	2.28	3
96	1	2.63	3
97	1	3.26	0
100	1	3.11	0
105	1	2.50	4
107	1	2.60	3
119	1	2.35	4
127	1	2.44	4
134	1	2.55	3
136	1	2.24	3
138	1	2.39	4
141	1	2.06	2
142	1	2.32	4
145	1	2.31	4
146	1	2.40	4
147	1	2.14	2
149	1	2.60	3
151	1	2.05	2
193	1	2.30	4
204	1	2.70	2
212	1	2.60	3
213	1	2.30	4
215	1	2.49	4
217	1	2.32	4
220	1	2.40	4
221	1	2.41	4
234	1	2.00	1
235	1	2.62	3
247	1	2.33	4
255	1	40.10	0
283	1	3.10	0
284	1	1.63	0
292	1	2.40	4
297	1	2.54	3
298	1	2.50	4
304	1	2.50	4

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported		
1. AA: direct, air	=	atomic absorption: direct, air
2. AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma / mass spectrometry
7. IC	=	ion chromatography
10. AA: extraction	=	atomic absorption: extraction (chelating agent[s] specified)
11. AA: hydride	=	atomic absorption: hydride (reducing agent specified)
12. AA: flame emission	=	atomic absorption: flame emission
22. Color	=	colorimetric (color reagent specified)

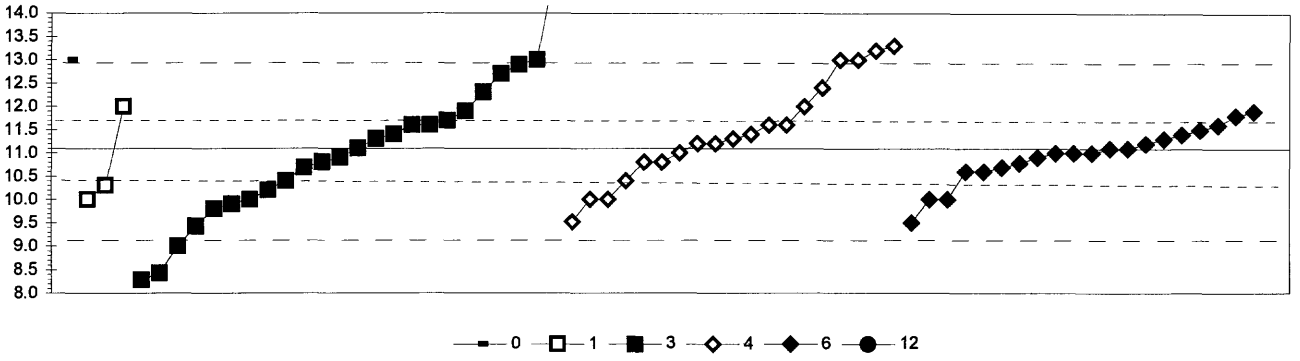
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
µg/L	=	micrograms per liter
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page	Constituent		page
Ag	Silver	52	Mg	Magnesium	66
Al	Aluminum	53	Mn	Manganese	67
As	Arsenic	54	Mo	Molybdenum	68
B	Boron	55	Na	Sodium	69
Ba	Barium	56	Ni	Nickel	70
Be	Beryllium	57	Pb	Lead	71
Ca	Calcium	58	Sb	Antimony	72
Cd	Cadmium	59	Se	Selenium	73
Co	Cobalt	60	SiO_2	Silica	74
Cr	Chromium	61	Sr	Strontium	75
Cu	Copper	62	Tl	Thallium	76
Fe	Iron	63	U	Uranium	77
K	Potassium	64	V	Vanadium	78
Li	Lithium	65	Zn	Zinc	79

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Ag (Silver) µg/L



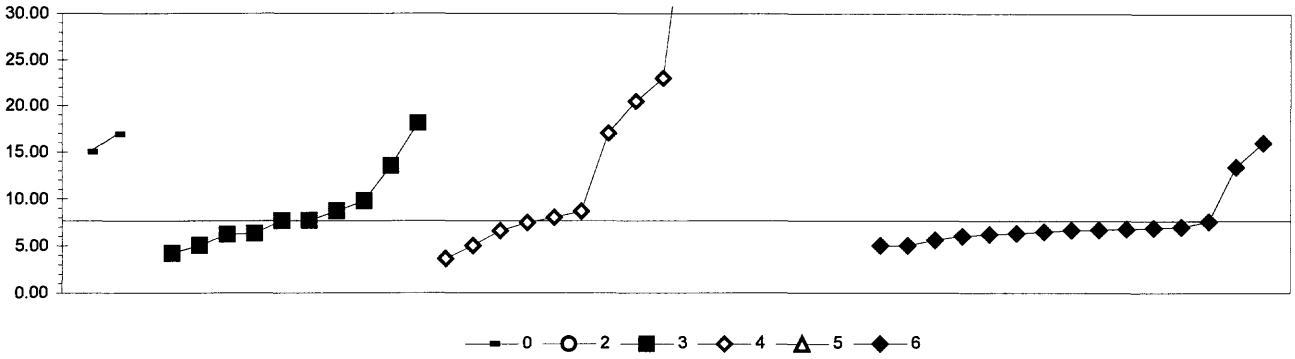
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
3. AA: graphite furnace			12. Flame emission					
		N =	1	3	24	19	20	1
		Minimum =	13.0	10.0	8.3	9.5	9.5	6.0
		Maximum =		12.0	15.0	13.3	11.9	
		Median =			11.0	11.3	11.0	
		F-pseudosigma =			1.4	1.0	0.4	

MPV = 11.1
F-pseudosigma = 1.0
N = 68
Hu = 11.7
Hl = 10.4

Lab	Rating	Z-value	0	1	3	4	6	12
1	3	0.52					11.6	
3	1	1.97				13.0		
5	0	-2.18			9.0			
8	3	0.93				12.0		
11	4	-0.31				10.8		
12	0	4.05			15.0			
13	2	1.35				12.4		
16	1	-1.66					9.5	
18	4	-0.10				11.0		
23	3	0.83			11.9			
25	0	-5.10				< 6		
26	4	-0.21			10.9			
30.1	4	-0.10					11.0	
32	4	0.31					11.4	
34	4	0.31			11.4			
39	2	-1.14				10.0		
40	3	0.52				11.6		
42	3	-0.52					10.6	
46	2	-1.25			9.9			
48	3	-0.52					10.6	
59	4	-0.43					10.7	
68	3	-0.73				10.4		
69	0	-2.77			8.4			
70	3	0.62			11.7			
85	3	0.93		12.0				
87	3	-0.83		10.3				
89	3	0.52			11.6			
96	1	1.66			12.7			
97	0	-2.93			8.3			
100	4	0.31				11.4		
102	0	-10.10				< 1		
105	3	0.73					11.8	
107	1	1.87			12.9			
119	2	-1.35			9.8			
121	4	0.21					11.3	
126	2	-1.14			10.0			
127	3	0.52			11.6			
134	4	-0.44			10.7			
138	4	0.00					11.1	
140	2	-1.14		10.0				
141	2	1.25			12.3			
142	4	-0.33					10.8	
146	0	2.28				13.3		
147	4	-0.10					11.0	
151	4	0.00					11.1	
180	4	0.10				11.2		
190	4	0.21			11.3			
193	3	-0.93			10.2			
212	4	-0.10					11.0	
213	1	-1.73			9.4			
215	1	1.97			13.0			
217	4	-0.21					10.9	
221	4	-0.31			10.8			
234	4	-0.31				10.8		
235	4	0.00			11.1			
236	2	-1.14				10.0		
241	3	-0.73			10.4			
246	0	2.18				13.2		
247	3	0.83					11.9	
255	4	0.21				11.3		
256	1	-1.64				9.5		
257	0	-5.29						6.0
259	3	0.52				11.6		
265	4	0.10					11.2	
268	2	-1.14					10.0	
273	4	0.10				11.2		
283	2	-1.14					10.0	
284	1	1.97	13.0					
292	1	1.97				13.0		
304	4	0.42					11.5	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Al (Aluminum) µg/L



0. Other
2. AA: direct nitrous oxide
3. AA: graphite furnace
4. ICP
5. DCP
6. ICP/MS

MPV = insufficient data

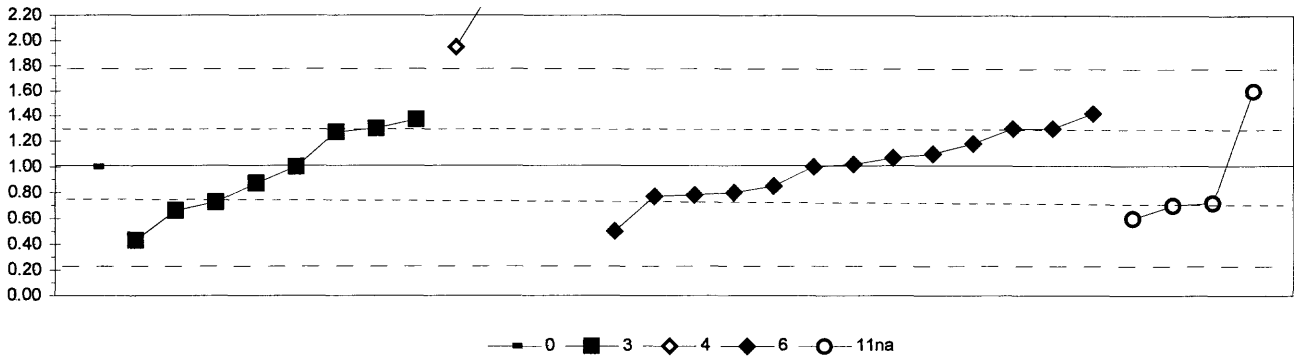
N = 43

	0	2	3	4	5	6
N =	2	0	10	15	1	15
Minimum =	15.00	< 50	4.19	3.63	65.00	5.00
Maximum =	16.88		18.10	749.00		16.00
Median =			7.69	20.50		6.66
F-pseudosigma =			2.64	51.73		0.63

Lab	Rating	Z-value	0	2	3	4	5	6
1	NR							6.30
3	NR					< 30		
5	NR					< 30		
8	NR					< 50		
13	NR				6.30			
16	NR							13.40
18	NR					< 100		
23	NR			< 50				
25	NR					< 19		
26	NR				4.19			
30.1	NR							< 10
32	NR							7.00
33	NR						65.00	
39	NR					88.00		
42	NR							< 10
48	NR							16.00
59	NR							6.70
68	NR					20.50		
69	NR				< 50			
70	NR					< 100		
85	NR					< 100		
89	NR				18.10			
97	NR				9.75			
100	NR					17.00		
102	NR					5.00		
105	NR							< 10
107	NR				13.50			
119	NR							5.60
127	NR					< 30		
134	NR					3.63		
136	NR					749.00		
138	NR					7.44		
141	NR					< 100		
142	NR					< 50		
145	NR					67.00		
146	NR					< 200		
147	NR							6.50
151	NR							6.00
180	NR					45.50		
190	NR				6.19			
191	NR							5.00
204	NR							6.66
212	NR					< 100		
215	NR					< 50		
217	NR					< 100		
218	NR					170.00		
221	NR				7.67			
234	NR					8.64		
235	NR							6.90
236	NR					23.00		
237	NR					142.00		
241	NR				8.70			
246	NR					< 35		
247	NR							7.60
254	NR					< 20		
255	NR					< 34		
256	NR		16.88					
257	NR				5.04			
265	NR							6.20
268	NR							5.00
273	NR					6.60		
283	NR					8.00		
284	NR		15.00					
287	NR				7.70			
292	NR					< 100		
304	NR							6.80

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

As (Arsenic) µg/L



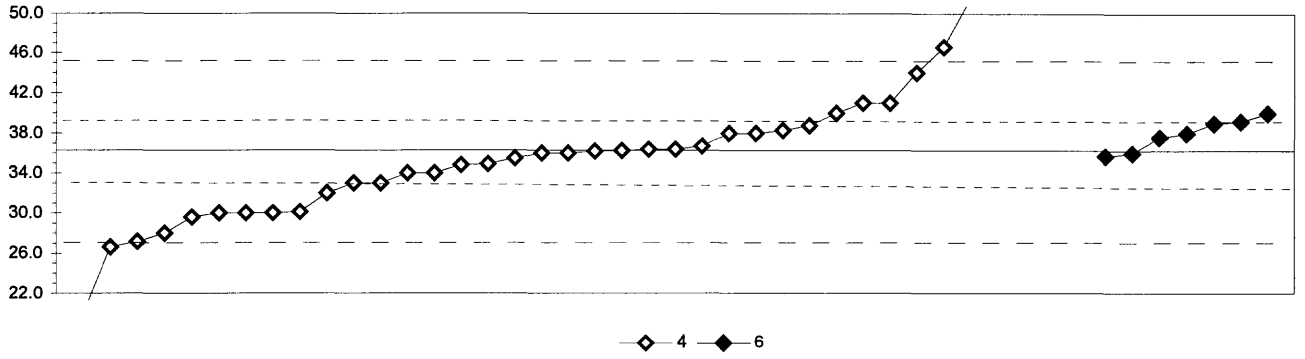
0. Other				6. ICP/MS			
3. AA: graphite furnace				11na. AA: hydride NaBH4			
4. ICP							
		N =	1	8	4	13	4
		Minimum =	1.00	0.43	1.95	0.50	0.60
		Maximum =		1.37	44.40	1.42	1.60
		Median =		0.94		1.02	
		F-pseudosigma =		0.44		0.28	

MPV =	1.01
F-pseudosigma =	0.39
N =	30
Hu =	1.30
HI =	0.77

Lab	Rating	Z-value	0	3	4	6	11na
1	2	1.50					1.60
3	NR				< 10		
5	3	0.92		1.37			
8	3	-0.79					0.70
10	NR						< 2
13	NR			< 5			
16	3	0.74				1.30	
18	NR			< 1			
23	NR			< 10			
25	NR				< 50		
26	3	-0.74					0.72
30.1	3	0.74				1.30	
32	NR					< 0.3	
39	2	-1.04					0.60
42	4	0.43				1.18	
46	3	0.74		1.30			
48	2	-1.30				0.50	
59	3	-0.53				0.80	
68	0	2.39			1.95		
69	NR			< 5			
70	NR			< 10			
87	NR						< 2
89	NR						< 2
96	NR			< 1			
100	NR			< 2			
102	NR				< 15		
105	NR					< 4	
107	NR			< 5			
119	NR						< 2
127	NR			< 2			
134	2	-1.48		0.43			
136	0	110.44			44.40		
138	NR					< 2	
141	NR				< 50		
142	4	0.03				1.02	
145	0	33.06			14.00		
146	NR				< 10		
147	4	-0.41				0.85	
151	3	-0.61				0.77	
154	3	0.66		1.27			
180	NR				< 40.1		
190	3	-0.73		0.73			
191	4	0.15				1.07	
193	NR			< 5			
204	2	1.04				1.42	
212	NR					< 5	
215	NR			< 5			
217	NR					< 2	
220	NR			< 1			
221	4	-0.03		1.00			
234	4	-0.36		0.87			
235	4	0.23				1.10	
236	NR				< 35		
241	NR			< 5			
246	NR				< 65		
247	NR					< 2	
254	NR				< 110		
255	NR			< 2			
256	0	3.67			2.45		
257	3	-0.89		0.66			
265	4	-0.03				1.00	
268	NR					< 10	
283	NR					< 5	
284	4	-0.03	1.00				
292	NR			< 3			
304	3	-0.59				0.78	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

B (Boron) µg/L



4. ICP
6. ICP/MS

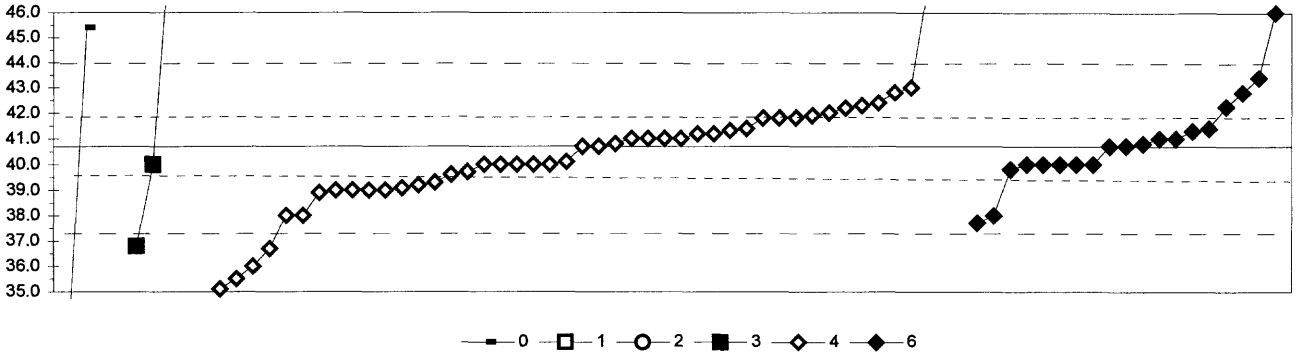
	4	6
N =	38	7
Minimum =	20.0	35.7
Maximum =	151.0	40.0
Median =	36.1	38.0
F-pseudosigma =	5.9	1.7

MPV =	36.3
F-pseudosigma =	4.6
N =	45
Hu =	39.2
Hl =	33.0

Lab	Rating	Z-value	4	6
1	4	0.03	36.4	
3	2	1.03	41.0	
4	3	-0.93	32.0	
5	4	0.38	38.0	
8	1	-1.80	28.0	
11	4	-0.17	35.5	
16	0	24.96	151.0	
18	NR		< 50	
24	4	0.38	38.0	
25	0	-2.89	< 23	
26	4	-0.30	34.9	
30.1	4	-0.06		36.0
32	4	0.38		38.0
39	2	1.03	41.0	
40	0	-2.10	26.6	
42	3	0.64		39.2
48	2	-1.45	29.6	
48	3	0.59		39.0
68	0	4.44	56.7	
70	NR		< 100	
85	3	0.81	40.0	
86	4	-0.32	34.8	
100	0	18.22	120.0	
119	NR		< 50	
127	3	-0.71	33.0	
134	4	0.00	36.3	
136	0	3.86	54.0	
138	3	0.54	38.8	
141	0	2.25	46.6	
142	NR		< 50	
145	4	-0.49	34.0	
147	4	-0.49	34.0	
154	4	-0.02	36.2	
158	2	-1.36	30.0	
180	0	3.34	51.6	
212	NR		< 100	
215	2	-1.36	30.0	
217	NR		< 100	
220	4	-0.06	36.0	
234	4	0.03	36.4	
236	3	-0.71	33.0	
237	1	1.68	44.0	
246	4	0.09	36.7	
247	4	0.29		37.6
254	2	-1.36	30.0	
255	4	0.44	38.3	
256	1	-1.98	27.2	
259	4	-0.06	36.0	
265	4	-0.12		35.7
268	3	0.81		40.0
273	2	-1.34	30.1	
283	0	-3.54	20.0	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Ba (Barium) µg/L



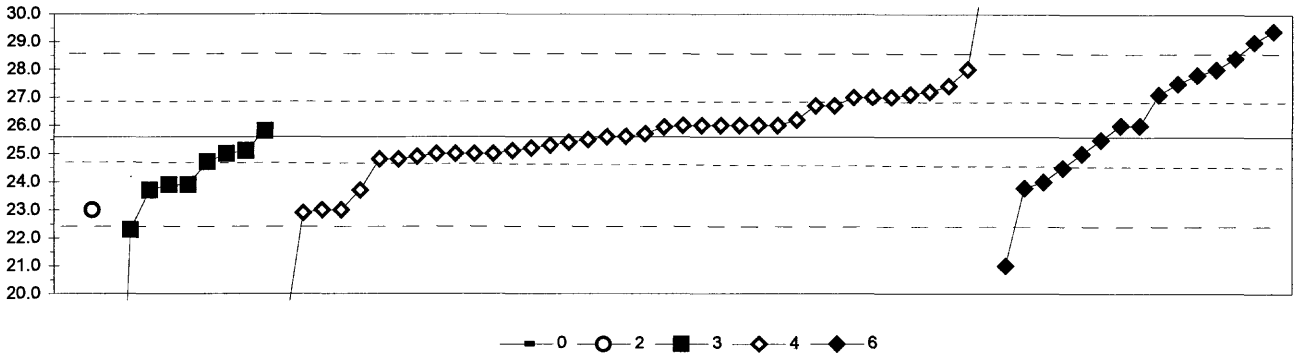
0. Other			3. AA: graphite furnace					
1. AA: direct air			4. ICP					
2. AA: direct nitrous oxide			6. ICP/MS					
		N =	2	1	0	5	46	19
		Minimum =	34.0	55.0	< 100	36.8	35.1	37.7
		Maximum =	45.4			62.0	384.0	46.0
		Median =					40.7	40.7
		F-pseudosigma =					2.0	1.0
Lab	Rating	Z-value	0	1	2	3	4	6
1	4	0.05						40.8
3	4	0.17					41.0	
4	0	-3.29					35.1	
5	3	0.64					41.8	
8	1	-1.59					38.0	
11	0	201.35					384.0	
13	4	0.29					41.2	
16	4	0.40						41.4
18	3	-1.00					39.0	
19	4	-0.42					40.0	
23	NR				< 100			
24	3	0.93					42.3	
25	4	-0.01					40.7	
26	4	0.29					41.2	
30.1	4	-0.42						40.0
32	4	0.17						41.0
33	0	2.75	45.4					
39	4	0.17					41.0	
40	3	-0.89					39.2	
42	4	0.35						41.3
46	3	-0.59					39.7	
48	1	-1.59						38.0
59	2	1.23						42.8
68	3	-1.00					39.0	
70	NR						< 50	
76	3	0.90						42.2
83	3	-0.65					39.6	
85	0	-2.76					36.0	
86	3	0.70					41.9	
87	0	-2.29				36.8		
89	NR					< 50		
96	NR				< 100			
97	0	4.74				48.8		
100	2	1.23					42.8	
102	3	-1.00					39.0	
105	4	0.17						41.0
107	0	5.04				49.3		
119	4	-0.42					40.0	
121	4	-0.42					40.0	
127	3	-0.83					39.3	
134	4	0.36					41.3	
136	0	5.21					49.6	
138	3	0.65					41.8	
140	0	8.38		55.0				
141	0	-2.35					36.7	
142	4	0.00						40.7
145	3	0.76					42.0	
146	4	-0.01					40.7	
147	4	-0.42						40.0
149	4	-0.42				40.0		

MPV =	40.7
F-pseudosigma =	1.7
N =	73
Hu =	41.9
HI =	39.6

Lab	Rating	Z-value	0	1	2	3	4	6
151	4	-0.42						40.0
154	0	-3.06					35.5	
158	2	1.34					43.0	
180	3	0.64					41.8	
191	4	-0.01						40.7
204	1	-1.77						37.7
212	4	-0.42						40.0
215	4	-0.42					40.0	
217	4	0.40					41.4	
220	4	0.17					41.0	
234	4	0.05					40.8	
235	3	-1.00					39.0	
236	1	-1.59					38.0	
237	0	3.69					47.0	
241	0	12.49				62.0		
246	3	0.99					42.4	
247	1	1.58						43.4
255	3	0.87					42.2	
256	3	-0.96					39.1	
259	4	-0.36					40.1	
265	4	-0.42						40.0
268	0	3.10						46.0
273	2	-1.06					38.9	
283	4	-0.42					40.0	
284	0	-3.94	34.0					
292	4	0.17					41.0	
304	3	-0.53						39.8

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Be (Beryllium) µg/L



0. Other
2. AA: direct nitrous oxide
3. AA: graphite furnace
4. ICP
6. ICP/MS

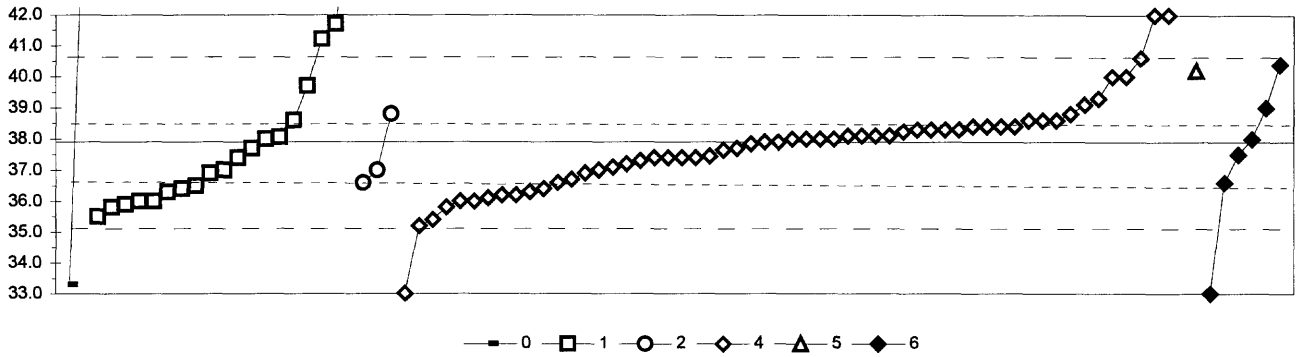
	0	2	3	4	6
N =	1	1	9	38	15
Minimum =	36.0	23.0	6.2	18.3	21.0
Maximum =			25.8	32.0	29.4
Median =			23.9	25.7	26.0
F-pseudosigma =			0.0	1.3	2.3

MPV = 25.6
F-pseudosigma = 1.6
N = 64
Hu = 26.9
HI = 24.8

Lab	Rating	Z-value	0	2	3	4	6
1	4	-0.03					25.5
3	4	0.29				26.0	
4	0	-4.66				18.3	
5	4	0.29				26.0	
8	3	0.93				27.0	
11	4	-0.10				25.4	
13	3	0.93				27.0	
16	1	1.83					28.4
18	4	-0.35				25.0	
25	2	-1.19				23.7	
26	3	1.00				27.1	
30.1	4	-0.35					25.0
32	1	1.57					28.0
39	4	-0.35				25.0	
40	4	-0.48				24.8	
42	2	1.45					27.8
46	4	0.42				26.2	
48	3	-1.00					24.0
59	3	-0.67					24.5
68	4	-0.29				25.1	
69	2	-1.06			23.9		
70	4	0.10				25.7	
83	4	-0.22				25.2	
85	4	-0.35				25.0	
86	4	0.03				25.6	
89	0	-2.09			22.3		
96	1	-1.64		23.0			
97	4	0.16			25.8		
100	2	1.19				27.4	
102	1	-1.64				23.0	
105	0	2.22					29.0
119	3	-0.55			24.7		
127	4	-0.35				25.0	
134	4	0.04				25.6	
138	4	0.25				25.9	
141	1	-1.70				22.9	
142	2	-1.14					23.8
145	3	0.93				27.0	
146	4	0.29				26.0	
147	4	0.29					26.0
151	2	1.25					27.5
154	2	-1.06			23.9		
158	4	0.29				26.0	
180	4	-0.42				24.9	
193	2	-1.19			23.7		
212	4	0.29					26.0
213	4	-0.29			25.1		
215	4	-0.35			25.0		
217	4	-0.03				25.5	
220	2	1.06				27.2	
234	4	-0.48				24.8	
235	1	1.57				28.0	
236	4	0.29				26.0	
237	0	4.14				32.0	
241	0	-12.43			6.2		
246	3	0.74				26.7	
247	0	2.47					29.4
255	4	-0.16				25.3	
265	4	0.29				26.0	
268	0	-2.92					21.0
283	3	0.74				26.7	
284	0	6.71	36.0				
292	1	-1.64				23.0	
304	3	1.00					27.1

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Ca (Calcium) mg/L



0. Other			4. ICP					
1. AA: direct air			5. DCP					
2. AA: direct nitrous oxide			6. ICP/MS					
		N =	2	19	3	57	1	6
		Minimum =	33.3	35.5	36.6	33.0	40.2	33.0
		Maximum =	46.1	44.6	38.8	64.4		40.4
		Median =		37.0		38.0		
		F-pseudosigma =		1.6		1.0		

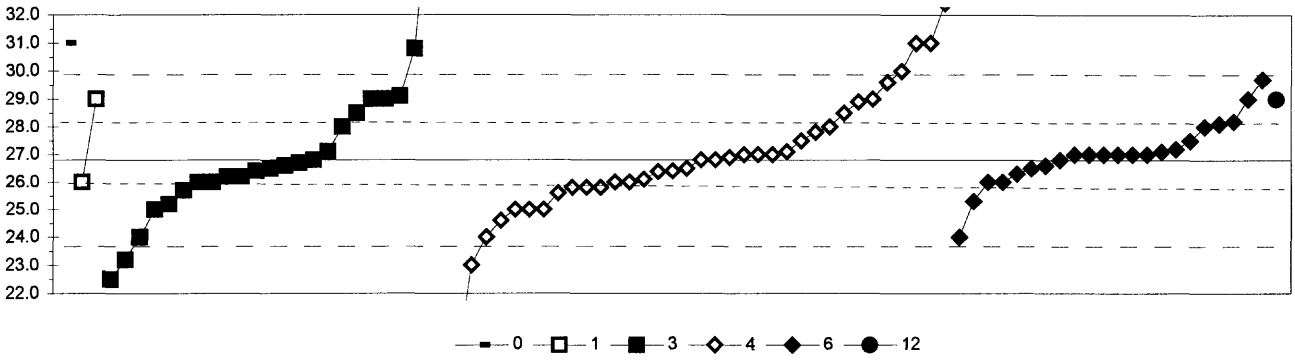
MPV = 37.9
F-pseudosigma = 1.4
N = 88
Hu = 38.5
HI = 36.6

Lab	Rating	Z-value	0	1	2	4	5	6
1	4	0.02				37.9		
3	1	1.51				40.0		
4	1	1.51				40.0		
5	3	0.66				38.8		
8	4	0.31				38.3		
11	4	0.31				38.3		
13	4	0.16				38.1		
16	4	0.09				38.0		
18	1	-1.75				35.4		
19	4	-0.40				37.3		
23	2	-1.33		36.0				
24	4	-0.33				37.4		
25	1	1.94				40.6		
26	4	-0.48				37.2		
30.1	0	-3.46						33.0
30.2	3	-0.62			37.0			
32	4	-0.26						37.5
33	1	1.65					40.2	
39	2	-1.47				35.8		
40	3	-0.90				36.6		
43	4	0.02				37.9		
46	4	-0.12				37.7		
48	1	1.80						40.4
51	3	0.52		38.6				
59	3	-0.97		38.5				
64	4	0.38				38.4		
68	3	0.52				38.6		
69	2	-1.11		36.3				
70	3	0.52				38.6		
83	3	-0.83				36.7		
84	2	-1.33		36.0				
85	2	-1.40		35.9				
86	4	-0.33				37.4		
87	3	0.66			38.8			
89	0	4.78		44.6				
97	4	-0.12		37.7				
100	3	0.52				38.6		
102	2	-1.33				36.0		
105	3	-0.62				37.0		
107	4	-0.33		37.4				
110	4	0.13		38.1				
119	4	0.09				38.0		
121	4	-0.33				37.4		
127	4	0.16				38.1		
134	4	-0.16				37.6		
136	2	-1.26				36.1		
138	4	0.26				38.2		
140	3	-0.62		37.0				
141	0	-3.46				33.0		
142	4	0.16				38.1		

Lab	Rating	Z-value	0	1	2	4	5	6
145	4	0.38				38.4		
146	2	-1.04				36.4		
147	2	-1.33				36.0		
149	3	-0.69		36.9				
154	2	-1.11				36.3		
158	0	2.93				42.0		
180	4	0.16				38.1		
191	3	-0.90						36.6
193	3	-0.90			36.6			
196	0	2.37		41.2				
203	2	-1.47		35.8				
204	2	-1.04		36.4				
209	0	18.82				64.4		
212	3	-0.69				36.9		
215	1	-1.90				35.2		
217	2	-1.19				36.2		
218	0	2.93				42.0		
220	4	-0.02				37.8		
221	1	-1.68		35.5				
234	4	0.09				38.0		
235	2	1.02				39.3		
236	2	-1.19				36.2		
237	4	0.31				38.3		
241	2	1.30		39.7				
246	4	-0.30				37.5		
247	4	0.31				38.3		
254	3	-0.55				37.1		
255	4	0.38				38.4		
257	0	-3.24	33.3					
265	4	0.38				38.4		
268	3	0.80						39.0
273	4	-0.33				37.4		
283	3	0.87				39.1		
284	0	5.84	46.1					
287	4	0.09		38.0				
292	0	2.72		41.7				
297	4	0.09				38.0		
304	4	0.09						38.0

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Cd (Cadmium) µg/L



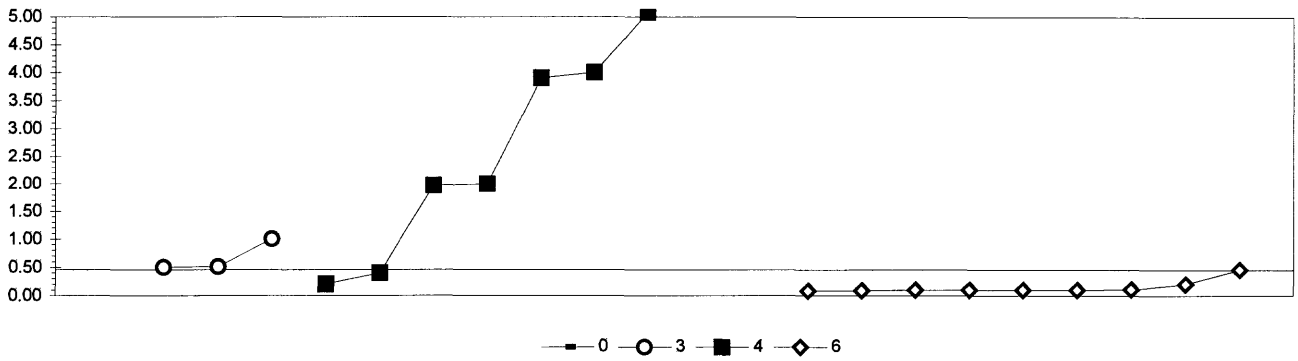
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
3. AA: graphite furnace			12. Flame emission					
	N =	1	2	24	35	22	1	
	Minimum =	31.0	26.0	22.5	19.5	24.0	29.0	
	Maximum =		29.0	313.0	32.4	29.7		
	Median =			26.6	26.8	27.0		
	F-pseudosigma =			2.1	1.6	0.7		

MPV = 26.8
F-pseudosigma = 1.6
N = 85
Hu = 28.1
Hl = 26.0

Lab	Rating	Z-value	0	1	3	4	6	12
1	4	-0.13					26.6	
3	3	-0.64				25.8		
4	0	-4.69				19.5		
5	3	-0.51			26.0			
8	4	0.13				27.0		
10	4	-0.19			26.5			
11	4	-0.45				26.1		
12	4	0.00			26.8			
13	3	-0.64				25.8		
16	3	-0.51					26.0	
18	3	-0.51				26.0		
19	1	-1.80				24.0		
23	1	-1.80			24.0			
24	4	0.00				26.8		
25	2	-1.16				25.0		
26	2	1.09				28.5		
30.1	4	0.13					27.0	
32	4	0.13					27.0	
34	2	1.41			29.0			
39	1	-1.80					24.0	
40	3	-0.64				25.8		
42	3	0.84					28.1	
46	4	-0.39			26.2			
48	3	-0.51					26.0	
59	4	0.45					27.5	
68	4	0.13				27.0		
69	0	-2.76			22.5			
70	4	-0.19				26.5		
83	4	0.06				26.9		
86	3	0.77				28.0		
87	2	1.41		29.0				
89	0	2.57			30.8			
96	2	-1.03			25.2			
97	3	-0.51			26.0			
100	0	3.60				32.4		
102	2	-1.16				25.0		
105	4	0.13					27.0	
107	4	-0.06			26.7			
119	4	0.19			27.1			
121	4	0.00					26.8	
126	2	1.48			29.1			
127	2	1.35				28.9		
134	4	-0.27				26.4		
136	2	-1.41				24.6		
138	4	0.13					27.0	
140	3	-0.51		26.0				
141	2	-1.16				25.0		
142	3	0.90					28.2	
145	2	1.41				29.0		
146	4	0.13				27.0		
147	4	0.13					27.0	
149	2	1.41			29.0			
151	3	0.77					28.0	
154	3	-0.71			25.7			
180	1	1.80				29.6		
190	4	-0.13			26.6			
191	4	-0.32					26.3	
193	2	-1.16			25.0			
204	3	-0.96					25.3	
212	4	0.13					27.0	
215	0	-2.44				23.0		
217	4	-0.26				26.4		
220	0	2.70				31.0		
221	4	-0.26			26.4			
234	2	1.09			28.5			
235	4	-0.39			26.2			
236	3	-0.51				26.0		
237	0	2.70				31.0		
241	3	0.77			28.0			
246	4	0.00				26.8		
247	1	1.86					29.7	
253	0	183.85			313.0			
254	0	2.06				30.0		
255	4	0.19				27.1		
256	3	-0.77				25.6		
257	2	1.41						29.0
259	3	0.64				27.8		
265	4	0.26					27.2	
268	2	1.41					29.0	
273	4	0.45				27.5		
283	4	-0.19					26.5	
284	0	2.70	31.0					
287	0	5.91			36.0			
292	0	-2.31			23.2			
304	4	0.19					27.1	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Co (Cobalt) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS

	0	3	4	6
N =	0	3	9	9
Minimum =	< 100	0.50	0.20	0.08
Maximum =		1.00	23.20	0.46
Median =			3.90	0.10
F-pseudosigma =			2.31	0.01

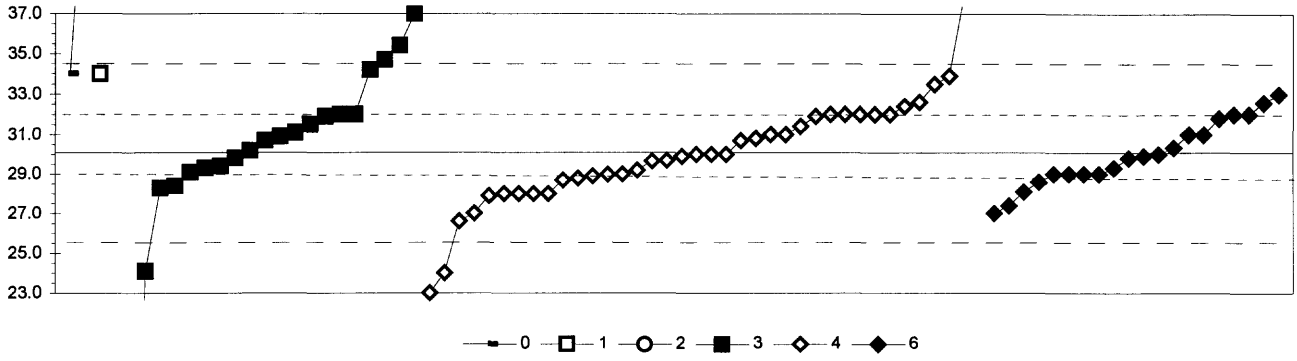
MPV = insufficient data

N = 21

Lab	Rating	Z-value	0	3	4	6
1	NR			< 1		
3	NR				< 5	
5	NR				< 3	
8	NR				< 10	
13	NR				< 5	
16	NR					0.46
18	NR				< 5	
25	NR				< 12	
26	NR				< 6	
30.1	NR					0.10
32	NR					< 0.1
42	NR					< 2
48	NR					0.10
68	NR				0.20	
70	NR				< 50	
85	NR				< 10	
89	NR			< 5		
100	NR				0.40	
102	NR				< 1	
105	NR					< 1
119	NR					0.08
121	NR					0.11
127	NR				< 6	
134	NR			< 1		
136	NR				8.30	
138	NR					0.20
141	NR				< 10	
142	NR					< 1
145	NR				4.00	
146	NR				< 10	
154	NR				2.00	
158	NR				3.90	
180	NR				< 5.22	
191	NR					0.10
212	NR					< 1
213	NR			< 0.7		
215	NR				< 5	
217	NR				< 10	
221	NR			1.00		
234	NR			0.50		
236	NR				< 6	
237	NR				< 6	
246	NR				< 10	
247	NR					< 1
254	NR				< 5	
255	NR				23.20	
256	NR				1.97	
257	NR			0.51		
265	NR					< 0.5
268	NR					< 20
273	NR				5.08	
283	NR					0.10
284	NR		< 100			
304	NR					0.08

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Cr (Chromium) µg/L



0. Other
1. AA: direct air
2. AA: direct nitrous oxide
3. AA: graphite furnace
4. ICP
6. ICP/MS

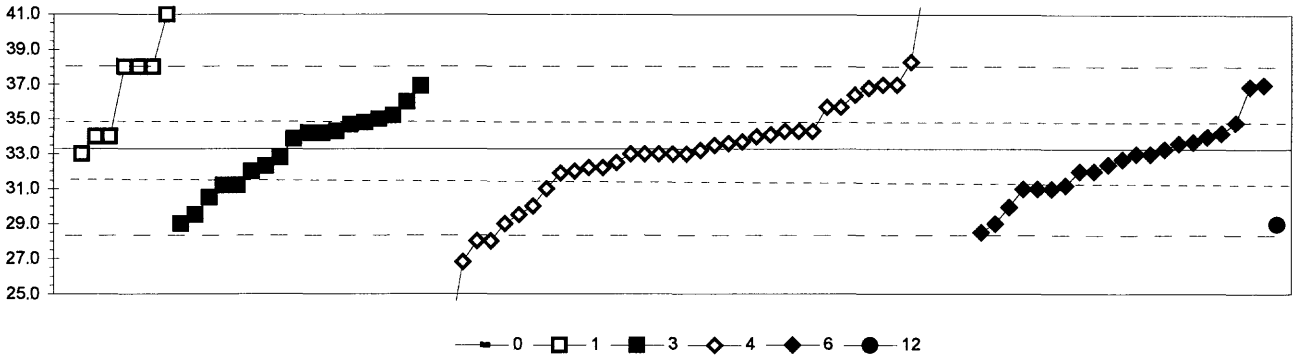
MPV = 30.1
F-pseudosigma = 2.2
N = 82
Hu = 32.0
Hl = 29.0

			0	1	2	3	4	6
		N =	2	1	1	20	38	20
		Minimum =	34.0	34.0	44.0	4.0	23.0	27.0
		Maximum =	45.0			37.0	46.0	33.0
		Median =				30.8	30.0	29.9
		F-pseudosigma =				2.1	2.5	1.8
Lab	Rating	Z-value	0	1	2	3	4	6
1	4	-0.13						29.8
3	3	0.85					32.0	
4	0	-3.18					23.0	
5	3	-0.63					28.7	
8	2	-1.39					27.0	
10	3	0.81				31.9		
11	4	-0.18					29.7	
13	2	1.03					32.4	
16	4	-0.49						29.0
18	3	-0.94					28.0	
19	3	0.85					32.0	
23	3	-0.76				28.4		
24	3	0.85					32.0	
25	4	0.40					31.0	
26	4	0.45				31.1		
30.1	2	1.30						33.0
32	4	-0.04						30.0
34	0	-2.69				24.1		
39	2	-1.39						27.0
42	4	-0.36						29.3
46	4	-0.36				29.3		
48	4	-0.49						29.0
59	3	-0.67						28.6
68	4	-0.40					29.2	
69	4	-0.45				29.1		
70	2	1.12					32.6	
76	2	1.11						32.6
83	3	-0.54					28.9	
85	4	-0.04					30.0	
86	3	-0.99					27.9	
87	0	6.23			44.0			
89	3	0.85				32.0		
96	0	2.38				35.4		
97	1	1.84				34.2		
100	3	0.81					31.9	
102	0	-2.73					24.0	
105	4	-0.49						29.0
107	4	0.36				30.9		
119	3	-0.81				28.3		
127	4	-0.31				29.4		
134	4	-0.50					29.0	
136	4	0.27					30.7	
138	4	-0.19					29.7	
140	1	1.75		34.0				
141	3	-0.94					28.0	
142	4	0.10						30.3
145	0	3.54					38.0	
146	4	0.40					31.0	
147	4	0.40						31.0
149	0	3.09				37.0		

Lab	Rating	Z-value	0	1	2	3	4	6
151	4	-0.09						29.9
154	1	1.70					33.9	
180	3	-0.58					28.8	
190	0	2.06				34.7		
191	2	-1.21						27.4
193	4	0.04				30.2		
204	3	-0.90						28.1
212	4	-0.49						29.0
213	4	-0.13				29.8		
215	3	-0.94					28.0	
217	3	0.85					32.0	
220	0	7.13					46.0	
221	3	0.63				31.5		
234	4	0.27				30.7		
235	4	-0.49					29.0	
236	3	-0.94					28.0	
237	3	0.85					32.0	
241	0	-11.70				4.0		
246	1	1.52					33.5	
247	3	0.76						31.8
254	4	-0.04					30.0	
255	3	0.58					31.4	
257	0	6.68	45.0					
259	4	-0.09					29.9	
265	4	0.40						31.0
268	3	0.85						32.0
273	1	-1.57					26.6	
283	4	0.31					30.8	
284	1	1.75	34.0					
287	3	0.85				32.0		
292	4	-0.04					30.0	
304	3	0.85						32.0

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Cu (Copper) µg/L



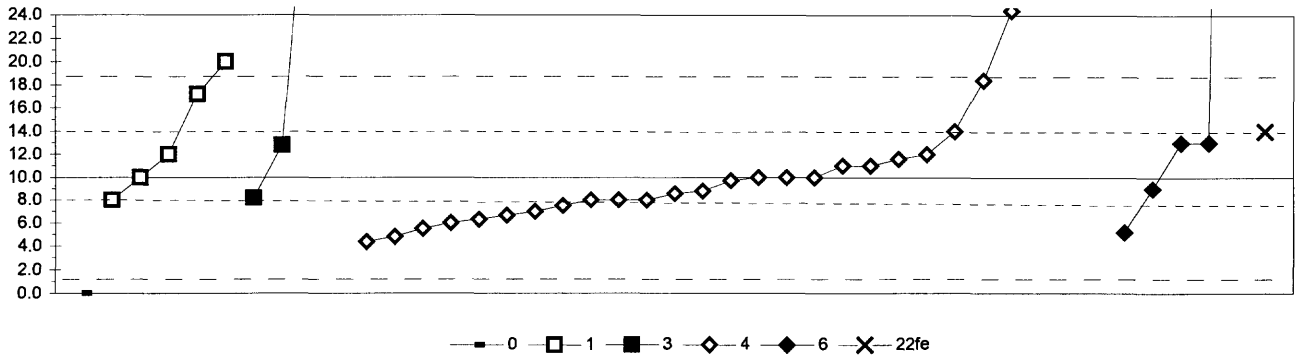
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
3. AA: graphite furnace			12. Flame emission					
	N =	1	7	18	39	21	1	
	Minimum =	44.0	33.0	29.0	21.0	28.5	29.0	
	Maximum =		41.0	36.9	45.3	37.0		
	Median =		38.0	34.0	33.2	32.7		
	F-pseudosigma =		3.0	2.7	2.8	2.0		

MPV = 33.0
F-pseudosigma = 2.5
N = 87
Hu = 34.9
HI = 31.6

Lab	Rating	Z-value	0	1	3	4	6	12
1	4	-0.23					32.7	
3	4	-0.11				33.0		
4	0	-4.54				22.0		
5	4	0.41				34.3		
8	3	-0.91				31.0		
10	3	0.70			35.0			
11	4	0.41				34.3		
12	3	-0.51			32.0			
13	2	1.42				36.8		
16	4	0.17					33.7	
18	3	-0.51				32.0		
19	0	-2.12				28.0		
23	3	-0.83			31.2			
24	3	0.98				35.7		
25	4	-0.11				33.0		
26	4	-0.03				33.2		
30.1	4	0.29					34.0	
32	4	-0.11					33.0	
39	2	1.50				37.0		
40	4	-0.43				32.2		
42	2	-1.34					30.0	
46	4	0.41			34.3			
48	1	-1.72					29.0	
59	4	0.37					34.2	
68	1	2.03				38.3		
69	NR				< 50			
70	3	0.98				35.7		
76	2	1.45					36.9	
83	4	0.17				33.7		
85	1	1.90		38.0				
86	4	0.09				33.5		
87	4	0.29		34.0				
89	3	-0.83			31.2			
96	4	0.37			34.2			
97	3	0.78			35.2			
100	3	-0.55				31.9		
102	0	-2.12				28.0		
105	3	-0.91					31.0	
107	2	1.10			36.0			
119	4	-0.11				33.0		
121	3	-0.83					31.2	
126	1	1.90		38.0				
127	4	-0.39			32.3			
134	4	0.24			33.9			
136	0	4.84				45.3		
138	4	0.13					33.6	
140	4	-0.11		33.0				
141	1	-1.52				29.5		
142	4	0.00					33.3	
145	0	4.32				44.0		
146	2	1.26				36.4		
147	3	-0.51					32.0	
149	4	0.29		34.0				
151	4	-0.11					33.0	
154	2	-1.12			30.5			
158	2	1.50				37.0		
180	4	0.13				33.6		
190	4	0.37			34.2			
191	1	-1.92					28.5	
193	NR			< 50				
203	1	1.90		38.0				
204	3	-0.91					31.0	
212	3	-0.91					31.0	
213	3	0.62			34.8			
215	1	-1.72				29.0		
217	4	-0.31				32.5		
220	0	3.96				43.1		
221	3	0.58			34.7			
234	4	-0.43				32.2		
235	4	-0.19			32.8			
236	4	-0.11				33.0		
237	0	4.72				45.0		
241	1	-1.52			29.5			
246	4	0.41				34.3		
247	3	0.62					34.8	
253	2	1.47			36.9			
254	4	0.29				34.0		
255	4	0.33				34.1		
256	2	-1.32				30.0		
257	1	-1.72						29.0
259	4	-0.11				33.0		
265	3	-0.51					32.0	
268	2	1.50					37.0	
273	0	-4.94				21.0		
283	0	-2.61				26.8		
284	0	4.32	44.0					
287	0	3.11		41.0				
292	1	-1.72			29.0			
304	4	-0.35					32.4	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Fe (Iron) µg/L



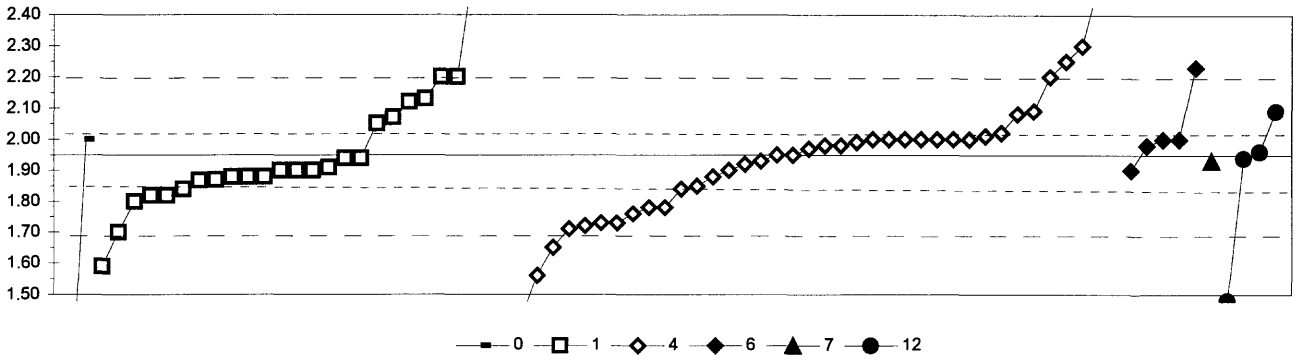
0. Other				4. ICP				
1. AA: direct air				6. ICP/MS				
3. AA: graphite furnace				22fe: Color. ferricyanide				
		N =	1	5	4	27	5	1
		Minimum =	0.0	8.0	8.2	4.4	5.2	14.0
		Maximum =		20.0	137.0	80.0	175.0	
		Median =				9.7		
		F-pseudosigma =				3.4		

		MPV =	10.0					
		F-pseudosigma =	4.4					
		N =	43					
		Hu =	14.0					
		Hl =	8.0					

Lab	Rating	Z-value	0	1	3	4	6	22fe
1	3	-0.56				7.5		
3	0	15.74				80.0		
5	4	-0.06				9.7		
8	NR					< 20		
10	NR			< 20				
13	NR					< 10		
16	4	-0.27				8.8		
18	NR					< 50		
21	3	0.90						14.0
23	NR			< 500				
25	NR					< 6		
26	3	-0.75				6.7		
30.1	0	37.10					175.0	
30.2	NR			< 500				
33	0	-2.25	0.0					
40	3	-0.83				6.3		
43	NR					< 10		
48	3	0.67					13.0	
68	4	0.36				11.6		
69	NR			< 50				
70	NR					< 20		
83	1	1.89				18.4		
85	NR					< 10		
87	NR			< 40				
89	NR				< 50			
91	NR					< 20		
96	NR			< 50				
97	4	-0.40			8.2			
100	NR					< 10		
102	4	-0.45				8.0		
105	NR					< 20		
107	0	2.25		20.0				
119	4	0.00				10.0		
121	3	0.90				14.0		
126	NR			< 50				
127	4	0.22				11.0		
134	4	-0.45				8.0		
136	0	3.24				24.4		
138	3	-0.68				7.0		
140	4	-0.45		8.0				
141	NR					< 50		
142	NR					< 2		
145	3	-0.90				6.0		
146	NR					< 50		
147	NR					< 40		
151	2	-1.08					5.2	
154	2	-1.01				5.5		
158	2	-1.17				4.8		
180	NR					< 3.33		
190	1	1.62		17.2				
191	NR						< 50	
203	NR			< 10				
204	0	-2.27		< 0.02				
212	NR					< 100		
213	0	28.55			137.0			
215	4	0.00				10.0		
217	NR					< 100		
218	0	8.99				50.0		
220	4	0.22				11.0		
221	3	0.63			12.8			
234	4	-0.32				8.6		
236	4	-0.45				8.0		
237	NR					< 50		
241	4	0.45		12.0				
246	NR					< 15		
247	4	0.45				12.0		
254	NR					< 8		
255	NR					< 14.2		
256	2	-1.27				4.4		
257	0	6.72			39.9			
265	3	0.67					13.0	
268	4	-0.22					9.0	
273	4	0.00				10.0		
283	NR					< 20		
284	NR		< 50					
287	4	0.00		10.0				
292	NR					< 10		
297	0	5.62				35.0		

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

K (Potassium) mg/L



0. Other				6. ICP/MS				
1. AA: direct air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	2	26	38	5	1	4
		Minimum =	1.06	1.59	1.42	1.90	1.93	1.48
		Maximum =	2.00	7.43	3.80	2.23		2.09
		Median =		1.90	1.98			
		F-pseudosigma =		0.19	0.16			

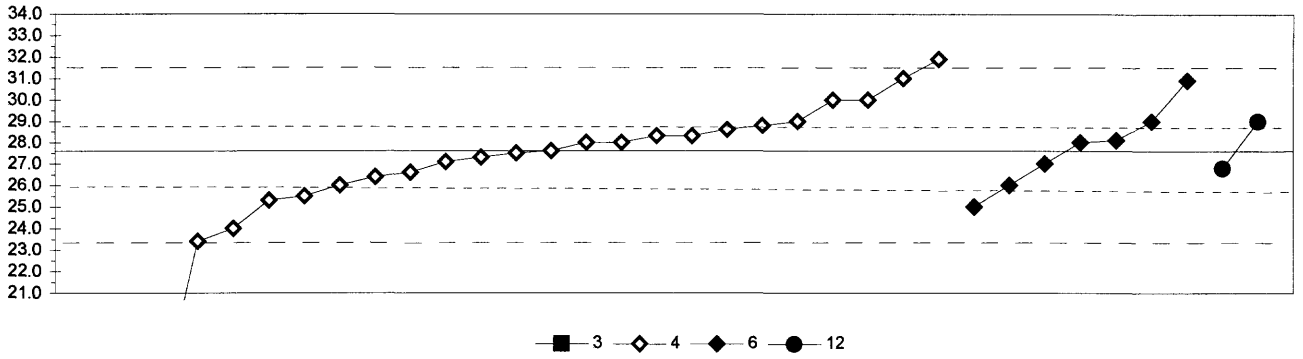
MPV =	1.95
F-pseudosigma =	0.13
N =	76
Hu =	2.02
HI =	1.85

Lab	Rating	Z-value	0	1	4	6	7	12
1	3	-0.60		1.87				
3	4	0.36			1.99			
4	1	2.02			2.20			
5	0	-4.17			1.42			
8	4	0.44			2.00			
11	0	-2.34			1.65			
13	4	0.28			1.98			
16	1	2.02		2.20				
18	4	0.20			1.97			
19	2	-1.47			1.76			
23	3	0.99		2.07				
24	1	-1.86			1.71			
25	NR				< 1.12			
26	4	-0.12					1.93	
32	4	0.44				2.00		
33	4	0.44	2.00					
40	3	-0.83			1.84			
43	4	0.44			2.00			
46	4	0.44			2.00			
48	0	2.26				2.23		
51	4	-0.04						1.94
59	1	2.02		2.20				
64	3	0.83		2.05				
68	3	0.60			2.02			
69	2	1.15						2.09
70	3	0.52			2.01			
83	4	-0.36		1.90				
85	3	-0.83		1.84				
86	4	0.04			1.95			
87	0	-2.82		1.59				
89	3	-0.99		1.82				
97	3	-0.52		1.88				
100	2	-1.31			1.78			
102	4	-0.36			1.90			
105	1	-1.79			1.72			
107	0	4.80		2.55				
110	3	-0.99		1.82				
119	4	0.44			2.00			
127	2	1.39		2.12				
134	4	-0.28		1.91				
138	3	-0.75			1.85			
140	4	-0.04		1.94				
141	1	-1.71			1.73			
142	2	-1.31			1.78			
145	4	-0.20			1.92			
146	2	1.07			2.08			
149	4	-0.36		1.90				
154	0	4.40			2.50			
158	4	0.44			2.00			
180	0	-3.06			1.56			

Lab	Rating	Z-value	0	1	4	6	7	12
191	4	0.28				1.98		
193	3	-0.52		1.88				
196	3	-0.61		1.87				
203	2	1.47		2.13				
204	4	0.12						1.96
209	0	43.53		7.43				
212	NR				< 5			
215	0	-7.31			< 1			
217	NR				< 5			
218	0	2.82			2.30			
220	0	14.72			3.80			
221	4	-0.04		1.94				
234	4	0.04			1.95			
236	4	-0.12			1.93			
241	1	-1.94		1.70				
246	2	1.15			2.09			
247	0	2.42			2.25			
254	2	-1.15		1.80				
255	4	0.44			2.00			
256	0	-3.69						1.48
259	3	-0.52		1.88				
265	3	-0.52			1.88			
268	4	0.44				2.00		
273	4	0.44			2.00			
283	1	-1.71			1.73			
284	0	-7.05	1.06					
287	0	8.37		3.00				
292	4	-0.36		1.90				
297	4	0.28			1.98			
304	4	-0.36				1.90		

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Li (Lithium) µg/L

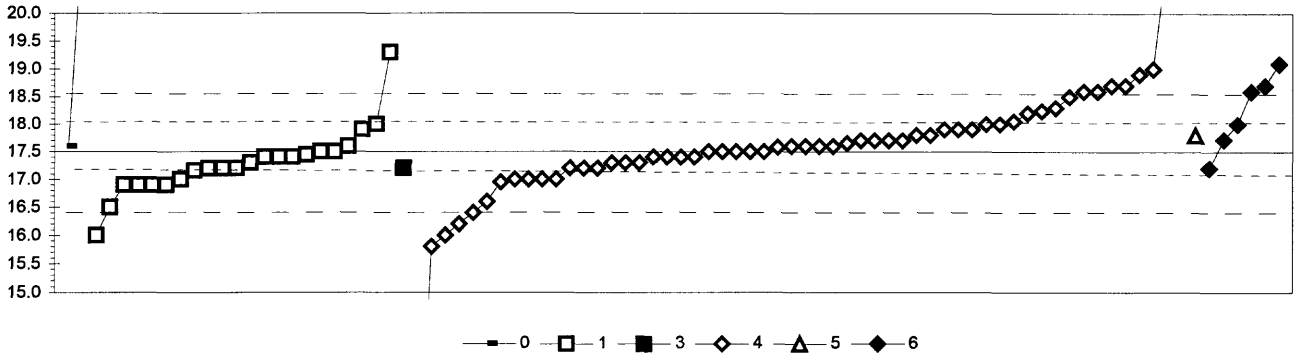


3. AA: graphite furnace				12. Flame emission		
4. ICP						
6. ICP/MS						
		N =	0	24	7	2
		Minimum =	< 50	10.0	25.0	26.8
		Maximum =		31.9	30.9	29.0
		Median =		27.6	28.0	
		F-pseudosigma =		2.2	1.5	
Lab	Rating	Z-value	3	4	6	12
1	3	0.58		28.8		
3	0	-8.48		10.0		
4	0	-5.54		16.1		
5	3	-0.58		26.4		
8	0	-3.62		< 20		
11	4	-0.14		27.3		
24	0	2.07		31.9		
25	2	1.16		30.0		
26	4	-0.05		27.5		
30.1	2	-1.25			25.0	
32	4	0.19			28.0	
39	2	-1.01		25.5		
40	4	0.00		27.6		
68	4	-0.24		27.1		
69	NR		< 50			
100	4	0.19		28.0		
105	NR			< 50		
127	1	-2.02		23.4		
134	2	-1.11		25.3		
142	4	0.48		28.6		
145	1	1.64		31.0		
147	4	-0.29			27.0	
151	4	0.24			28.1	
217	NR			< 50		
234	4	-0.48		26.6		
236	1	-1.73		24.0		
237	3	0.67		29.0		
246	4	0.19		28.0		
247	1	1.59			30.9	
254	2	1.16		30.0		
256	4	-0.39				26.8
257	3	0.67				29.0
259	4	0.34		28.3		
265	3	-0.77			26.0	
268	3	0.67			29.0	
273	4	0.34		28.3		
283	3	-0.77		26.0		

MPV =	27.6
F-pseudosigma =	2.1
N =	33
Hu =	28.8
Hl =	26.0

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Mg (Magnesium) mg/L



0. Other			4. ICP					
1. AA: direct air			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
	N =	2	22	1	56	1	6
	Minimum =	17.6	16.0	17.2	10.8	17.8	17.2
	Maximum =	21.4	19.3		47.2		19.1
	Median =		17.3		17.6		
	F-pseudosigma =		0.4		0.6		

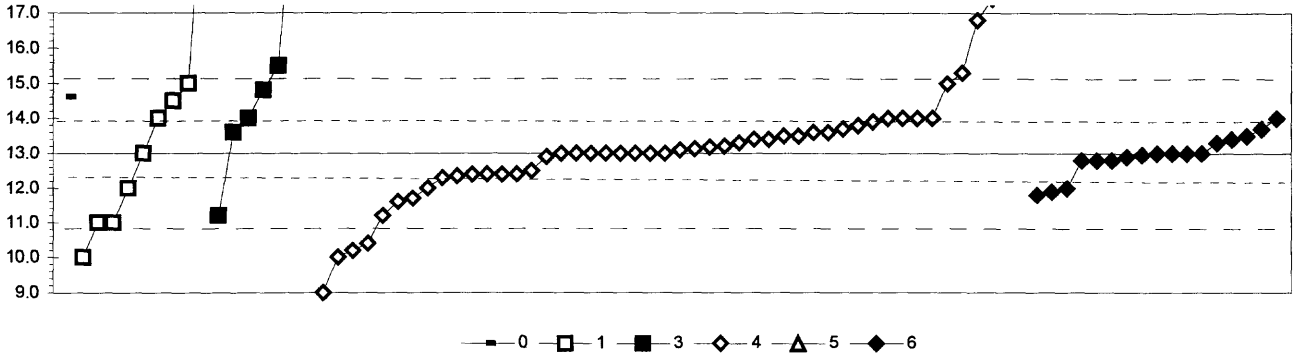
MPV =	17.5
F-pseudosigma =	0.6
Rating Criterion =	0.9 **
N =	88
Hu =	18.0
Hl =	17.2

Lab	Rating	Z-value	0	1	3	4	5	6
1	4	0.00				17.5		
3	0	1.37				18.7		
4	0	1.60				18.9		
5	4	0.23				17.7		
8	4	0.23				17.7		
11	4	0.00				17.5		
13	4	-0.11				17.4		
16	3	0.57				18.0		
18	0	-1.71				16.0		
19	4	-0.23				17.3		
23	3	-0.57		17.0				
24	3	0.46				17.9		
25	1	1.26				18.6		
26	3	0.46				17.9		
30.1	3	0.57						18.0
30.2	3	0.57		18.0				
32	1	1.26						18.6
33	3	0.34					17.8	
39	4	0.00				17.5		
40	0	-1.49				16.2		
43	4	-0.11				17.4		
46	4	-0.11				17.4		
48	0	1.83						19.1
51	4	0.11		17.6				
59	4	-0.23		17.3				
64	3	-0.57				17.0		
68	2	0.80				18.2		
69	3	-0.34		17.2				
70	3	0.46				17.9		
76	4	0.00		17.5				
83	4	-0.23				17.3		
84	2	-0.69		16.9				
85	3	-0.34		17.2				
86	2	0.91				18.3		
87	2	-0.69		16.9				
89	3	0.46		17.9				
97	4	-0.11		17.4				
100	1	1.14				18.5		
102	0	1.71				19.0		
105	3	-0.57				17.0		
107	2	-0.69		16.9				
110	3	-0.39		17.2				
119	4	-0.23				17.3		
121	4	0.11				17.6		
127	4	0.00				17.5		
134	4	0.17				17.7		
136	1	-1.26				16.4		
138	4	0.09				17.6		
140	2	-0.69		16.9				
141	0	-7.66				10.8		

Lab	Rating	Z-value	0	1	3	4	5	6
142	0	1.37				18.7		
145	2	0.85				18.2		
146	3	-0.34				17.2		
147	3	-0.57				17.0		
149	3	-0.34			17.2			
154	1	-1.03				16.6		
158	3	0.57				18.0		
180	4	0.11				17.6		
191	4	0.25						17.7
193	1	-1.14		16.5				
196	4	-0.07		17.4				
203	4	-0.11		17.4				
204	3	-0.34		17.2				
209	0	33.94				47.2		
212	4	0.23				17.7		
215	0	-1.94				15.8		
217	3	-0.57				17.0		
218	0	4.00				21.0		
220	3	-0.63				17.0		
221	4	-0.11		17.4				
234	3	-0.34				17.2		
236	3	-0.34				17.2		
237	4	0.11				17.6		
241	4	0.00		17.5				
246	3	0.63				18.1		
247	4	0.23				17.7		
254	4	0.00				17.5		
255	4	0.11				17.6		
257	0	4.46	21.4					
265	3	0.34				17.8		
268	0	1.37						18.7
273	4	-0.11				17.4		
283	1	1.26				18.6		
284	4	0.11	17.6					
287	0	-1.71		16.0				
292	0	2.06		19.3				
297	3	0.34				17.8		
304	3	-0.34						17.2

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Mn (Manganese) µg/L



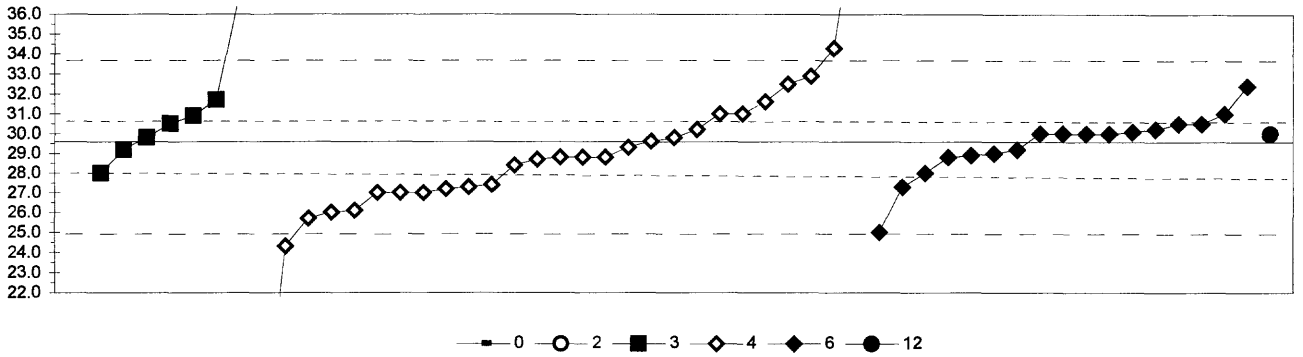
0. Other				4. ICP				
1. AA: direct air				5. DCP				
3. AA: graphite furnace				6. ICP/MS				
		N =	1	9	6	48	1	17
		Minimum =	14.6	10.0	11.2	4.3	20.0	11.8
		Maximum =		21.0	20.6	18.0		14.0
		Median =		13.0		13.0		13.0
		F-pseudosigma =		2.2		0.9		0.4
Lab	Rating	Z-value	0	1	3	4	5	6
1	4	-0.18						12.8
3	4	0.00				13.0		
4	0	-7.82				4.3		
5	0	3.96				17.4		
8	3	0.90				14.0		
10	2	1.35		14.5				
11	4	0.09				13.1		
13	0	-2.52				10.2		
16	4	0.00						13.0
18	4	0.00				13.0		
19	3	0.90				14.0		
23	0	2.25			15.5			
24	3	0.54				13.6		
25	0	-10.91				< 2		
26	4	0.36				13.4		
30.1	3	0.90						14.0
32	4	0.00						13.0
33	0	6.30					20.0	
39	4	0.27				13.3		
40	3	-0.63				12.3		
42	3	-0.99						11.9
43	3	0.90				14.0		
46	3	-0.54				12.4		
48	4	-0.09						12.9
59	4	-0.04						13.0
68	3	0.72				13.8		
69	0	7.19		21				
70	NR					< 20		
83	3	-0.54				12.4		
86	4	0.18				13.2		
87	1	-1.80		11.0				
89	1	-1.62			11.2			
91	3	-0.54				12.4		
96	NR			< 20				
97	3	0.54			13.6			
100	4	0.45				13.5		
102	3	-0.90				12.0		
105	4	-0.18						12.8
107	0	-2.70		10.0				
119	0	-2.70				10.0		
127	4	-0.45				12.5		
134	4	0.12				13.1		
136	3	0.54				13.6		
138	4	0.16				13.2		
140	4	0.00		13.0				
141	0	3.42				16.8		
142	0	-5.45				< 7		
145	3	0.90				14.0		
146	4	0.36				13.4		
147	4	0.00						13.0

MPV =	13.0
F-pseudosigma =	1.1
N =	82
Hu =	13.9
HI =	12.4

Lab	Rating	Z-value	0	1	3	4	5	6
149	1	-1.80		11.0				
151	4	-0.18						12.8
154	1	-1.62				11.2		
158	4	0.00				13.0		
180	3	0.81				13.9		
190	3	0.90			14.0			
191	2	-1.08						11.8
203	3	0.90		14.0				
204	4	0.27						13.3
212	3	-0.90						12.0
215	1	1.80				15.0		
217	3	-0.54				12.4		
218	0	4.50				18.0		
220	0	2.07				15.3		
221	1	1.62			14.8			
234	4	0.45				13.5		
235	4	0.00				13.0		
236	4	0.00				13.0		
237	0	-3.60				9.0		
241	3	-0.90		12.0				
246	3	0.63				13.7		
247	4	0.36						13.4
254	4	0.00				13.0		
255	4	0.00				13.0		
256	2	-1.17				11.7		
257	0	6.81			20.6			
259	4	-0.09				12.9		
265	3	0.63						13.7
268	4	0.00						13.0
273	3	-0.58				12.4		
283	2	-1.26				11.6		
284	2	1.46	14.6					
287	1	1.80		15.0				
292	4	0.00				13.0		
297	0	-2.34				10.4		
304	4	0.45						13.5

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Mo (Molybdenum) µg/L



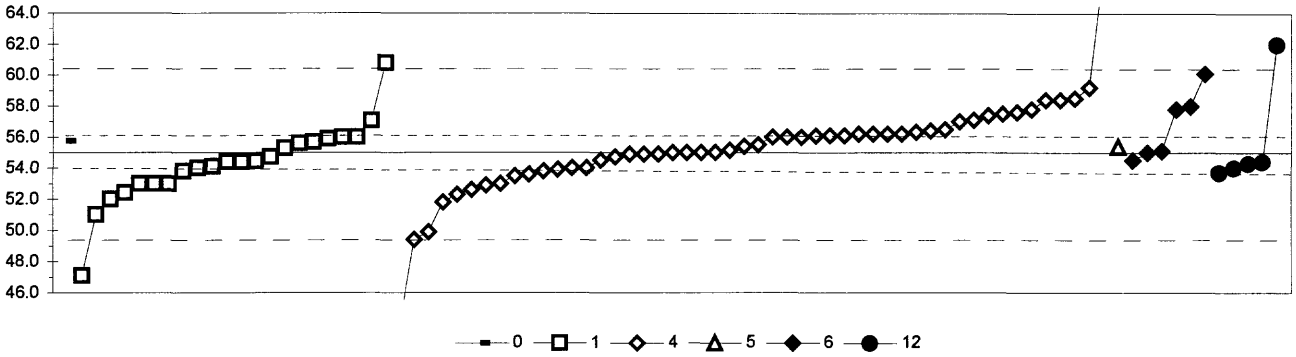
0. Other			4. ICP					
2. AA: direct nitrous oxide			6. ICP/MS					
3. AA: graphite furnace			12. Flame emission					
		N =	1	0	7	27	17	1
		Minimum =	68.0	< 100	28.0	14.2	25.0	30.0
		Maximum =			37.0	41.7	32.4	
		Median =			30.5	28.8	30.0	
		F-pseudosigma =			1.3	2.7	1.0	
Lab	Rating	Z-value	0	2	3	4	6	12
1	4	-0.11					29.2	
3	3	0.69				31.0		
4	0	-6.86				14.2		
5	2	-1.01				27.2		
8	NR					< 20		
10	NR							
11	4	-0.47				28.4		
13	NR					< 50		
16	3	-0.97					27.3	
18	4	-0.29				28.8		
23	NR			< 100				
24	4	0.15				29.8		
26	4	-0.29				28.8		
30.1	2	1.32					32.4	
32	3	0.69					31.0	
39	4	0.47					30.5	
40	2	1.37				32.5		
42	4	-0.25					28.9	
46	0	2.18				34.3		
48	4	0.24					30.0	
68	3	-0.97				27.3		
70	NR					< 50		
87	4	0.15			29.8			
97	2	1.01			31.7			
100	3	0.96				31.6		
105	4	0.24					30.0	
119	3	0.65			30.9			
127	4	0.47			30.5			
134	4	0.07				29.6		
136	0	5.51				41.7		
138	4	-0.29					28.8	
141	0	-2.32				24.3		
142	4	0.34					30.2	
145	3	0.69				31.0		
146	4	-0.07				29.3		
147	4	-0.20					29.0	
151	4	0.47					30.5	
154	1	-1.69				25.7		
180	3	-0.92				27.4		
215	3	-0.65			28.0			
217	1	-1.51				26.1		
220	1	1.55				32.9		
221	4	-0.11			29.2			
234	2	-1.10				27.0		
236	2	-1.10				27.0		
237	1	-1.55				26.0		
241	0	3.39			37.0			
246	4	0.33				30.2		
247	4	0.29					30.1	
255	4	-0.29				28.8		

MPV =	29.6
F-pseudosigma =	1.9
N =	53
Hu =	30.5
HI =	28.0

Lab	Rating	Z-value	0	2	3	4	6	12
257	4	0.24						30.0
259	4	-0.34				28.7		
265	4	0.24					30.0	
268	1	-2.00					25.0	
283	3	-0.65					28.0	
284	0	17.33	68.0					
292	2	-1.10				27.0		
304	4	0.24					30.0	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Na (Sodium) mg/L



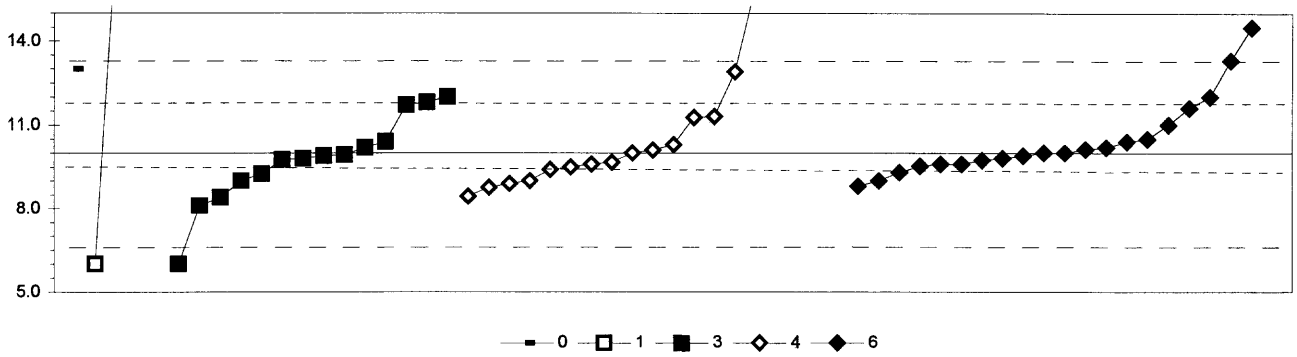
0. Other			5. DCP				
1. AA: direct air			6. ICP/MS				
4. ICP			12. Flame emission				
	N =	1	22	50	1	6	5
	Minimum =	55.8	47.1	44.0	55.4	54.5	53.7
	Maximum =		60.8	67.0		60.1	62.0
	Median =		54.4	55.5			
	F-pseudosigma =		2.0	1.8			

MPV = 55.0
F-pseudosigma = 1.6
Rating Criterion = 2.8 **
N = 85
Hu = 56.2
HI = 54.0

Lab	Rating	Z-value	0	1	4	5	6	12
1	4	0.15			55.4			
3	4	0.40			56.1			
4	3	-0.76			52.9			
5	3	0.91			57.5			
8	4	0.00			55.0			
11	0	-2.04			49.4			
13	4	-0.36			54.0			
16	4	0.36			56.0			
18	4	-0.11			54.7			
19	3	-0.73			53.0			
23	0	-2.87		47.1				
24	4	0.18			55.5			
25	2	1.24			58.4			
26	4	0.36			56.0			
30.1	4	0.00					55.0	
30.2	0	2.55						62.0
32	2	1.02					57.8	
33	4	0.15				55.4		
39	4	-0.40			53.9			
40	4	0.44			56.2			
43	3	-0.55			53.5			
46	4	0.44			56.2			
48	1	1.85					60.1	
51	4	-0.36						54.0
59	2	-1.09		52.0				
64	4	0.22		55.6				
68	4	0.00			55.0			
69	4	-0.22						54.4
70	4	0.44			56.2			
83	3	0.55			56.5			
84	4	-0.47						53.7
85	3	-0.73		53.0				
86	3	0.87			57.4			
87	4	-0.36		54.0				
89	3	-0.73		53.0				
97	4	-0.44		53.8				
100	2	1.27			58.5			
102	0	-4.00			44.0			
105	4	-0.18			54.5			
107	4	-0.11		54.7				
110	4	0.25		55.7				
119	3	0.73			57.0			
121	4	0.00			55.0			
127	4	0.33		55.9				
134	4	-0.20		54.5				
138	4	-0.04			54.9			
140	4	0.36		56.0				
141	2	-1.85			49.9			
142	3	0.51			56.4			
145	4	0.48			56.3			
146	1	1.53			59.2			
149	4	0.36		56.0				
154	3	-0.87			52.6			
158	4	-0.36			54.0			
180	4	0.44			56.2			
191	4	0.04					55.1	
193	4	-0.22		54.4				
196	3	0.75		57.1				
203	4	-0.22		54.4				
204	4	-0.25						54.3
209	3	-0.94		52.4				
212	3	0.76			57.1			
215	2	-1.16			51.8			
217	3	-0.51			53.6			
218	0	4.36			67.0			
220	4	0.05			55.2			
221	4	0.11		55.3				
234	4	-0.04			54.9			
236	3	-0.98			52.3			
237	4	-0.04			54.9			
241	2	-1.45		51.0				
246	4	0.39			56.1			
247	3	0.95			57.6			
254	4	0.36			56.0			
255	4	0.40			56.1			
259	4	-0.33		54.1				
265	4	-0.44			53.8			
268	2	1.09					58.0	
273	4	0.00			55.0			
283	2	1.02			57.8			
284	4	0.27	55.8					
287	3	-0.73		53.0				
292	0	2.11		60.8				
297	2	1.24			58.4			
304	4	-0.18					54.5	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Ni (Nickel) µg/L



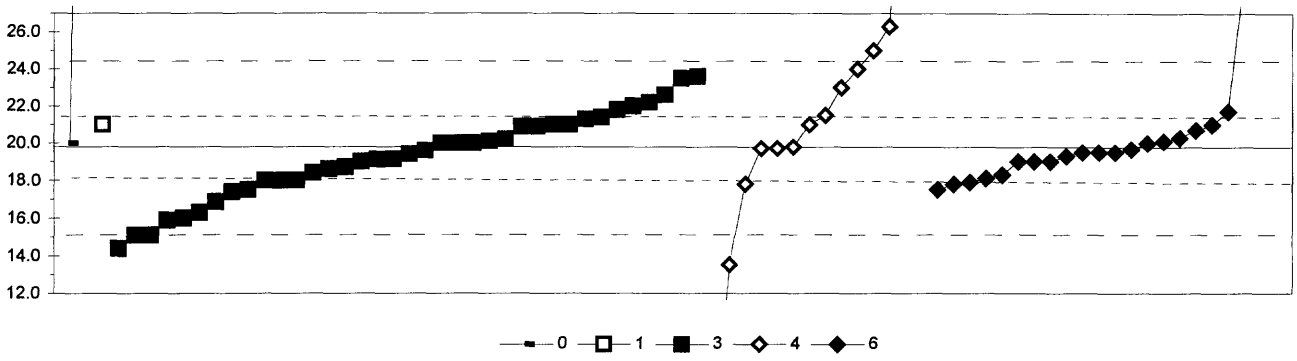
0. Other			4. ICP				
1. AA: direct air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	4	14	19	21
		Minimum =	13.0	6.0	6.0	8.4	8.7
		Maximum =		41.0	12.0	22.0	14.5
		Median =			9.9	10.1	10.0
		F-pseudosigma =			1.0	3.7	0.7
Lab	Rating	Z-value	0	1	3	4	6
1	4	0.00					10.0
3	4	0.00				10.0	
5	NR					< 10	
8	NR					< 20	
11	4	0.06				10.1	
13	NR					< 20	
16	0	2.63					14.5
18	4	-0.23				9.6	
19	0	7.02				22.0	
23	NR				< 20		
25	NR					< 49	
26	4	-0.12			9.8		
30.1	4	0.29					10.5
32	2	1.17					12.0
39	2	1.17			12.0		
40	3	0.76				11.3	
42	1	1.93					13.3
48	4	-0.41					9.3
59	4	0.23					10.4
68	4	-0.29				9.5	
69	NR				< 50		
70	NR					< 50	
85	NR					< 10	
87	0	4.68		18.0			
89	4	0.12			10.2		
96	2	-1.11			8.1		
97	2	1.05			11.8		
100	1	1.70				12.9	
102	0	-5.29				< 1	
105	4	0.00					10.0
107	3	-0.94			8.4		
119	4	-0.15					9.7
121	4	-0.12					9.8
126	0	11.70		30.0			
127	4	-0.44			9.3		
134	4	-0.06			9.9		
136	0	4.68				18.0	
138	3	0.74				11.3	
140	0	-2.34		6.0			
141	NR					< 20	
142	4	0.08					10.1
145	0	3.51				16.0	
146	NR					< 40	
147	4	-0.23					9.6
151	4	0.12					10.2
154	4	-0.35				9.4	
158	3	-0.64				8.9	
180	NR					< 16.3	
190	4	-0.14			9.8		
191	4	-0.23					9.6

MPV =	10.0
F-pseudosigma =	1.7
N =	59
Hu =	11.8
Hl =	9.5

Lab	Rating	Z-value	0	1	3	4	6
193	0	18.14		41.0			
203	NR			< 50			
204	3	-0.78					8.7
212	3	0.59					11.0
215	3	-0.59			9.0		
217	NR					< 40	
220	0	4.16				17.1	
221	4	-0.04			9.9		
234	4	0.23			10.4		
235	4	-0.28					9.5
236	3	-0.59				9.0	
237	0	7.02				22.0	
241	NR				< 10		
246	NR					< 15	
247	3	0.94					11.6
254	NR					< 15	
255	3	-0.91				8.4	
256	3	-0.73				8.8	
257	3	1.00			11.7		
259	4	0.18				10.3	
265	3	-0.59					9.0
268	NR						< 20
273	4	-0.19				9.7	
283	3	-0.70					8.8
284	1	1.76	13.0				
287	0	-2.34			6.0		
292	NR					< 20	
304	4	-0.06					9.9

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Pb (Lead) µg/L



0. Other				4. ICP				
1. AA: direct air				6. ICP/MS				
3. AA: graphite furnace								
		N =	2	1	37	14	21	1
		Minimum =	20.0	21.0	14.4	2.1	17.5	33.0
		Maximum =	78.4		23.6	39.1	29.7	
		Median =			19.4	21.3	19.5	
		F-pseudosigma =			2.2	3.9	1.0	

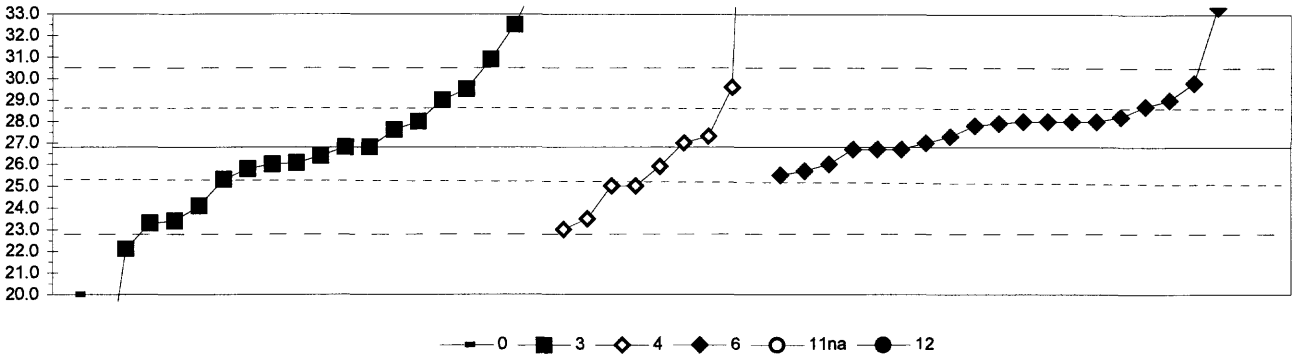
MPV =	19.8
F-pseudosigma =	2.3
N =	76
Hu =	21.4
HI =	18.2

Lab	Rating	Z-value	0	1	3	4	6
1	4	0.11			20.0		
3	3	0.54				21.0	
4	0	-7.56				2.1	
5	4	0.19			20.2		
8	NR					< 30	
10	4	-0.32			19.0		
11	4	-0.02				19.7	
12	1	-1.61			16.0		
13	2	1.22			22.6		
16	0	3.96					29.0
18	4	0.11			20.0		
23	3	-0.96			17.5		
25	NR					< 71	
26	4	0.49			20.9		
30.1	4	-0.32					19.0
32	4	0.11					20.0
33	0	25.12	78.4				
39	3	0.54			21.0		
42	3	0.84					21.7
46	3	0.96			22.0		
48	4	-0.11					19.5
59	4	0.15					20.1
68	3	-0.84				17.8	
69	4	-0.28			19.1		
70	4	0.15			20.1		
83	3	0.88			21.8		
87	NR				< 20		
89	0	-2.29			14.4		
96	4	-0.15			19.4		
97	4	-0.45			18.7		
100	3	0.71			21.4		
102	0	2.25				25.0	
105	4	-0.11					19.5
107	1	-1.99			15.1		
119	4	-0.49			18.6		
121	3	-0.71					18.1
126	3	0.54			21.0		
127	3	-0.58			18.4		
134	4	-0.26			19.1		
136	0	8.29				39.1	
138	4	-0.03					19.7
140	3	0.54		21.0			
141	1	-1.99			15.1		
142	0	4.24					29.7
145	0	7.82				38.0	
146	3	0.75				21.5	
147	4	-0.32					19.0
149	4	0.11			20.0		
151	4	-0.11					19.5
154	4	-0.06			19.6		

Lab	Rating	Z-value	0	1	3	4	6	12
180	NR					< 31.9		
190	1	1.65			23.6			
191	3	-0.79					17.9	
193	3	0.66			21.3			
204	4	0.41					20.7	
212	4	-0.32					19.0	
213	2	-1.48			16.3			
215	3	-0.75			18.0			
217	3	-0.62					18.3	
220	1	-1.65			15.9			
221	2	-1.01			17.4			
234	4	-0.02				19.7		
235	3	-0.96					17.5	
236	1	1.82				24.0		
237	2	1.39				23.0		
241	4	0.49			20.9			
246	0	2.81				26.3		
247	4	0.24					20.3	
253	2	-1.24			16.9			
254	NR					< 100		
255	1	1.61			23.5			
257	0	5.67						33.0
259	4	0.02				19.8		
265	3	-0.84					17.8	
268	NR						< 100	
273	0	-2.67				13.5		
283	3	0.54					21.0	
284	4	0.11	20.0					
287	3	-0.75			18.0			
292	3	-0.75			18.0			
297	2	1.05			22.2			
304	4	-0.19					19.3	

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Sb (Antimony) µg/L



0. Other				6. ICP/MS				
3. AA: graphite furnace				11na. AA: hydride $NaBH_4$				
4. ICP				12. Flame emission				
		N =	1	19	9	19	1	1
		Minimum =	20.0	14.4	23.0	25.5	2.3	9.6
		Maximum =		34.8	56.1	33.3		
		Median =		26.4	25.9	27.9		
		F-pseudosigma =		2.8	1.7	1.0		

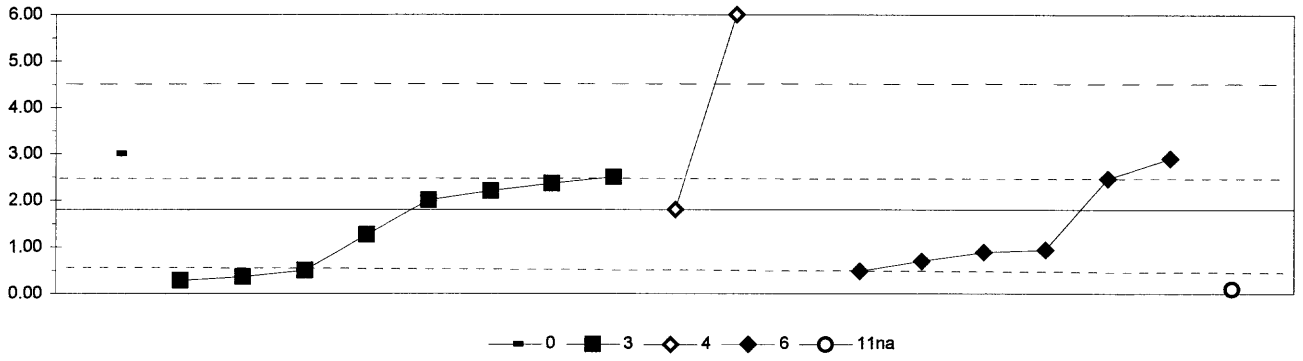
Lab	Rating	Z-value	0	3	4	6	11na	12
1	3	0.95				28.7		
3	1	-1.90			23.0			
5	2	1.40			29.6			
8	0	-12.24					2.3	
11	4	-0.45			25.9			
13	4	-0.20		26.4				
16	4	-0.05				26.7		
18	4	-0.40		26.0				
25	NR				< 51			
26	4	0.25			27.3			
30.1	2	1.10				29.0		
32	4	-0.40				26.0		
39	3	0.60				28.0		
42	3	0.60				28.0		
46	3	-0.75		25.3				
48	3	0.60				28.0		
59	4	0.50				27.8		
68	1	-1.65			23.5			
69	1	-1.70		23.4				
70	1	-1.75		23.3				
76	4	0.24				27.3		
89	1	2.05		30.9				
96	0	-6.20		14.4				
97	2	1.35		29.5				
100	4	0.40		27.6				
102	3	-0.90			25.0			
105	4	-0.05				26.7		
119	0	-2.35		22.1				
127	2	-1.35		24.1				
134	4	-0.36		26.1				
138	4	0.09			27.0			
141	0	4.00		34.8				
142	0	3.26				33.3		
146	NR				< 50			
147	4	0.10				27.0		
151	3	0.55				27.9		
154	4	-0.50		25.8				
180	NR				< 27.8			
193	4	0.00		26.8				
212	3	0.60				28.0		
215	2	1.10		29.0				
217	3	-0.55				25.7		
234	4	0.00		26.8				
236	3	-0.90			25.0			
241	0	2.85		32.5				
246	NR				< 85			
247	2	1.50				29.8		
255	0	14.64			56.1			
257	0	-8.59						9.6
265	3	0.70				28.2		

MPV =	26.8
F-pseudosigma =	2.0
N =	50
Hu =	28.0
Hl =	25.3

Lab	Rating	Z-value	0	3	4	6	11na	12
283	3	-0.65				25.5		
284	0	-3.40	20.0					
292	3	0.60		28.0				
304	4	-0.05				26.7		

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Se (Selenium) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS
11na. AA: hydride NaBH4

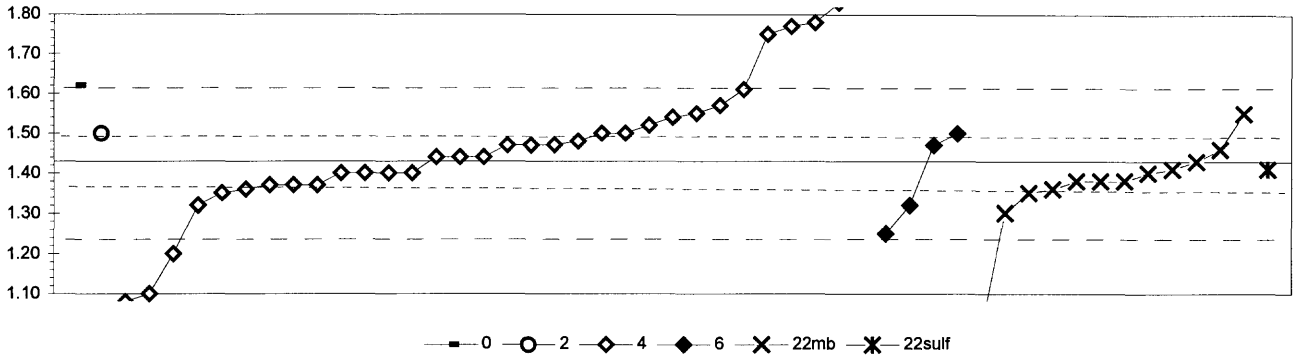
	0	3	4	6	11na
N =	1	8	3	6	1
Minimum =	3.00	0.28	1.80	0.48	0.10
Maximum =		2.50	48.00	2.90	
Median =		1.63			
F-pseudosigma =		1.37			

MPV = 1.80
F-pseudosigma = 1.39
N = 19
Hu = 2.48
Hl = 0.60

Lab	Rating	Z-value	0	3	4	6	11na
1	NR						< 1
3	NR				< 10		
5	NR			< 2			
8	2	-1.22					0.10
10	NR			< 2			
13	NR			< 5			
16	3	0.79				2.90	
18	NR			< 1			
23	NR						< 1
25	NR				< 129		
26	NR						< 0.5
30.1	NR					< 1	
32	NR					< 4	
42	NR					< 2	
48	NR					< 0.4	
59	3	-0.65				0.89	
68	4	0.00			1.80		
69	NR			< 5			
70	NR			< 10			
87	NR						< 2
89	NR						< 2
96	NR			< 1			
100	NR			< 2			
102	0	3.01			6.00		
105	NR					< 7	
107	4	0.50		2.50			
119	3	-0.95				0.48	
126	NR						< 1
127	NR			< 3			
134	2	-1.03		0.36			
136	0	33.15			48.00		
138	NR					< 1	
141	4	0.29		2.20			
142	3	-0.62				0.94	
146	NR				< 10		
154	4	-0.39		1.26			
180	NR				< 53.2		
190	4	0.40		2.36			
191	NR					< 2	
193	NR			< 5			
204	4	0.47				2.46	
212	NR					< 5	
215	NR			< 5			
217	NR					< 2	
220	NR			< 1			
221	3	-0.93		0.50			
234	2	-1.09		0.28			
236	NR				< 90		
241	NR			< 5			
246	NR				< 80		
247	NR					< 5	
255	NR			< 2			
256	NR						< 1
265	3	-0.79				0.70	
268	NR					< 15	
283	NR					< 5	
284	3	0.86	3.00				
292	4	0.14		2.00			

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

SiO_2 (Silica) mg/L



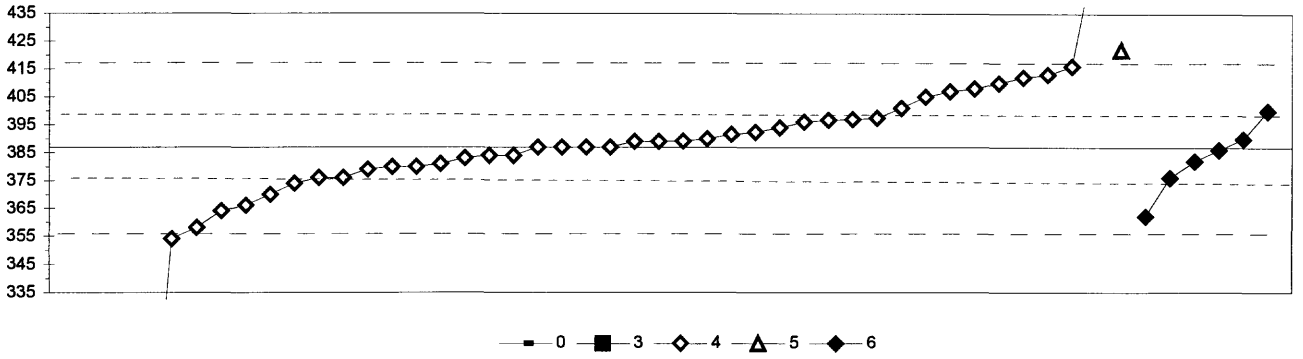
0. Other				6. ICP/MS				
2. AA: direct nitrous oxide				22mb. Color: molybdate blue				
4. ICP				22sulf. Color: sulfonic acid				
		N =	1	1	32	4	12	1
		Minimum =	1.62	1.50	1.08	1.25	1.01	1.41
		Maximum =			4.36	1.50	1.55	
		Median =			1.46		1.38	
		F-pseudosigma =			0.13		0.05	

MPV =	1.43
F-pseudosigma =	0.10
N =	51
Hu =	1.50
Hl =	1.37

Lab	Rating	Z-value	0	2	4	6	22mb	22sulf
1	4	-0.31			1.40			
3	0	4.15			1.83			
4	2	1.25			1.55			
5	4	0.10			1.44			
8	2	-1.35					1.30	
13	4	0.42			1.47			
24	4	0.42			1.47			
25	0	30.40			4.36			
26	3	0.93			1.52			
32	4	0.42				1.47		
33	1	1.97	1.62					
40	0	3.32			1.75			
43	4	-0.31			1.40			
64	3	-0.73			1.36			
70	3	-0.73					1.36	
83	3	-0.62			1.37			
87	3	-0.83					1.35	
89	4	-0.21						1.41
97	4	-0.31					1.40	
100	0	3.63			1.78			
102	0	-3.63			1.08			
105	2	1.45			1.57			
107	3	-0.52					1.38	
118	4	0.31					1.46	
119	3	0.73			1.50			
121	4	0.10			1.44			
127	3	-0.83			1.35			
134	4	0.43			1.47			
138	3	-0.52					1.38	
140	3	-0.52					1.38	
145	3	0.52			1.48			
147	4	-0.31			1.40			
151	3	0.73				1.50		
190	4	0.00					1.43	
191	2	-1.14				1.32		
203	4	-0.21					1.41	
204	2	1.25					1.55	
212	4	-0.31			1.40			
215	0	-2.39			1.20			
217	2	-1.14			1.32			
234	4	0.10			1.44			
236	0	-3.42			1.10			
237	0	3.53			1.77			
241	3	0.73		1.50				
246	2	1.14			1.54			
247	0	-4.36					1.01	
254	3	-0.62			1.37			
265	3	0.73			1.50			
268	1	-1.87				1.25		
273	1	1.87			1.61			
283	3	-0.62			1.37			
284	0	-13.30	< 0.1					

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Sr (Strontium) µg/L

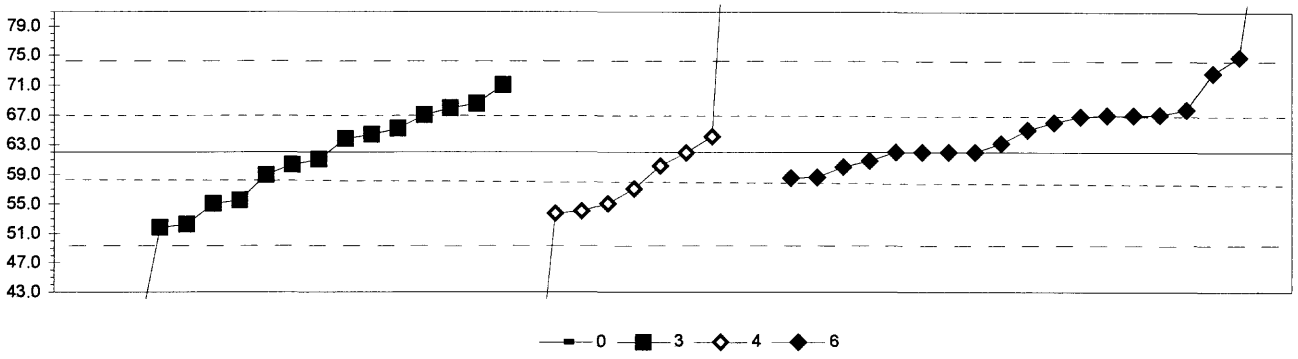


0. Other				5. DCP			
3. AA: graphite furnace				6. ICP/MS			
4. ICP							
		N =	1	1	41	1	6
		Minimum =	474	311	37	422	362
		Maximum =			460		400
		Median =			387		
		F-pseudosigma =			13		
Lab	Rating	Z-value	0	3	4	5	6
1	4	0.13			389		
3	2	1.15			405		
4	4	0.00			387		
5	2	1.46			410		
8	4	-0.38			381		
11	4	-0.45			380		
16	1	-1.85			358		
18	2	-1.34			366		
24	1	1.59			412		
25	1	1.85			416		
30.1	4	0.19					390
32	1	-1.59					362
33	0	2.19				422	
39	2	-1.08			370		
40	0	-8.40			255		
68	4	-0.19			384		
70	4	0.45			394		
85	4	0.00			387		
86	2	1.34			408		
97	0	-4.84		311			
100	4	0.00			387		
102	3	0.57			396		
105	3	0.89			401		
121	4	0.00			387		
127	2	-1.46			364		
134	4	0.14			389		
136	3	-0.83			374		
138	4	0.29			392		
142	4	0.34			392		
145	3	0.64			397		
147	3	-0.70					376
151	4	-0.06					386
154	0	-2.10			354		
191	4	-0.32					382
217	0	-22.28			37		
218	0	4.65			460		
234	4	-0.19			384		
235	4	-0.25			383		
236	3	-0.51			379		
237	2	1.27			407		
246	3	0.66			397		
247	3	-0.70			376		
254	4	0.19			390		
256	4	0.13			389		
259	4	-0.45			380		
265	3	-0.70			376		
268	3	0.83					400
273	3	0.62			397		
283	1	1.65			413		
284	0	5.54	474				

MPV =	387
F-pseudosigma =	16
N =	49
Hu =	397
Hl =	376

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Tl (Thallium) µg/L



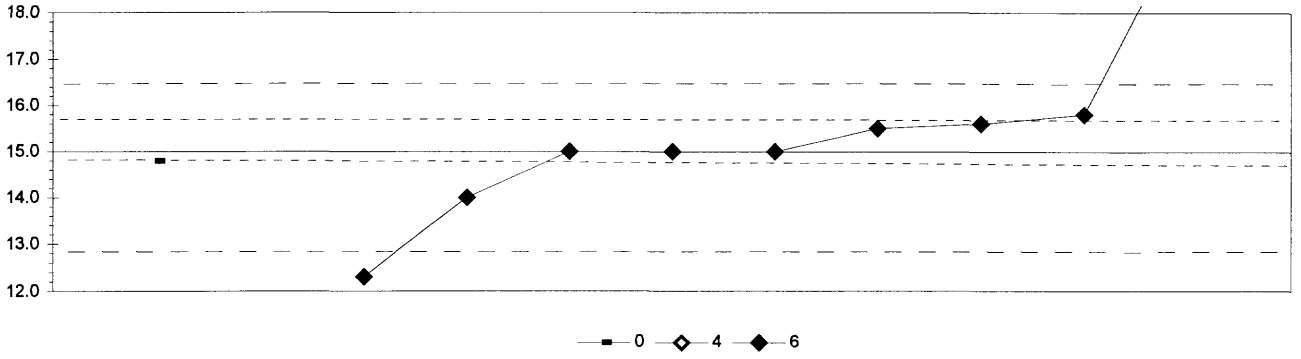
0. Other				6. ICP/MS		
3. AA: graphite furnace						
4. ICP						
		N =	1	16	10	19
		Minimum =	84.0	31.0	17.4	58.5
		Maximum =		71.0	151.0	99.0
		Median =		60.7	58.6	65.0
		F-pseudosigma =		9.3	7.5	3.7

MPV = 62.0
F-pseudosigma = 6.3
N = 46
Hu = 67.0
Hl = 58.5

Lab	Rating	Z-value	0	3	4	6
1	4	0.19				63.2
3	3	-0.79			57.0	
8	NR				< 50	
11	4	0.33			64.1	
13	2	1.03		68.5		
16	3	0.79				67.0
18	4	-0.16		61.0		
25	NR				< 68	
30.1	4	-0.32				60.0
32	3	0.63				66.0
42	1	2.03				74.8
46	2	-1.03		55.5		
48	4	0.48				65.0
59	3	0.76				66.8
68	2	-1.32			53.7	
69	2	1.43		71.0		
70	4	-0.49		58.9		
89	1	-1.56		52.2		
97	3	0.51		65.2		
100	0	-4.52		33.5		
102	0	9.52			122.0	
105	4	0.00				62.0
119	4	0.29		63.8		
127	4	-0.27		60.3		
134	4	0.37		64.4		
136	0	14.12			151.0	
138	3	0.80				67.0
141	2	-1.27			54.0	
142	0	5.87				99.0
146	4	-0.02			61.9	
147	4	0.00				62.0
151	3	0.90				67.7
154	3	0.79		67.0		
180	4	-0.30			60.1	
191	3	-0.54				58.6
193	1	-1.62		51.8		
212	4	0.00				62.0
215	0	-4.92		31.0		
217	4	-0.19				60.8
234	2	-1.11			55.0	
241	3	0.94		67.9		
246	0	-9.83			< 0.1	
247	1	1.68				72.6
255	0	-6.89			< 18.6	
265	3	-0.56				58.5
273	0	-7.08			17.4	
283	3	0.79				67.0
284	0	3.49	84.0			
292	2	-1.11		55.0		
304	4	0.00				62.0

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

U (Uranium) µg/L

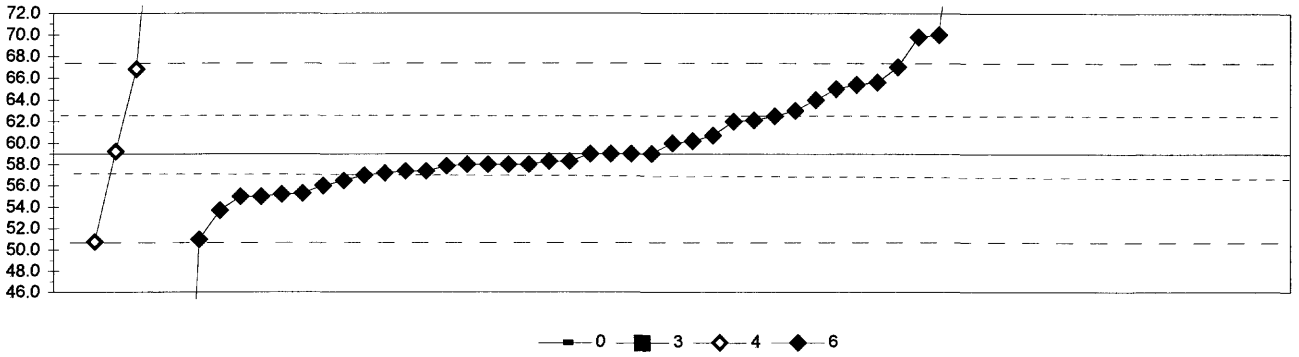


0. Other					
4. ICP					
6. ICP/MS					
		N =	1	0	10
		Minimum =	14.8	< 200	12.3
		Maximum =			21.8
		Median =			15.3
		F-pseudosigma =			0.6
Lab	Rating	Z-value	0	4	6
1	4	0.00			15.0
16	0	6.80			20.1
30.1	2	-1.33			14.0
32	3	0.80			15.6
121	0	-3.60			12.3
127	NR			< 200	
142	0	9.12			21.8
147	4	0.00			15.0
217	4	0.00			15.0
254	4	-0.27	14.8		
265	3	0.67			15.5
283	2	1.07			15.8

MPV =	15.0
F-pseudosigma =	0.6
Rating Criterion =	0.8 **
N =	11
Hu =	15.7
Hl =	14.9

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

V (Vanadium) µg/L



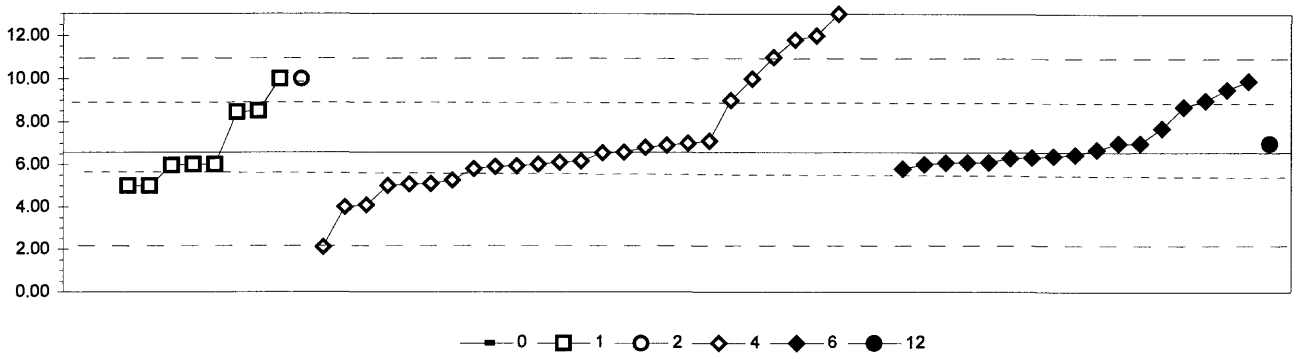
0. Other			6. ICP/MS			
3. AA: graphite furnace						
4. ICP						
		N =	1	4	39	15
		Minimum =	40.0	50.8	9.5	49.5
		Maximum =		89.2	89.0	66.0
		Median =			58.3	59.7
		F-pseudosigma =			3.9	0.0

MPV =	59.0
F-pseudosigma =	4.3
N =	59
Hu =	62.8
HI =	57.0

Lab	Rating	Z-value	0	3	4	6
1	4	-0.16			58.3	
3	4	0.23			60.0	
4	2	-1.24			53.7	
5	4	0.00			59.0	
8	3	-0.94			55.0	
11	4	-0.23			58.0	
13	4	-0.42			57.2	
16	4	0.21				59.9
18	3	-0.70			56.0	
24	4	0.00			59.0	
25	4	-0.23			58.0	
26	4	-0.23			58.0	
30.1	3	-0.70				56.0
32	4	-0.23				58.0
39	4	-0.23			58.0	
40	3	-0.87			55.3	
42	4	0.30				60.3
46	4	0.40			60.7	
48	3	-0.70				56.0
68	4	-0.47			57.0	
70	4	0.00			59.0	
86	3	0.82			62.5	
89	0	7.09		89.2		
97	1	1.83		66.8		
100	4	-0.38			57.4	
102	4	0.00			59.0	
105	4	0.00				59.0
121	0	-2.23				49.5
127	3	-0.94			55.0	
134	4	-0.16			58.3	
136	4	-0.38			57.4	
138	4	-0.27			57.9	
141	1	-1.88			51.0	
142	4	0.32				60.4
145	2	1.41			65.0	
146	4	0.28			60.2	
147	4	0.00				59.0
154	3	0.73			62.1	
158	3	0.70			62.0	
180	0	2.53			69.8	
212	4	-0.47				57.0
215	0	7.04			89.0	
217	3	-0.59			56.5	
220	0	2.58			70.0	
234	3	-0.89			55.2	
235	2	1.08				63.6
236	2	1.17			64.0	
237	1	1.88			67.0	
241	4	0.05		59.2		
246	1	1.55			65.6	
247	2	1.20				64.1
255	3	0.94			63.0	
256	0	-11.61			9.5	
257	1	-1.94		50.8		
265	4	0.16				59.7
268	1	1.64				66.0
283	2	1.50			65.4	
284	0	-4.46	40.0			
304	3	0.94				63.0

Table 14. *Statistical summary of reported data for standard reference sample T-151 (trace constituents)--Continued*

Zn (Zinc) µg/L



0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
2. AA: direct nitrous oxide			12. Flame emission					
	N =	2	8	1	27	17	1	
	Minimum =	14.00	5.00	10.00	2.10	5.80	7.00	
	Maximum =	17.10	12.00		186.00	9.90		
	Median =		6.00		6.55	6.45		
	F-pseudosigma =		2.22		2.94	1.19		

MPV = 6.57
F-pseudosigma = 2.24
N = 56
Hu = 9.00
HI = 5.98

Lab	Rating	Z-value	0	1	2	4	6	12
1	4	-0.12					6.30	
3	1	1.98				11.00		
5	4	-0.19				6.15		
8	NR					< 10		
10	3	0.86		8.50				
13	NR					< 10		
16	4	-0.21					6.10	
18	NR					< 100		
23	NR			< 20				
24	4	-0.34				5.80		
25	NR					< 4		
26	4	-0.28				5.93		
30.1	3	0.51					7.70	
32	4	0.19					7.00	
39	4	0.10				6.80		
40	4	-0.30				5.90		
42	4	-0.22					6.08	
48	2	1.09					9.00	
59	3	0.95					8.70	
68	0	80.15				186.00		
69	NR			< 50				
70	NR					< 20		
83	4	-0.21				6.10		
87	4	-0.27		5.96				
89	0	4.71	17.10					
96	NR			< 10				
97	3	-0.70		5.00				
100	3	-0.58				5.26		
102	4	0.19				7.00		
105	2	1.49					9.90	
107	3	-0.70		5.00				
119	1	1.53				10.00		
121	4	-0.21					6.10	
126	NR			< 20				
127	4	-0.01				6.55		
134	3	-0.65				5.10		
136	0	6.40				20.90		
138	4	0.01				6.58		
140	1	1.53		10.00				
141	0	2.34				11.80		
142	4	-0.05					6.45	
145	0	2.87				13.00		
146	NR					< 20		
147	4	-0.25					6.00	
151	4	0.06					6.70	
154	1	-1.99				2.10		
158	4	0.24				7.10		
180	2	-1.10				4.10		
190	3	0.84		8.44				
191	4	0.19					7.00	
193	NR			< 50				
203	4	-0.25		6.00				
204	4	-0.10					6.34	
212	NR						< 10	
213	NR			< 10				
215	4	-0.25				6.00		
217	NR					< 20		
220	2	1.09				9.00		
234	4	0.15				6.90		
236	2	-1.15				4.00		
237	NR					< 10		
241	4	-0.25		6.00				
246	NR					< 5		
247	4	-0.07					6.40	
254	NR					< 5		
255	3	-0.66				5.08		
256	3	-0.70				5.00		
257	4	0.19						7.00
265	4	-0.34					5.80	
268	NR						< 20	
273	0	2.43				12.00		
284	0	3.32	14.00					
287	1	1.53			10.00			
292	NR					< 10		
304	2	1.31					9.50	

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0	Other/Not reported		
1	AA: direct, air	=	atomic absorption: direct, air
2	AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3	AA: graphite furnace	=	atomic absorption: graphite furnace
4	ICP	=	inductively coupled plasma
5	DCP	=	direct current plasma
6	ICP/MS	=	inductively coupled plasma / mass spectrometry
7	IC	=	ion chromatography
12	Flame emission	=	flame emission
20	Titrate: color	=	titration: colorimetric (color reagent specified)
21	Titrate: electro	=	titration: electrometric
22	Color:	=	colorimetric (color reagent specified)
40	Ion electrode	=	ion selective electrode
41	Electro	=	electrometric: (type meter specified)
50	Gravimetric	=	gravimetric: (precipitate specified)
51	Turbidimetric	=	turbidimetric: (precipitate specified)

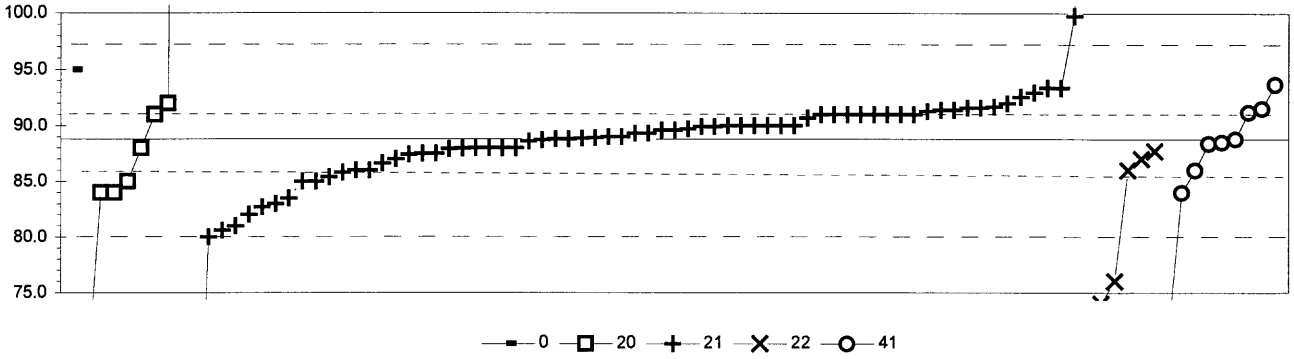
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
µg/L	=	micrograms per liter
mg/L	=	milligrams per liter
µS/cm	=	microsiemens per centimeter at 25^0 C
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
Alk	Alkalinity as $CaCO_3$	81
B	Boron	82
Ca	Calcium	83
Cl	Chloride	84
DSRD	Dissolved solids	85
F	Fluoride	86
K	Potassium	87
Mg	Magnesium	88
Na	Sodium	89
total P	Phosphorus	90
pH		91
SiO_2	Silica	92
SO_4	Sulfate	93
Sp Cond	Specific Conductance	94
Sr	Strontium	95
V	Vanadium	96

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Alkalinity (as $CaCO_3$) mg/L



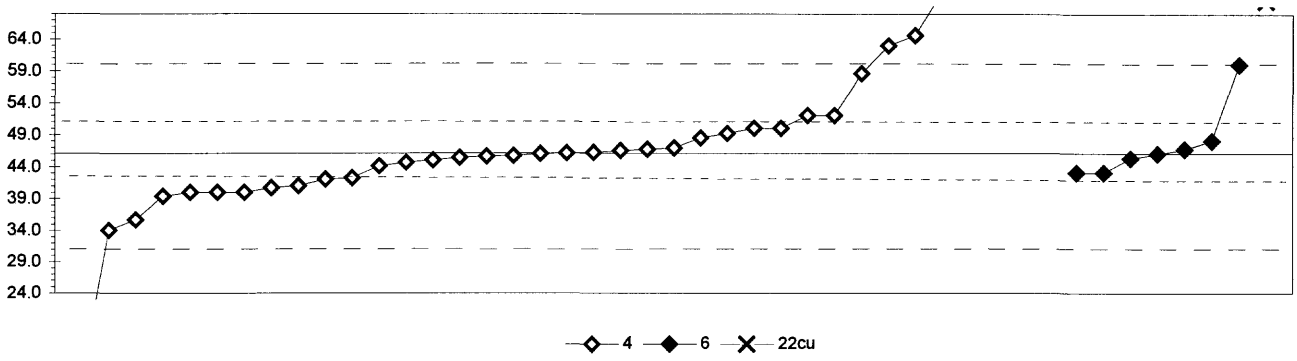
0. Other			22. Colorimetric				
20. Titrate: colorimetric			41. Direct reading				
21. Titrate: electrometric							
		N =	1	8	68	5	9
		Minimum =	95.0	67.0	48.0	74.0	70.8
		Maximum =		258.5	143.0	87.7	93.7
		Median =		86.5	89.3		88.5
		F-pseudosigma =		5.6	2.6		3.9
Lab	Rating	Z-value	0	20	21	22	41
1	4	0.25			89.9		
3	4	0.27			90.0		
5	4	0.11			89.3		
8	4	-0.18		88.0			
10	4	0.11			89.3		
11	2	-1.19			83.5		
12	4	0.27			90.0		
13	3	-0.63			86.0		
15	4	-0.18			88.0		
16	1	-1.76			81.0		
18	3	0.65			91.7		
19	4	0.27			90.0		
23	4	0.27			90.0		
24	3	0.56			91.3		
25	3	0.95			93.0		
26	4	0.05			89.0		
32	3	0.59			91.4		
33	4	-0.18			88.0		
34	2	1.04			93.4		
38	4	0.01			88.8		
39	2	-1.37			82.7		
40	0	12.21			143.0		
42	4	-0.19			88.0		
43	4	0.50			91.0		
46	4	-0.18			88.0		
48	0	-3.33				74.0	
51	4	0.50			91.0		
57	2	-1.08		84.0			
59	4	-0.07					88.5
68	4	-0.25				87.7	
69	3	-0.63				86.0	
70	4	0.50			91.0		
83	4	-0.32			87.4		
84	4	0.02			88.9		
85	4	0.43			90.7		
87	4	0.50			91.0		
89	3	0.63			91.6		
96	4	0.50			91.0		
97	2	1.04			93.4		
100	0	-9.19			48.0		
105	4	0.00			88.8		
107	3	-0.77			85.4		
118	3	0.72		92.0			
127	3	0.63			91.6		
134	3	0.62					91.6
136	4	-0.02			88.7		
138	3	0.86			92.6		
141.1	4	-0.05			88.6		
142	2	-1.53			82.0		
145	0	-2.88				76.0	

MPV =	88.8
F-pseudosigma =	3.7
Rating Criterion =	4.4 **
N =	91
Hu =	91.0
Hl =	86.0

Lab	Rating	Z-value	0	20	21	22	41
146	3	0.59			91.4		
149	0	-4.91		67.0			
151	4	0.05			89.0		
154	4	0.00			88.8		
158	4	-0.41				87.0	
180	4	-0.09					88.4
190	2	-1.31			83.0		
196	3	-0.86		85.0			
203	3	-0.86			85.0		
204	2	1.10					93.7
212	4	-0.20			87.9		
213	4	0.50			91.0		
215	2	-1.08		84.0			
217	4	0.25			89.9		
218	0	-4.05					70.8
220	4	0.18			89.6		
224	4	0.27			90.0		
234	4	0.50		91.0			
236	4	0.50			91.0		
237	4	-0.50			86.6		
241	4	0.27			90.0		
244	4	0.50			91.0		
247	2	-1.08					84.0
253	3	-0.63					86.0
255	4	0.00					88.8
256	0	38.22		258.5			
257	4	-0.18			88.0		
259	3	-0.86			85.0		
263	4	-0.29			87.5		
264	4	-0.41			87.0		
266	3	0.72			92.0		
267	4	-0.29			87.5		
269	3	-0.68			85.8		
273	4	0.20			89.7		
283	3	0.54					91.2
284	2	1.40	95.0				
286	0	2.46			99.7		
287	1	-1.98			80.0		
292	1	-1.85			80.6		
294	4	0.18			89.6		
297	3	-0.63			86.0		

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

B (Boron) µg/L



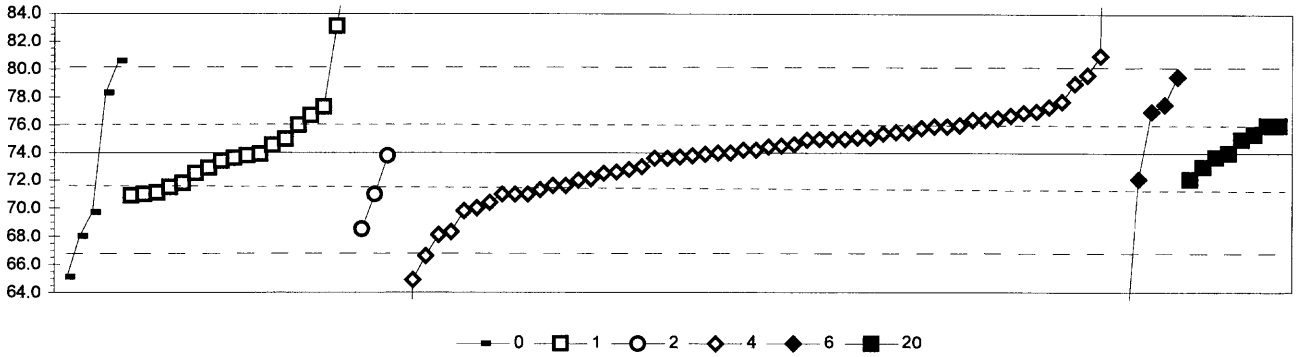
4. ICP				
6. ICP/MS				
22cu. Color: curcumin				
N =	37	7	1	
Minimum =	10.4	43.0	70.0	
Maximum =	207.0	60.0		
Median =	46.1	45.3		
F-pseudosigma =	7.4	3.2		

MPV =	46.1
F-pseudosigma =	7.3
N =	45
Hu =	52.0
Hl =	42.2

Lab	Rating	Z-value	4	6	22cu
1	4	-0.06	45.7		
3	3	0.81	52.0		
5	4	0.11	46.9		
8	4	-0.15	45.0		
10	0	3.29			70.0
11	4	0.06	46.5		
15	0	3.48	71.4		
16	0	22.15	207.0		
18	NR		< 50		
24	4	-0.07	45.6		
25	0	-3.16	< 23		
26	3	-0.54	42.2		
30.1	4	-0.43		43.0	
32	4	0.26		48.0	
40	1	-1.67	34.0		
42	4	0.08		46.7	
46	3	-0.92	39.4		
48	4	-0.43		43.0	
57	NR		< 100		
68	0	5.67	87.3		
70	NR		< 100		
85	3	0.54	50.0		
86	4	-0.10	45.4		
100	0	4.76	80.7		
119	NR		< 100		
127	4	-0.28	44.1		
134	4	0.01	46.2		
136	0	-4.91	10.4		
138	4	0.43	49.2		
141.1	0	2.55	64.6		
142	3	0.54	50.0		
145	3	0.81	52.0		
147	3	-0.56	42.0		
154	3	-0.74	40.7		
158	3	-0.84	40.0		
180	1	1.72	58.6		
212	NR		< 100		
215	3	-0.84	40.0		
217	0	-6.30	< 0.1		
220	4	-0.21	44.6		
234	4	0.00	46.1		
235	0	3.84	74.0		
236	3	-0.84	40.0		
246	4	0.08	46.7		
247	4	-0.11		45.3	
254	3	-0.70	41.0		
255	4	0.33	48.5		
259	4	-0.01	46.0		
265	4	-0.01		46.0	
268	1	1.91		60.0	
273	0	2.33	63.0		
283	2	-1.43	35.7		

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Ca (Calcium) mg/L



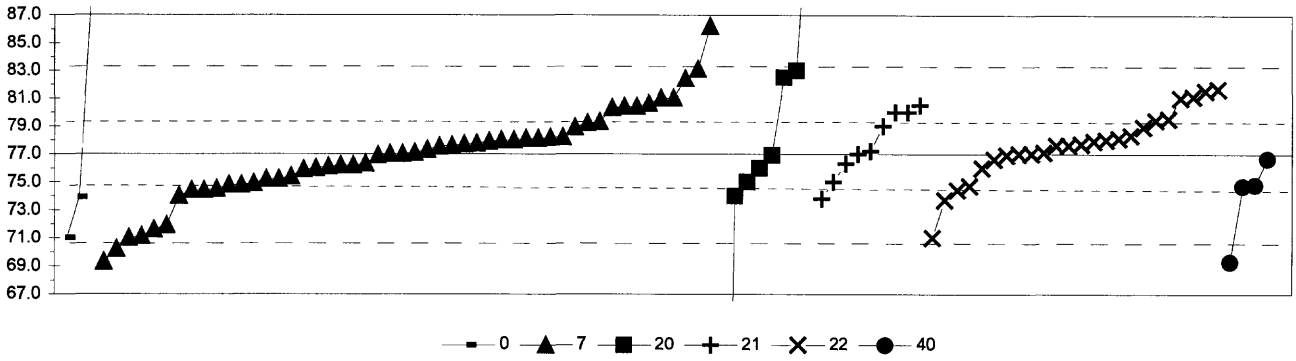
0. Other				4. ICP				
1. AA: direct air				6. ICP/MS				
2. AA: direct nitrous oxide				20. Titrate: colorimetric				
		N =	4	18	3	57	5	8
		Minimum =	65.1	70.9	68.5	19.8	60.0	72.1
		Maximum =	80.6	88.5	73.8	137.9	79.5	76.0
		Median =		73.7		74.2		74.5
		F-pseudosigma =		3.1		3.0		1.7

MPV = 74.0
F-pseudosigma = 3.2
N = 95
Hu = 76.0
HI = 71.7

Lab	Rating	Z-value	0	1	2	4	6	20
1	4	0.32				75.0		
3	2	1.17				77.7		
5	1	-1.79				68.3		
8	3	0.76				76.4		
10	4	-0.19		73.4				
11	3	0.95				77.0		
13	3	-0.85				71.3		
15	4	-0.03				73.9		
16	4	0.32				75.0		
18	3	-0.94				71.0		
19	4	-0.47				72.5		
24	4	-0.06				73.8		
25	4	0.44				75.4		
26	4	0.35				75.1		
30.1	0	-4.40					60.0	
30.2	3	-0.94			71.0			
32	1	1.73					79.5	
33	0	2.08	80.6					
38	4	-0.06			73.8			
39	2	-1.13				70.4		
40	4	0.07				74.2		
43	4	0.07				74.2		
46	3	-0.59				72.1		
48	2	1.10					77.5	
51	2	1.04		77.3				
57	3	-0.75				71.6		
59	4	-0.06		73.8				
64	4	0.47				75.5		
68	4	0.32				75.0		
69	3	-0.78		71.5				
70	3	0.92				76.9		
83	4	-0.44				72.6		
84	4	-0.12		73.6				
85	3	-0.69		71.8				
86	3	0.57				75.8		
87	1	-1.73			68.5			
89	0	4.56		88.5				
97	4	-0.34		72.9				
100	3	0.60				75.9		
102	3	-0.94				71.0		
105	3	-0.63				72.0		
107	4	-0.03		73.9				
119	4	-0.31				73.0		
121	4	0.00				74.0		
127	3	0.79				76.5		
134	4	0.14				74.4		
136	0	-17.04				19.8		
138	4	0.30				75.0		
140	3	-0.94		71.0				
141.1	0	-2.86				64.9		
142	4	-0.12				73.6		
145	4	0.16				74.5		
146	2	-1.32				69.8		
147	2	-1.25				70.0		
149	4	0.32		75.0				
154	1	-1.85				68.1		
158	0	2.20				81.0		
180	4	0.35				75.1		
190	1	-1.88	68.0					
191	3	-0.59					72.1	
196	4	0.18		74.6				
203	3	-0.91		71.1				
204	4	-0.47		72.5				
209	0	20.09				137.9		
212	4	0.19				74.6		
215	0	-2.32				66.6		
217	3	-0.94				71.0		
218	3	0.63				76.0		
220	4	-0.38				72.8		
221	3	-0.97		70.9				
230	0	-2.80	65.1					
234	3	0.76				76.4		
235	1	1.58				79.0		
236	3	-0.75				71.6		
241	0	2.86		83.1				
246	4	0.00				74.0		
247	1	1.76				79.6		
254	4	-0.09				73.7		
255	4	0.47				75.5		
256	4	0.43						75.4
257	4	0.32						75.0
259	4	-0.31						73.0
263	3	0.63						76.0
264	3	0.63						76.0
265	3	0.60				75.9		
266	4	0.00						74.0
267	4	-0.09						73.7
268	3	0.95					77.0	
269	3	-0.59						72.1
273	4	-0.12				73.6		
283	2	1.04				77.3		
284	2	-1.35	69.7					
287	3	0.63		76.0				
292	3	0.85		76.7				
297	3	0.85				76.7		

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Cl (Chloride) mg/L



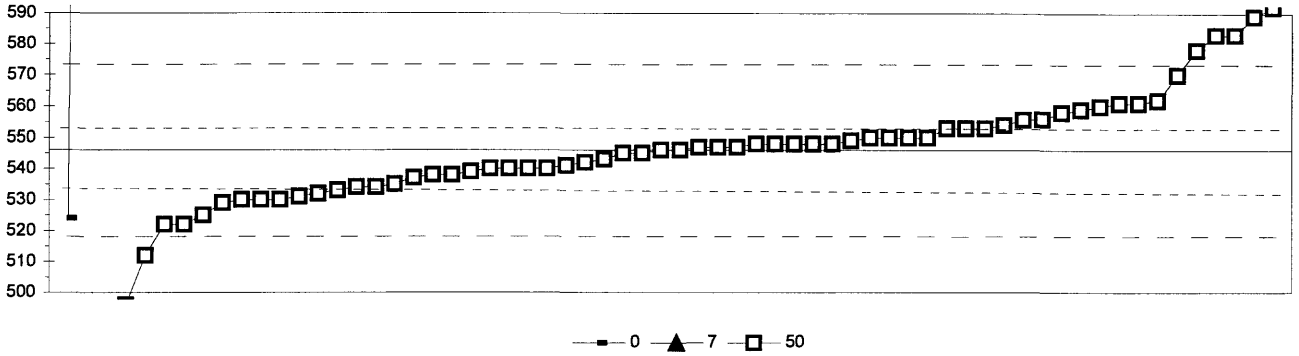
0. Other			21. Titrate: electrometric					
7. Ion chromatography			22. Colorimetric					
20. Titrate: colorimetric			40. Ion selective electrode					
		N =	3	50	8	9	24	4
		Minimum =	71.0	69.3	6.0	73.8	71.0	69.3
		Maximum =	88.7	86.2	96.0	80.5	81.7	76.7
		Median =		77.0	76.5	77.2	77.6	
		F-pseudosigma =		2.4	6.1	2.7	1.8	

MPV = 77.0
F-pseudosigma = 3.2
N = 98
Hu = 79.2
HI = 74.9

Lab	Rating	Z-value	0	7	20	21	22	40
1	4	-0.25		76.2				
3	4	0.19					77.6	
5	3	-0.97	73.9					
8	1	-1.88		71.0				
10	4	0.35					78.1	
11	2	1.25					81.0	
12	4	0.00					77.0	
13	3	-0.56		75.2				
15	0	-2.13		70.2				
16	3	-0.72					74.7	
18	2	1.29					81.1	
19	3	-0.63			75.0			
23	3	-0.69						74.8
24	4	0.03					77.1	
25	4	-0.03		76.9				
26	4	0.31		78.0				
30.1	3	-0.66		74.9				
32	4	-0.28		76.1				
33	3	-0.82		74.4				
39	1	1.73			82.5			
40	2	-1.04					73.7	
42	2	1.04		80.3				
46	4	0.22					77.7	
48	1	-1.88					71.0	
51	0	2.89		86.2				
57	3	-0.94			74.0			
59	3	-0.69		74.8				
64	4	0.22		77.7				
68	4	0.28					77.9	
69	4	0.31					78.0	
70	1	1.88			83.0			
76	4	0.24		77.8				
83	3	-1.00				73.8		
84	2	1.25		81.0				
85	4	0.28		77.9				
86	4	0.35		78.1				
87	4	-0.31					76.0	
89	4	-0.50		75.4				
96	4	0.41					78.3	
97	4	0.19					77.6	
100	1	1.69		82.4				
102	4	-0.03					76.9	
105	4	0.00		77.0				
107	3	-0.63				75.0		
119	3	-0.78		74.5				
127	2	1.13		80.6				
134	4	0.17		77.5				
138	4	-0.25		76.2				
140	3	0.60					78.9	
141.1	3	-0.82					74.4	
141.2	0	-2.42		69.3				
142	3	0.69		79.2				
145	2	1.07		80.4				
146	3	0.75					79.4	
149	1	-1.88	71.0					
151	4	0.00		77.0				
154	4	-0.13					76.6	
158	1	1.91		83.1				
180	4	-0.35		75.9				
190	1	-1.69		71.6				
191	4	0.03		77.1				
196	1	-1.85		71.1				
203	4	-0.22				76.3		
204	3	-0.72						74.7
208	3	-0.82		74.4				
212	2	1.07		80.4				
213	4	-0.31			76.0			
215	0	5.96			96.0			
217	3	-0.56		75.2				
220	2	1.46					81.7	
221	4	-0.03			76.9			
224	4	0.37		78.2				
230	4	0.38		78.2				
234	4	0.35		78.1				
236	2	1.25		81.0				
241	3	0.60		78.9				
246	3	-0.69		74.8				
247	4	0.09		77.3				
255	3	0.78					79.5	
256	4	-0.10						76.7
257	4	0.00				77.0		
259	3	0.94				80.0		
263	2	1.41					81.5	
264	3	0.94				80.0		
265	4	-0.22		76.3				
266	3	0.63				79.0		
267	4	0.06				77.2		
268	4	0.31		78.0				
269	2	1.10				80.5		
270	4	0.00					77.0	
273	0	-2.42						69.3
283	1	-1.60		71.9				
284	0	3.67	88.7					
286	3	-0.94		74.0				
287	0	-22.27			6.0			
292	4	0.19		77.6				
294	3	0.72		79.3				
297	4	-0.31		76.0				

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

DSRD (Dissolved solids) mg/L



0. Other			
7. Ion chromatography			
50. Gravimetric			
N =	2	1	61
Minimum =	524	78	496
Maximum =	1548		592
Median =			547
F-pseudosigma =			12

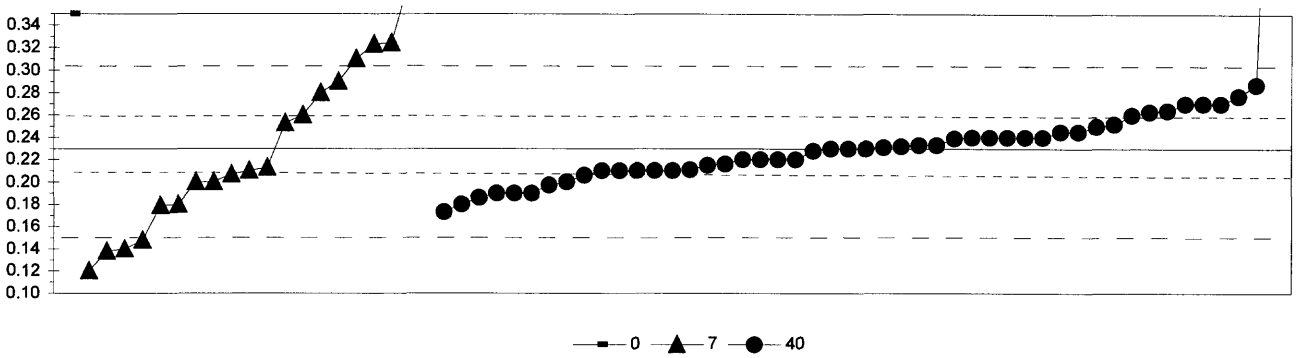
MPV =	546
F-pseudosigma =	14
N =	64
Hu =	553
Hl =	534

Lab	Rating	Z-value	0	7	50
1	3	0.57			554
3	4	0.28			550
5	4	0.50			553
8	4	0.50			553
10	4	0.07			547
11	3	-0.99			532
12	2	-1.14			530
13	3	-0.85			534
15	3	0.99			560
16	2	-1.49			525
18	2	-1.14			530
19	4	-0.07			545
23	4	0.00			546
25	0	-2.41			512
26	2	1.14			562
32	3	0.92			559
39	4	-0.43			540
40	4	0.14			548
43	4	0.28			550
46	4	0.14			548
48	4	0.28			550
51	4	-0.43			540
57	4	0.28			550
59	4	0.14			548
69	4	0.07			547
70	4	0.00			546
85	1	-1.70			522
87	3	0.71			556
89	4	-0.36			541
96	2	1.07			561
97	2	1.07			561
100	4	0.14			548
105	0	3.27			592
118	0	2.63			583
119	2	-1.21			529
127	0	2.27			578
134	3	0.69			556
138	3	-0.78			535
140	4	0.21			549
141.1	4	-0.43			540
142	2	-1.14			530
146	3	-0.57			538
154	4	0.14			548
158	4	0.07			547
190	3	-0.85			534
212	3	-0.64			537
215	3	-0.92			533
217	4	-0.21			543
221	1	1.70			570
224	3	-0.57			538

Lab	Rating	Z-value	0	7	50
234	4	-0.28			542
236	4	-0.43			540
241	4	-0.50			539
247	2	-1.07			531
253	0	2.63			583
257	3	0.85			558
259	4	0.50			553
263	1	-1.56	524		
266	4	-0.07			545
273	1	-1.70			522
283	0	-3.55			496
284	0	71.14	1548		
292	0	3.05			589

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

F (Fluoride) mg/L



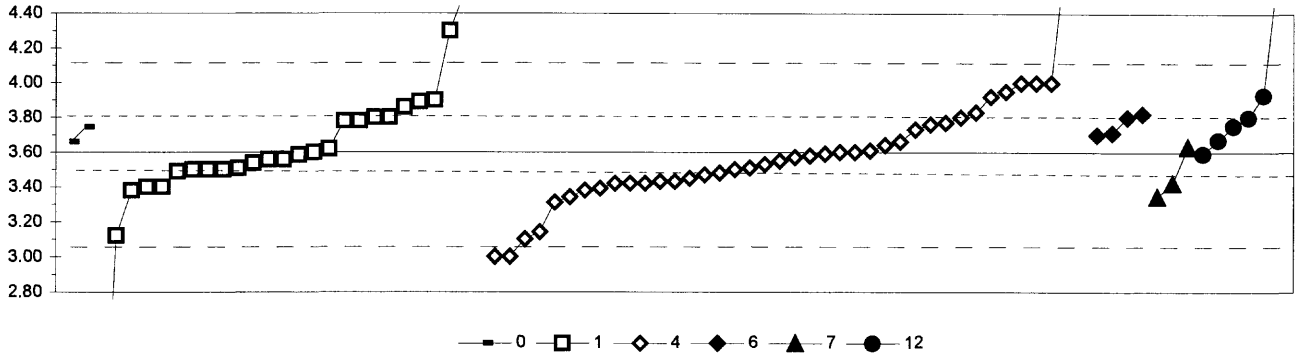
0. Other			
7. Ion chromatography			
40. Ion selective electrode			
N =	1	20	48
Minimum =	0.35	0.12	0.17
Maximum =		0.45	0.70
Median =		0.21	0.23
F-pseudosigma =		0.09	0.03

MPV =	0.23
F-pseudosigma =	0.04
N =	69
Hu =	0.26
Hl =	0.21

Lab	Rating	Z-value	0	7	40
1	3	-0.51			0.21
3	4	-0.48			0.21
8	0	-2.29		0.14	
10	4	-0.25			0.22
11	0	11.96			0.70
13	0	-2.34		0.14	
15	2	-1.45			0.17
16	4	0.25			0.24
18	4	0.00			0.23
24	4	0.38			0.25
25	4	0.00			0.23
32	3	0.56			0.25
39	4	0.23			0.24
40	3	-0.84			0.20
42	1	1.53		0.29	
46	3	-0.76			0.20
48	2	-1.02			0.19
57	4	0.25			0.24
59	2	1.02			0.27
69	3	-0.51			0.21
70	2	-1.27			0.18
76	3	0.87			0.26
83	4	0.25			0.24
84	3	0.59		0.25	
85	3	-0.51			0.21
86	0	2.39		0.32	
89	4	-0.25			0.22
96	4	-0.05			0.23
97	4	-0.36			0.22
100	4	0.08			0.23
105	NR			< 0.2	
107	2	-1.12			0.19
119	3	-0.51			0.21
127	4	-0.43		0.21	
134	4	-0.25			0.22
138	4	0.25			0.24
140	4	-0.38			0.22
141.1	2	1.02			0.27
141.2	3	0.76		0.26	
142	4	0.25			0.24
145	3	-0.76		0.20	
146	4	0.03			0.23
149	3	-0.51		0.21	
151	2	-1.02			0.19
154	2	1.20			0.28
158	0	2.37		0.32	
180	0	-8.18		< 0.05	
190	0	-2.80		0.12	
196	0	-2.09		0.15	
208	NR			< 3	
212	3	-0.51			0.210
215	4	0.05			0.232
217	2	-1.02			0.190
230	2	-1.27		0.180	
234	3	-0.59		0.207	
236	1	2.04		0.310	
241	3	-0.61			0.206
246	NR			< 0.5	
247	2	-1.30		0.179	
255	3	0.84			0.263
257	2	1.02			0.270
259	4	0.00			0.230
263	4	-0.25			0.220
265	3	0.51			0.250
266	3	0.76			0.260
269	4	0.38			0.245
273	4	0.08			0.233
283	0	3.82		0.380	
284	0	3.05	0.350		
286	0	5.60		0.450	
287	2	1.45			0.287
292	3	-0.76		0.200	
294	2	1.27		0.280	

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

K (Potassium) mg/L



0. Other				6. ICP/MS				
1. AA: direct air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	2	26	40	4	3	7
		Minimum =	3.66	1.37	3.00	3.70	3.34	3.59
		Maximum =	3.74	5.71	5.12	3.82	3.63	5.00
		Median =		3.56	3.56			3.80
		F-pseudosigma =		0.22	0.26			0.44

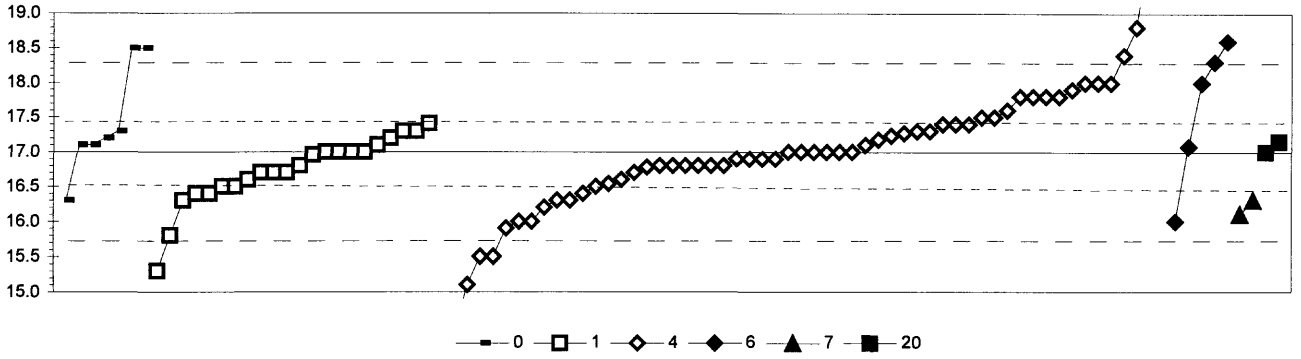
Lab	Rating	Z-value	0	1	4	6	7	12
1	4	-0.15		3.56				
3	4	0.15			3.64			
5	1	-1.77			3.14			
8	1	1.54			4.00			
10	4	-0.15		3.56				
11	2	-1.12			3.31			
13	3	0.66			3.77			
15	4	-0.12			3.57			
16	3	0.77		3.80				
18	3	0.77			3.80			
19	3	-0.81			3.39			
24	3	-1.00			3.34			
25	4	0.00			3.60			
26	4	0.12					3.63	
32	3	0.77				3.80		
33	4	0.23	3.66					
38	3	0.69		3.78				
40	3	-0.66			3.43			
43	4	0.00			3.60			
46	3	-0.69			3.42			
48	3	0.85				3.82		
51	4	-0.04						3.59
57	0	2.70		4.30				
59	2	1.16		3.90				
64	3	1.00		3.86				
68	4	0.50			3.73			
69	2	1.27						3.93
70	2	1.23			3.92			
83	4	-0.23		3.54				
85	4	0.08		3.62				
86	4	-0.46			3.48			
87	1	-1.85		3.12				
89	3	-0.85		3.38				
97	4	-0.39		3.50				
100	3	-0.69			3.42			
102	1	-1.93			3.10			
105	4	-0.50			3.47			
107	0	3.58		4.53				
119	0	-2.31			3.00			
127	4	0.23			3.66			
134	4	-0.05		3.59				
138	4	-0.39			3.50			
140	3	-0.77		3.40				
141.1	0	-2.31			3.00			
142	4	-0.04			3.59			
145	3	-0.85			3.38			
146	3	0.62			3.76			
149	4	-0.39		3.50				
154	0	5.86			5.12			
158	1	1.54			4.00			

MPV =	3.60
F-pseudosigma =	0.26
N =	82
Hu =	3.80
HI =	3.45

Lab	Rating	Z-value	0	1	4	6	7	12
180	3	-0.69			3.42			
190	3	-0.69					3.42	
191	4	0.42				3.71		
196	4	-0.35		3.51				
203	2	1.12		3.89				
204	4	0.27						3.67
209	0	-8.60		1.37				
212	NR				< 5			
215	0	-10.00			< 1			
217	NR				< 5			
218	1	1.54			4.00			
220	0	4.63			4.80			
221	3	0.69		3.78				
230	3	-1.00					3.34	
234	4	0.04			3.61			
236	4	-0.35			3.51			
241	3	0.77		3.80				
246	3	0.89			3.83			
247	2	1.35			3.95			
254	4	-0.39		3.50				
255	4	-0.19			3.55			
256	0	4.20						4.69
257	0	5.40						5.00
259	4	-0.42		3.49				
264	4	0.00		3.60				
265	4	-0.27			3.53			
266	3	0.77						3.80
268	4	0.39				3.70		
270	3	0.58						3.75
273	3	-0.58			3.45			
283	3	-0.66			3.43			
284	3	0.56	3.74					
287	0	8.13		5.71				
292	3	-0.77		3.40				
297	4	-0.08			3.58			

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Mg (Magnesium) mg/L



0. Other				6. ICP/MS				
1. AA: direct air				7. Ion chromatography				
4. ICP				20. Titrate: colorimetric				
		N =	7	22	57	5	2	2
		Minimum =	16.3	15.3	4.3	16.0	16.1	17.0
		Maximum =	18.5	17.4	35.1	18.6	16.3	17.2
		Median =	17.2	16.7	17.0			
		F-pseudosigma =	0.6	0.4	0.7			

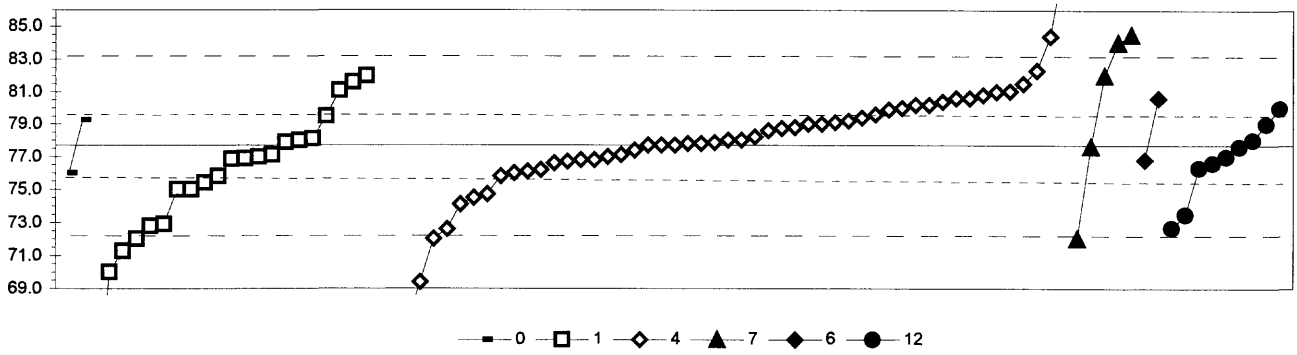
MPV = 17.0
F-pseudosigma = 0.6
N = 95
Hu = 17.4
Hl = 16.5

Lab	Rating	Z-value	0	1	4	6	7	20
1	4	0.29			17.2			
3	2	1.27			17.8			
5	4	-0.32			16.8			
8	4	0.48			17.3			
10	4	0.00		17.0				
11	4	0.48			17.3			
13	4	-0.32			16.8			
15	4	0.00			17.0			
16	4	-0.16			16.9			
18	0	-2.38			15.5			
19	4	-0.32			16.8			
24	4	-0.16			16.9			
25	0	2.22			18.4			
26	3	0.63			17.4			
30.1	1	-1.59				16.0		
30.2	4	0.00		17.0				
32	0	2.54				18.6		
33	4	0.16	17.1					
38	3	0.65		17.4				
39	4	-0.32			16.8			
40	1	-1.75			15.9			
43	4	0.00			17.0			
46	2	-1.11			16.3			
48	0	2.06				18.3		
51	1	-1.90		15.8				
57	1	-1.59			16.0			
59	4	0.00		17.0				
64	4	-0.50			16.7			
68	2	1.27			17.8			
69	4	-0.48		16.7				
70	3	0.79			17.5			
83	3	-0.95			16.4			
84	3	-0.95		16.4				
85	4	-0.48		16.7				
86	3	0.95			17.6			
87	3	-0.95		16.4				
89	4	0.48		17.3				
97	4	-0.32		16.8				
100	2	1.27			17.8			
102	1	1.59			18.0			
105	2	-1.11			16.3			
107	3	-0.79		16.5				
119	4	0.00			17.0			
121	4	0.16			17.1			
127	3	-0.79			16.5			
134	4	0.37			17.2			
136	0	-20.20			4.3			
138	4	-0.35			16.8			
140	2	-1.11		16.3				
141.1	0	-4.13			14.4			

Lab	Rating	Z-value	0	1	4	6	7	20
142	2	1.43			17.9			
145	4	0.43			17.3			
146	2	-1.27			16.2			
147	1	-1.59			16.0			
149	3	-0.79		16.5				
154	0	-2.38			15.5			
158	1	1.59			18.0			
180	4	0.00			17.0			
190	2	-1.43					16.1	
191	4	0.13				17.1		
196	4	-0.06		17.0				
203	3	-0.63		16.6				
204	4	-0.48		16.7				
209	0	28.76			35.1			
212	3	0.63			17.4			
215	0	-3.02			15.1			
217	3	-0.63			16.6			
218	0	4.76			20.0			
220	3	-0.73			16.5			
221	4	0.32		17.2				
230	2	-1.11					16.3	
234	4	-0.32			16.8			
235	1	1.59			18.0			
236	4	-0.16			16.9			
241	4	0.48		17.3				
246	2	1.27			17.8			
247	3	0.63			17.4			
254	4	0.00			17.0			
255	4	-0.32			16.8			
256	4	0.24						17.2
257	4	0.00						17.0
259	4	0.32	17.2					
263	2	-1.11	16.3					
264	0	-2.70		15.3				
265	3	0.79			17.5			
266	4	0.48	17.3					
267	0	2.38	18.5					
268	1	1.59				18.0		
269	4	0.16	17.1					
273	4	0.00			17.0			
283	0	2.86			18.8			
284	0	2.38	18.5					
287	4	0.00		17.0				
292	4	0.16		17.1				
297	4	-0.16			16.9			

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Na (Sodium) mg/L



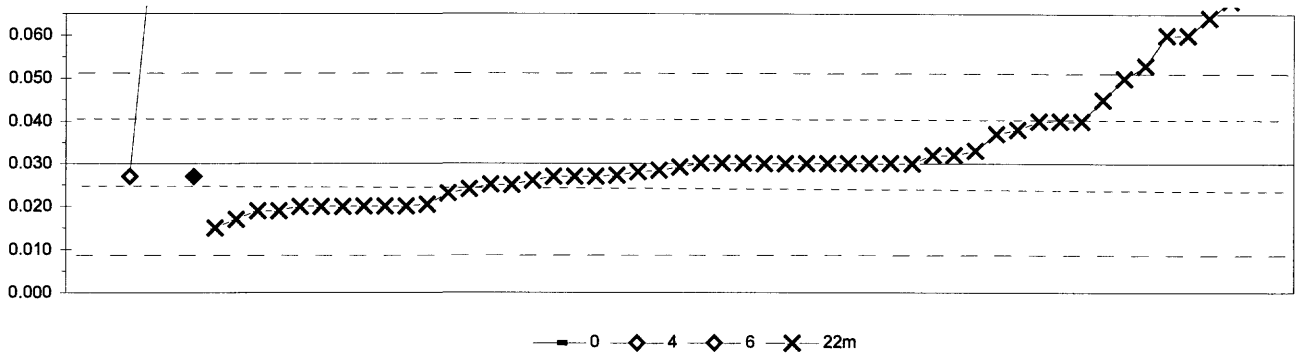
0. Other				7. Ion chromatography				
1. AA: direct air				6. ICP/MS				
4. ICP				12. Flame emission				
		N =	2	21	52	5	2	9
		Minimum =	76.0	60.8	51.1	72.0	76.8	72.7
		Maximum =	79.3	82.0	89.0	84.5	80.6	80.0
		Median =		76.3	77.9			77.0
		F-pseudosigma =		3.8	2.7			1.3
Lab	Rating	Z-value	0	1	4	7	6	12
1	4	0.39			78.8			
3	3	-0.54			76.2			
5	3	0.79			79.9			
8	3	0.61			79.4			
10	4	-0.25		77.0				
11	0	-2.05			72.0			
13	4	0.00			77.7			
15	4	0.18			78.2			
16	4	0.47			79.0			
18	4	0.04			77.8			
19	1	-1.83			72.6			
24	4	0.00			77.7			
25	0	2.41			84.4			
26	4	0.50			79.1			
30.1	0	-2.05				72.0		
30.2	3	0.83						80.0
32	0	2.27				84.0		
33	3	-0.61	76.0					
38	0	-2.05		72.0				
39	4	-0.40			76.6			
40	2	-1.08			74.7			
43	4	-0.36			76.7			
46	4	-0.25			77.0			
48	0	2.45				84.5		
51	4	-0.25						77.0
57	2	-1.30			74.1			
59	1	-1.73		72.9				
64	4	0.14		78.1				
68	3	-0.58			76.1			
69	4	-0.40						76.6
70	3	0.90			80.2			
83	4	0.00			77.7			
84	4	-0.04						77.6
85	3	-0.83		75.4				
86	3	0.83			80.0			
87	3	0.65		79.5				
89	2	1.22		81.1				
97	3	-0.68		75.8				
100	2	1.04			80.6			
102	0	-5.65			62.0			
105	4	0.04			77.8			
107	4	-0.29		76.9				
119	3	-0.61			76.0			
121	4	0.47			79.0			
127	4	-0.32			76.8			
134	4	-0.31		76.9				
138	4	0.32			78.6			
140	1	1.55		82.0				
141.1	0	-3.96			66.7			
142	2	1.37			81.5			

MPV =	77.7
F-pseudosigma =	2.8
N =	91
Hu =	79.6
Hl =	75.8

Lab	Rating	Z-value	0	1	4	7	6	12
145	4	0.05			77.9			
146	2	1.19			81.0			
149	3	-0.97		75.0				
154	3	-0.68			75.8			
158	4	0.11			78.0			
180	3	0.54			79.2			
190	4	-0.32					76.8	
191	4	-0.04				77.6		
196	2	1.40		81.6				
203	1	-1.76		72.8				
204	4	-0.50						76.3
209	0	-2.31		71.3				
212	3	0.90			80.2			
215	0	-2.99			69.4			
217	4	-0.32			76.8			
218	0	4.06			89.0			
220	4	0.37			78.7			
221	4	0.07		77.9				
230	2	1.04					80.6	
234	3	0.68			79.6			
236	2	-1.15			74.5			
241	0	-2.77		70.0				
246	4	-0.11			77.4			
247	2	1.04			80.6			
254	4	0.11			78.0			
255	2	1.12			80.8			
256	1	-1.81						72.7
257	1	-1.51						73.5
259	4	-0.22		77.1				
264	4	0.11		78.0				
265	4	-0.22			77.1			
266	4	0.47						79.0
268	1	1.55				82.0		
270	4	0.11						78.0
273	2	1.20			81.0			
283	1	1.65			82.3			
284	3	0.56	79.3					
286	0	-9.57			51.1			
287	3	-0.97		75.0				
292	0	-6.08		60.8				
297	3	0.97			80.4			

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

total P as P (total Phosphorus as phosphorus) mg/L



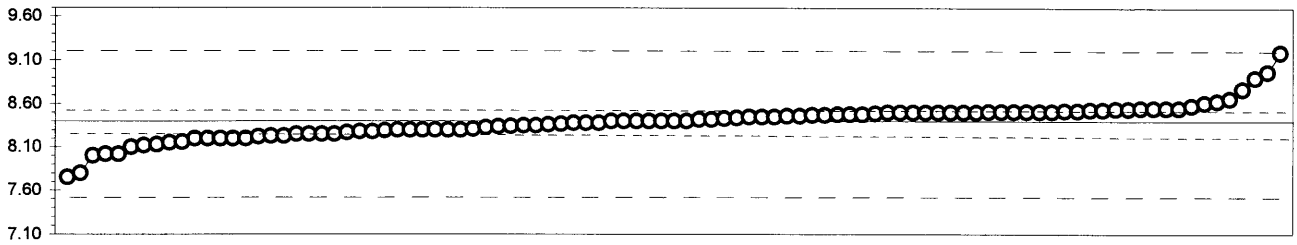
0. Other			22m. Color: phosphomolybdate			
4. ICP						
6. ICP/MS						
		N =	0	3	1	52
		Minimum =	< 0.1	0.027	0.027	0.015
		Maximum =		0.109		0.103
		Median =				0.030
		F-pseudosigma =				0.011

MPV = 0.030
F-pseudosigma = 0.011
N = 56
Hu = 0.040
HI = 0.025

Lab	Rating	Z-value	0	4	6	22m
1	2	-1.35				0.015
3	3	-0.90				0.020
8	3	0.90				0.040
12	4	0.00				0.030
13	NR					< 0.05
15	4	0.00				0.030
16	4	-0.14				0.028
18	3	-0.63				0.023
25	NR			< 0.121		
38	4	-0.27				0.027
39	4	0.00				0.030
46	4	0.00				0.030
48	3	-0.90				0.020
57	0	3.60				0.070
68	3	0.72				0.038
70	NR					< 0.1
83	0	4.41		0.079		
85	4	-0.18				0.028
86	0	7.10		0.109		
87	3	0.90				0.040
89	3	-0.90				0.020
102	4	-0.45				0.025
105	3	-0.90				0.020
107	2	-1.17				0.017
118	4	0.00				0.030
119	4	0.00				0.030
127	3	-0.86				0.020
134	3	-0.90				0.020
138	4	-0.07				0.029
140	0	3.60				0.070
141.1	0	2.70				0.060
142	4	0.18				0.032
145	3	-0.90				0.020
146	0	6.57				0.103
149	4	-0.27				0.027
151	4	-0.36				0.026
154	3	-0.54				0.024
158	NR					< 0.03
180	3	0.63				0.037
190	3	-0.99				0.019
191	4	-0.27			0.027	
203	4	0.00				0.030
204	4	-0.24				0.027
212	NR					< 0.05
213	4	0.00				0.030
215	4	0.00				0.030
217	NR					< 0.05
220	0	3.06				0.064
221	0	2.70				0.060
224	2	1.35				0.045
234	4	0.27				0.033
236	4	-0.27		0.027		
241	3	-0.99				0.019
243	4	0.00				0.030
246	NR			< 0.07		
253	0	2.07				0.053
254	NR			< 0.1		
257	1	1.80				0.050
259	4	-0.27				0.027
264	4	-0.45				0.025
283	0	3.42				0.068
284	NR		< 0.1			
286	3	0.90				0.040
287	NR					< 0.1
292	4	0.00				0.030
294	4	0.18				0.032

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

pH



—O— 41

41. Direct reading

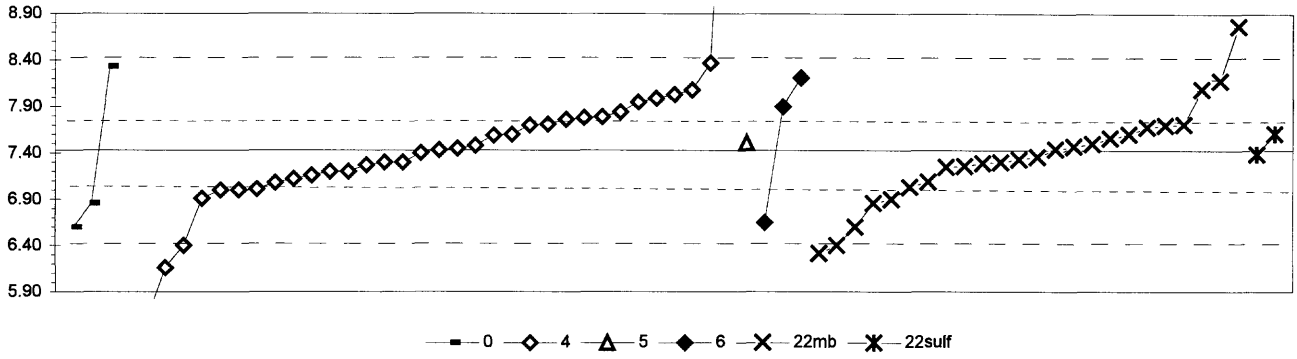
N =	97
Minimum =	7.75
Maximum =	9.19
Median =	8.40
F-pseudosigma =	0.17

MPV =	8.40
F-pseudosigma =	0.17
Rating Criterion =	0.42 **
N =	97
Hu =	8.50
Hl =	8.28

Lab	Rating	Z-value	41
1	3	-0.67	8.12
3	3	0.55	8.63
5	4	-0.36	8.25
8	4	0.36	8.55
10	4	0.31	8.53
11	4	-0.14	8.34
12	4	-0.48	8.20
13	4	0.29	8.52
15	4	0.14	8.46
16	4	0.05	8.42
18	4	-0.31	8.27
19	4	0.19	8.48
23	4	0.24	8.50
24	4	0.00	8.40
25	4	0.12	8.45
26	4	-0.24	8.30
30.1	4	0.43	8.58
32	4	0.19	8.48
33	4	0.14	8.46
38	4	0.24	8.50
39	4	0.26	8.51
40	1	1.88	9.19
42	2	1.36	8.97
43	4	-0.05	8.38
46	3	-0.90	8.02
48	4	-0.48	8.20
51	4	-0.12	8.35
57	3	-0.71	8.10
59	4	-0.40	8.23
64	4	-0.07	8.37
68	3	0.88	8.77
69	4	0.19	8.48
70	4	0.26	8.51
76	4	0.26	8.51
84	4	0.07	8.43
85	4	0.29	8.52
86	4	0.21	8.49
87	4	-0.29	8.28
89	4	-0.05	8.38
96	3	0.62	8.66
97	4	0.24	8.50
100	4	-0.12	8.35
107	4	-0.10	8.36
118	4	-0.24	8.30
119	4	0.36	8.55
127	4	0.31	8.53
134	4	-0.14	8.34
136	3	-0.57	8.16
138	4	0.10	8.44
140	2	-1.43	7.80
141.1	4	-0.36	8.25
142	4	0.24	8.50
146	4	0.05	8.42
149	4	0.00	8.40
151	4	0.00	8.40
154	4	0.36	8.55
158	4	-0.05	8.38
180	4	0.33	8.54
190	4	-0.48	8.20
196	4	0.50	8.61
203	4	-0.48	8.20
204	4	0.36	8.55
209	4	-0.48	8.20
212	4	0.00	8.40
213	4	0.12	8.45
215	4	-0.24	8.30
217	4	0.24	8.50
218	4	0.24	8.50
221	4	0.26	8.51
224	4	0.00	8.40
234	4	0.00	8.40
236	4	0.26	8.51
237	4	0.17	8.47
241	4	-0.21	8.31
243	4	-0.36	8.25
244	4	0.17	8.47
246	3	-0.64	8.13
247	4	0.26	8.51
253	3	-0.95	8.00
255	4	0.24	8.50
256	4	0.33	8.54
257	1	-1.55	7.75
259	4	-0.36	8.25
263	3	-0.60	8.15
264	4	-0.24	8.30
266	4	0.24	8.50
267	4	-0.29	8.28
269	4	-0.17	8.33
270	4	-0.24	8.30
273	4	-0.24	8.30
283	2	1.19	8.90
284	4	-0.26	8.29
286	3	-0.90	8.02
287	4	0.12	8.45
292	4	-0.40	8.23
294	4	-0.43	8.22
297	4	0.00	8.40

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

SiO_2 (Silica) mg/L



0. Other
4. ICP
5. DCP

6. ICP/MS
22mb. Color: molybdate blue
22sulf. Color: sulfonic acid

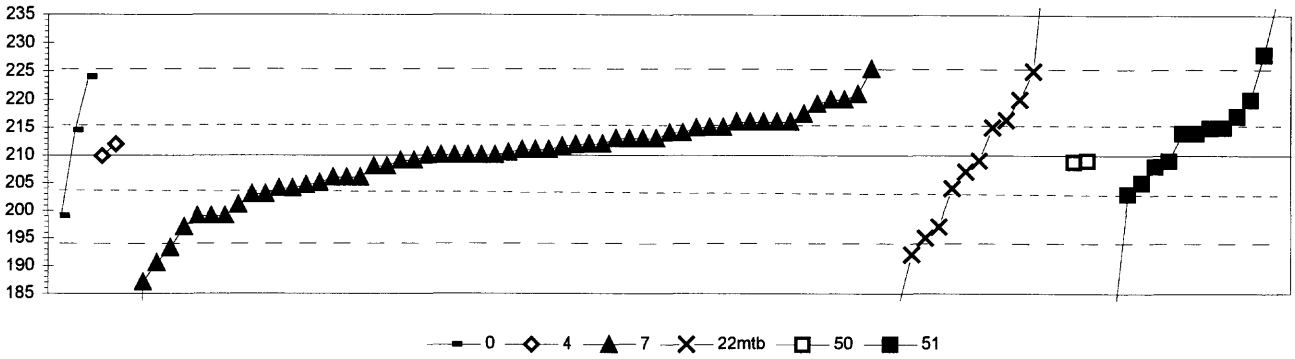
	0	4	5	6	22mb	22sulf
N =	3	34	1	3	24	2
Minimum =	6.60	5.19	7.51	6.65	6.31	7.39
Maximum =	8.33	12.10		8.21	8.77	7.61
Median =		7.44			7.35	
F-pseudosigma =		0.53			0.43	

MPV = 7.43
F-pseudosigma = 0.50
N = 67
Hu = 7.74
HI = 7.06

Lab	Rating	Z-value	0	4	5	6	22mb	22sulf
1	4	-0.26		7.30				
3	2	1.11		7.99				
5	4	0.04		7.45				
8	4	-0.26					7.30	
10	4	0.34					7.60	
11	0	-2.52		6.16				
13	4	0.32		7.59				
15	2	1.49					8.18	
18	0	-2.22					6.31	
24	2	1.19		8.03				
25	0	9.25		12.10				
26	2	1.03		7.95				
32	3	0.93				7.90		
33	4	0.16			7.51			
38	4	-0.28					7.29	
40	3	-0.61		7.12				
43	4	0.34		7.60				
46	4	0.26					7.56	
57	3	0.81		7.84				
64	4	-0.32		7.27				
68	2	-1.13					6.86	
70	3	-0.67					7.09	
83	2	-1.03		6.91				
85	4	0.14					7.50	
87	3	-0.79					7.03	
89	4	0.36						7.61
97	4	-0.20					7.33	
100	2	1.29		8.08				
102	1	-2.04		6.40				
105	3	0.71		7.79				
107	4	-0.14					7.36	
118	4	0.08					7.47	
119	3	-0.85		7.00				
121	3	-0.53		7.16				
127	3	-0.83		7.01				
134	3	0.66		7.76				
138	4	-0.08						7.39
140	4	-0.36					7.25	
142	1	1.86		8.37				
145	4	0.10		7.48				
147	4	-0.46		7.20				
149	2	-1.05					6.90	
151	3	0.53					7.70	
190	4	0.50					7.68	
191	1	1.55				8.21		
203	4	-0.34					7.26	
204	2	1.31					8.09	
212	3	0.53		7.70				
215	0	-4.44		5.19				
217	3	-0.69		7.08				
234	4	0.00		7.43				
236	0	-3.63		5.60				
241	2	-1.13	6.86					
246	3	0.69		7.78				
247	0	2.65					8.77	
254	4	-0.46		7.20				
255	4	0.02					7.44	
259	3	-0.85		7.00				
263	1	-1.64	6.60					
264	1	-2.04					6.40	
265	4	-0.26		7.30				
266	1	-1.64					6.60	
268	1	-1.55				6.65		
273	4	-0.06		7.40				
283	3	0.55		7.71				
284	1	1.78	8.33					
294	3	0.55					7.71	

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

SO_4 (Sulfate) mg/L



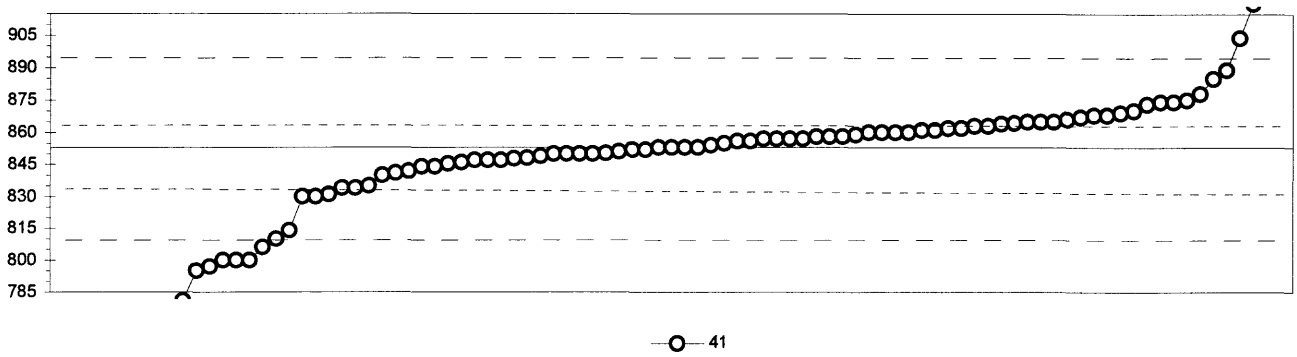
0. Other				22mtb. Color: methyl thymol blue				
4. ICP				50. Gravimetric				
7. Ion chromatography				51. Turbidimetric				
		N =	3	2	56	14	2	14
		Minimum =	199	210	103	55	209	165
		Maximum =	215	212	225	269	209	238
		Median =			210	208		214
		F-pseudosigma =			7	19		9
Lab	Rating	Z-value	0	4	7	22mtb	50	51
1	4	-0.01			210			
3	1	-1.84				195		
5	2	-1.35	199					
8	3	-0.86			203			
10	3	0.86						217
11	4	0.12			211			
12	2	1.23				220		
13	4	0.12			211			
15	4	-0.12			209			
16	0	-3.42				182		
18	4	-0.12				209		
19	3	-0.74				204		
23	0	3.43						238
24	0	7.24				269		
25	2	-1.35			199			
26	4	0.37			213			
30.1	4	-0.25			208			
32	4	0.00			210			
33	4	-0.49			206			
34	3	-0.86						203
39	2	1.23			220			
42	3	0.60			215			
43	4	-0.12					209	
46	3	0.74			216			
51	1	1.89			225			
57	0	-3.68						180
59	0	-2.06			193			
64	4	0.38			213			
68	0	-2.21				192		
69	1	-1.59				197		
70	2	-1.35			199			
76	4	0.20			212			
83	4	-0.01		210				
84	4	-0.49			206			
85	4	0.12			211			
86	3	0.61			215			
87	4	-0.37				207		
89	3	-0.74			204			
96	3	0.61						215
97	1	1.84				225		
100	4	0.00			210			
102	0	4.91				250		
105	0	-2.39			191			
119	4	0.00			210			
127	4	0.25			212			
134	4	0.06			210			
138	4	0.25			212			
140	4	0.49						214
141.1	0	2.21						228
141.2	1	-1.59			197			

MPV =	210
F-pseudosigma =	8
N =	91
Hu =	215
Hl =	204

Lab	Rating	Z-value	0	4	7	22mtb	50	51
142	4	0.49			214			
145	4	-0.25			208			
146	1	1.72	224					
149	2	1.23			220			
151	4	0.00			210			
154	3	0.61				215		
158	2	1.13			219			
180	3	0.74			216			
190	4	0.00			210			
191	4	0.23			212			
196	2	-1.10			201			
203	3	0.77				216		
204	0	-19.07				55		
208	4	-0.12			209			
212	3	-0.86			203			
215	2	1.23						220
217	4	-0.49			206			
220	3	0.61						215
221	4	-0.15					209	
224	3	0.91			217			
230	4	0.37			213			
234	4	0.49			214			
236	4	0.37			213			
241	3	0.74			216			
246	3	-0.61			205			
247	0	-2.82			187			
253	3	-0.61						205
256	3	0.56	215					
257	2	1.35			221			
259	3	0.74			216			
263	4	-0.25						208
264	4	-0.12						209
265	4	0.25		212				
266	4	0.49						214
268	3	0.61			215			
283	2	-1.35			199			
284	0	-25.63	< 5					
286	3	-0.74			204			
287	0	-5.52						165
292	3	-0.66			205			
294	3	0.74			216			
297	0	-13.10			103			

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Sp Cond (Specific Conductance) µS/cm



41. Direct reading

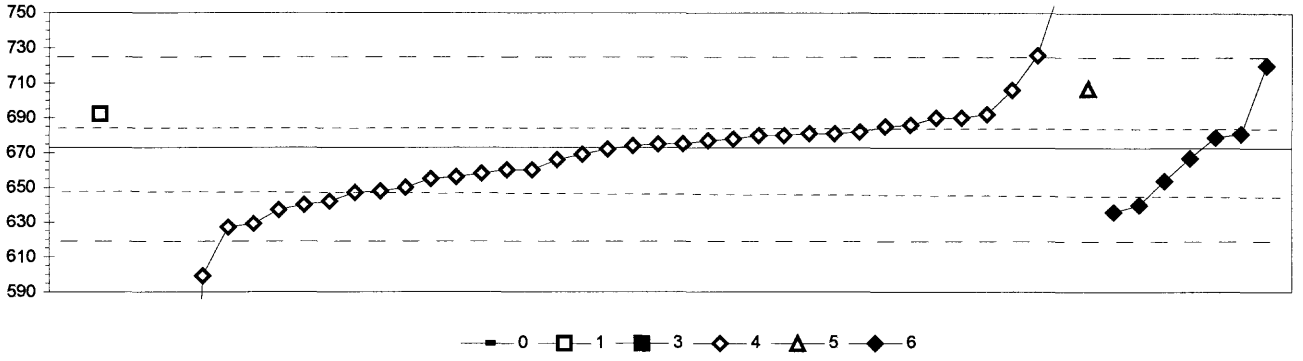
N =	93
Minimum =	9
Maximum =	954
Median =	853
F-pseudosigma =	21

MPV =	853
F-pseudosigma =	21
N =	93
Hu =	863
Hl =	834

Lab	Rating	Z-value	41
1	4	0.19	857
3	4	0.14	856
5	3	0.70	868
8	0	-2.19	806
10	4	0.37	861
11	3	-0.56	841
12	0	-12.05	594
13	4	0.47	863
15	3	0.51	864
16	4	-0.24	848
18	0	-2.70	795
19	4	0.23	858
23	0	-8.88	662
24	4	0.23	858
25	4	-0.28	847
26	4	0.33	860
32	1	-1.81	814
33	0	-2.47	800
38	3	0.53	884
39	1	-2.00	810
40	4	-0.14	850
42	4	-0.05	852
43	4	0.00	853
46	4	0.14	856
48	3	0.65	867
51	4	0.00	853
57	2	-1.07	830
59	4	0.28	859
64	4	0.33	880
68	0	-39.24	9
70	0	-3.35	781
84	4	-0.33	846
85	4	0.09	855
88	2	1.49	885
87	0	-20.42	414
89	4	-0.28	847
96	4	0.19	857
97	4	-0.14	850
100	4	0.00	853
102	3	0.98	874
105	3	-0.88	834
107	3	-0.51	842
118	4	0.33	860
119	4	0.23	858
127	4	0.42	862
134	4	-0.13	850
136	0	-4.00	767
138	3	-0.88	834
140	3	0.56	865
141.1	3	0.79	870
142	4	0.42	862
145	4	-0.28	847
146	0	-5.02	745
149	0	3.95	938
151	3	-0.84	835
154	3	0.74	869
158	3	0.56	865
180	0	-2.60	797
190	4	0.19	857
198	4	-0.35	845
203	3	0.60	866
204	4	-0.42	844
212	2	-1.02	831
215	1	1.67	889
217	0	-2.47	800
218	0	-39.28	9
224	3	-0.80	840
234	3	0.56	865
236	4	0.37	861
241	0	-7.58	690
243	4	-0.23	848
244	4	-0.05	852
246	0	-2.47	800
247	2	1.16	878
253	4	-0.14	850
255	0	4.70	954
256	0	2.37	904
257	4	-0.09	851
259	3	0.98	874
263	4	0.47	883
264	4	-0.19	849
266	3	0.70	868
267	4	0.33	860
269	4	0.19	857
270	0	3.12	920
273	2	1.02	875
283	3	0.93	873
284	4	0.05	854
286	4	-0.42	844
287	0	-3.72	773
292	4	0.00	853
294	4	-0.14	850
297	2	-1.07	830

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

Sr (Strontium) µg/L

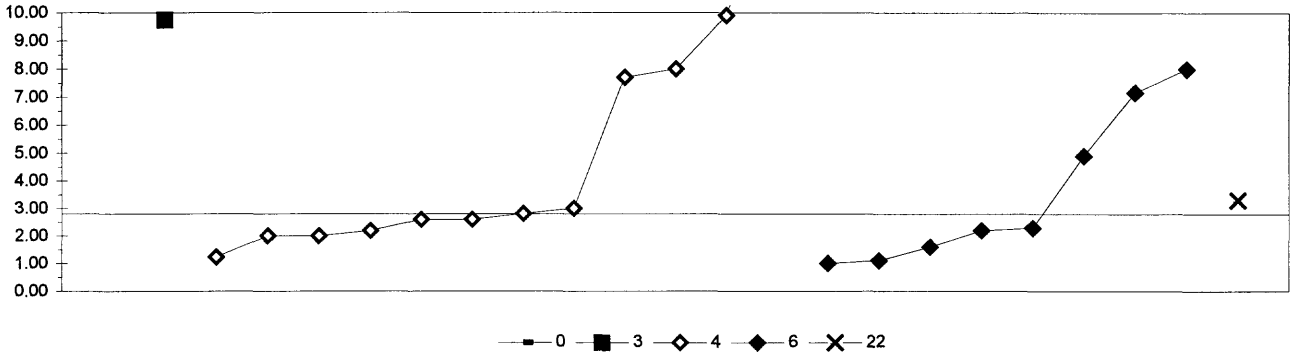


0. Other				4. ICP				
1. AA: direct air				5. DCP				
3. AA: graphite furnace				6. ICP/MS				
		N =	1	1	1	37	1	7
		Minimum =	1001	692	550	1	707	636
		Maximum =				770		720
		Median =				672		667
		F-pseudosigma =				25		24
Lab	Rating	Z-value	0	1	3	4	5	6
1	3	-0.71						654
3	4	0.19				678		
5	3	0.71				692		
8	4	-0.26				666		
11	3	-0.94				648		
16	1	-1.65				629		
18	1	-1.72				627		
24	4	0.34				682		
25	1	1.99				726		
30.1	4	0.30						681
32	2	-1.24						640
33	2	1.27					707	
39	2	-1.16				642		
40	2	-1.35				637		
68	3	-0.86				650		
70	4	0.49				686		
85	3	0.71		692				
86	3	0.64				690		
97	0	-4.61			550			
100	4	0.45				685		
102	3	0.64				690		
105	4	-0.04				672		
121	3	-0.56				658		
127	3	-0.64				656		
134	4	0.08				675		
136	0	-19.28				158		
138	4	0.07				675		
142	4	0.30				681		
145	4	0.04				674		
147	2	-1.39						636
154	0	-2.77				599		
191	4	-0.22						667
212	2	-1.24				640		
217	0	-25.20				1		
218	0	3.63				770		
234	4	-0.49				660		
235	4	0.26				680		
236	3	-0.67				655		
246	4	0.30				681		
247	4	0.22						679
254	4	0.26				680		
256	4	-0.15				669		
259	4	-0.49				660		
265	4	0.15				677		
268	1	1.76						720
273	3	-0.97				647		
283	2	1.24				706		
284	0	12.29	1001					

MPV =	673
F-pseudosigma =	27
N =	48
Hu =	684
Hl =	648

Table 15. *Statistical summary of reported data for standard reference sample M-144 (major constituents)--Continued*

V (Vanadium) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS
22. Colorimetric

MPV = insufficient data

N = 23

	0	3	4	6	22
N =	1	1	12	8	1
Minimum =	250.00	9.74	1.23	1.00	3.30
Maximum =			15.00	8.00	
Median =			2.70	2.25	
F-pseudosigma =			4.27	3.47	

Lab	Rating	Z-value	0	3	4	6	22
1	NR						3.30
3	NR				2.00		
5	NR				< 4		
8	NR				< 10		
13	NR				< 50		
15	NR				< 0.01		
16	NR					4.90	
18	NR				< 5		
25	NR				< 4		
26	NR				< 6		
30.1	NR					2.20	
32	NR					< 1	
42	NR					< 2	
46	NR				2.80		
48	NR					1.00	
57	NR				< 100		
68	NR				< 1		
70	NR				< 50		
89	NR			9.74			
100	NR				< 10		
102	NR				2.00		
105	NR				< 20		
127	NR				< 3		
134	NR				< 1		
136	NR				2.60		
138	NR				1.23		
141.1	NR				< 10		
142	NR					7.16	
145	NR				8.00		
146	NR				< 0.01		
147	NR					1.10	
154	NR				7.70		
158	NR				2.60		
180	NR				< 4.67		
212	NR				< 10		
215	NR				15.00		
217	NR				< 0.01		
220	NR				9.90		
234	NR				2.18		
235	NR					2.29	
236	NR				3.00		
246	NR				< 10		
247	NR					8.00	
256	NR				< 3		
265	NR					1.60	
268	NR					< 12	
283	NR				< 20		
284	NR		250.00				

Table 16. *Statistical summary of reported data for standard reference sample N-55 (nutrient constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported		
4. ICP	=	inductively coupled plasma
5. DCP	=	direct coupled plasma
7. IC	=	ion chromatography
20. Titrate: color	=	titration: colorimetric (color reagent specified)
21. Titrate: electro	=	titration: electrmetric
22. Color	=	colorimetric (color reagent specified)
40. Ion electrode	=	ion selective electrode

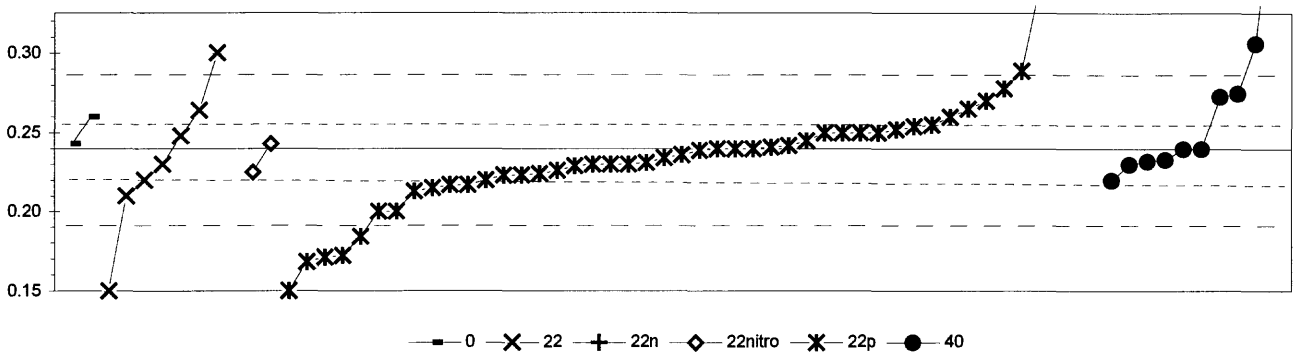
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
NH_3 as N	Ammonia as nitrogen	98
NH_3+Org N as N	Ammonia plus organic nitrogen as nitrogen	99
NO_3+NO_2 as N	Nitrate plus nitrite as nitrogen	100
Total P as P	Total Phosphorus as phosphorus	101
PO_4 as P	Orthophosphate as phosphorus	102

Table 16. *Statistical summary of reported data for standard reference sample N-55 (Nutrient constituents)--Continued*

NH_3 as N (Ammonia) mg/L



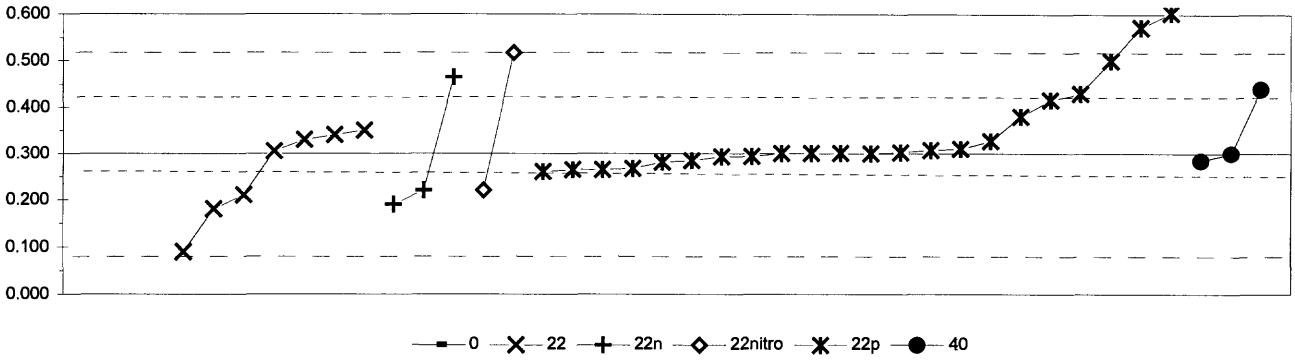
0. Other			22nitro. Color: nitroprusside				
22. Colorimetric			22p. Color: phenate				
22n. Color: Nesslerization			40. Ion selective electrode				
	N =	2	7	1	2	46	11
	Minimum =	0.243	0.150	0.130	0.225	0.150	0.220
	Maximum =	0.260	0.300		0.243	0.446	0.400
	Median =		0.230			0.238	0.240
	F-pseudosigma =		0.030			0.024	0.032

MPV = 0.240
F-pseudosigma = 0.024
N = 69
Hu = 0.255
HI = 0.222

Lab	Rating	Z-value	0	22	22N	22nitro	22p	40
1	2	-1.08					0.213	
5	3	0.51					0.252	
9	3	-0.92					0.217	
10	4	0.02						0.240
11	4	0.43					0.250	
12	1	-1.61					0.200	
13	4	0.02					0.240	
16	0	-3.66		0.150				
19	1	-1.61					0.200	
21	4	-0.35					0.231	
23	0	8.44					0.446	
25	2	-1.21		0.210				
33	4	-0.39					0.230	
38	4	0.43					0.250	
39	0	-2.27					0.184	
46	3	-0.92					0.217	
48	0	-3.66					0.150	
51	4	0.02						0.240
57	4	-0.39						0.230
59	4	0.43					0.250	
70	4	0.22					0.245	
76	4	-0.22					0.234	
86	2	1.04					0.285	
87	4	0.02					0.240	
88	0	-2.76					0.172	
89	4	0.43					0.250	
90	4	0.10					0.242	
91	4	-0.39					0.230	
96	3	-0.67					0.223	
97	4	0.35		0.248				
102	4	0.14				0.243		
105	3	-0.80		0.220				
107	4	-0.43					0.229	
110	3	-0.66					0.223	
113	4	-0.14					0.236	
114	3	-0.80						0.220
118	2	1.25					0.270	
127	3	-1.00					0.215	
134	3	0.63					0.255	
138	4	0.02					0.240	
140	0	2.47		0.300				
141	1	1.57					0.278	
142	1	2.02					0.289	
143	0	-2.80					0.171	
145	3	0.84					0.260	
146	4	0.06					0.241	
158	0	-2.92					0.168	
180	3	-0.55					0.226	
185	3	1.00		0.264				
190	4	0.39					0.249	
200	3	0.84	0.260					
203	3	-0.63					0.224	
204	4	-0.02					0.239	
205	0	4.15					0.341	
209	4	0.14	0.243					
212	0	4.93					0.360	
213	NR		< 1					
215	3	-0.80					0.220	
221	0	2.72						0.306
224	3	0.59					0.254	
227	0	-4.48			0.130			
234	2	1.37						0.273
241	4	-0.27						0.233
243	4	-0.39					0.230	
248	0	6.56						0.400
253	3	-0.59				0.225		
284	4	-0.31						0.232
285	2	1.45						0.275
290	4	-0.39		0.230				
294	0	5.33					0.370	

Table 16. *Statistical summary of reported data for standard reference sample N-55 (Nutrient constituents)--Continued*

NH_3 + Organic N as N (Ammonia + organic Nitrogen as nitrogen) mg/L



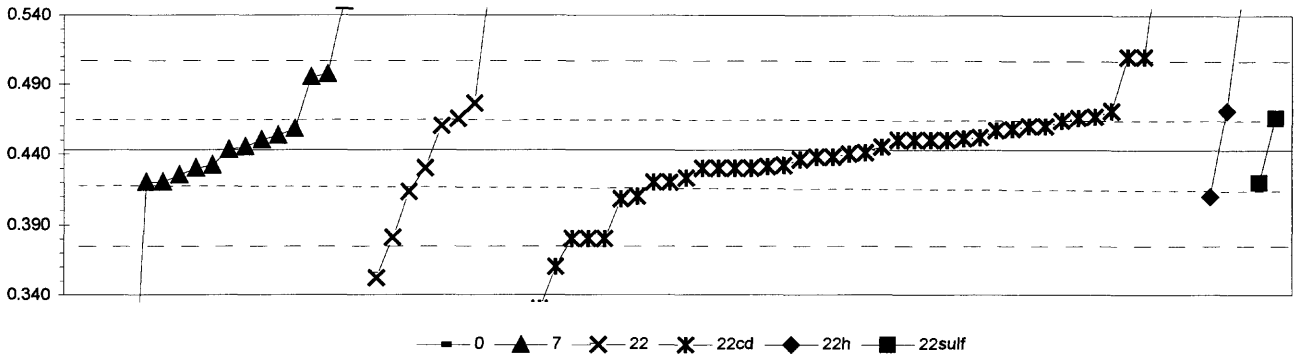
0. Other				22nitro. Color: nitroprusside				
22. Colorimetric				22p. Color: phenate				
22n. Color: Nesslerization				40. Ion selective electrode				
		N =	3	7	3	2	22	3
		Minimum =	0.628	0.090	0.190	0.220	0.260	0.284
		Maximum =	6.500	0.350	0.465	0.517	0.603	0.440
		Median =		0.305			0.300	
		F-pseudosigma =		0.104			0.071	

MPV = 0.300
F-pseudosigma = 0.110
N = 40
Hu = 0.423
HI = 0.274

Lab	Rating	Z-value	0	22	22n	22nitro	22p	40
1	4	-0.32					0.265	
9	4	0.00					0.300	
10	4	0.00					0.300	
11	2	-1.09		0.180				
12	NR						< 0.3	
16	4	0.45		0.350				
21	4	0.05		0.305				
25	3	-0.81		0.210				
38	3	-0.72			0.220			
46	NR						< 0.2	
48	2	1.18					0.430	
51	4	0.00						0.300
57	0	56.13	6.500					
59	4	0.00					0.300	
70	4	-0.06					0.293	
87	1	1.81					0.500	
89	3	0.72					0.380	
90	4	0.02					0.302	
96	2	1.05					0.416	
97	4	0.27		0.330				
102	3	-0.72				0.220		
105	NR			< 1				
113	0	2.74					0.603	
118	4	0.00					0.300	
127	4	-0.33					0.264	
134	4	-0.17					0.281	
138	4	0.09					0.310	
140	4	0.36		0.340				
141	2	1.49			0.465			
142	4	0.06					0.307	
145	4	-0.36					0.260	
146	4	-0.30					0.267	
180	4	-0.06					0.293	
190	0	2.46					0.572	
204	4	-0.14					0.284	
212	NR						< 0.5	
213	NR		< 1					
215	NR						< 0.5	
221	0	2.97	0.628					
224	4	0.24					0.327	
227	3	-1.00			0.190			
241	2	1.27						0.440
253	1	1.96				0.517		
284	0	12.86	1.720					
285	4	-0.14						0.284
290	1	-1.90		0.090				

Table 16. *Statistical summary of reported data for standard reference sample N-55 (Nutrient constituents)--Continued*

$NO_3 + NO_2$ as N (Nitrate + Nitrite as Nitrogen) mg/L



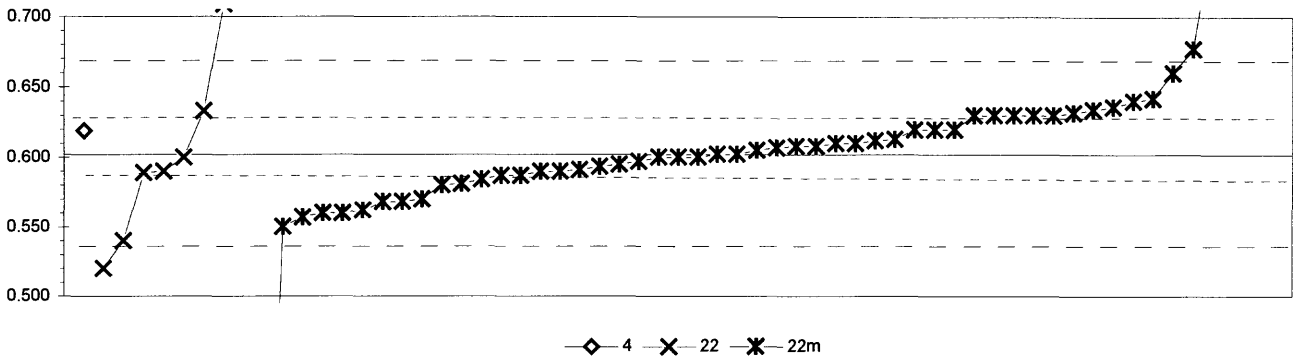
0. Other				22cd. Cd diazotization				
7. Ion chromatography				22h. Color: hydrazine diazotization				
22. Colorimetric				22sulf. Color: sulfanilamide				
		N =	3	15	8	43	4	2
		Minimum =	0.189	0.204	0.352	0.100	0.410	0.420
		Maximum =	0.315	1.054	0.572	1.280	0.631	0.466
		Median =		0.448	0.445	0.441		
		F-pseudosigma =		0.052	0.054	0.030		

MPV = 0.443
F-pseudosigma = 0.033
N = 75
Hu = 0.465
Hl = 0.420

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
1	3	0.63				0.464		
5	3	-0.60				0.423		
9	4	0.42				0.457		
10	4	0.21				0.450		
11	3	-0.69						0.420
12	1	-1.89				0.380		
13	4	0.21		0.450				
16	0	-2.73			0.352			
19	3	0.51				0.460		
21	0	5.64					0.631	
23	3	0.84				0.471		
25	3	-0.54		0.425				
38	4	0.24				0.451		
39	4	0.00		0.443				
42	1	1.56		0.495				
45	3	0.69				0.466		
46	4	-0.36				0.431		
48	0	3.51					0.560	
51	3	-0.69		0.420				
53	0	-3.84	0.315					
57	3	-0.69				0.420		
59	4	-0.39				0.430		
69	4	0.21				0.450		
70	0	-3.39				0.330		
84	0	3.21		0.550				
86	1	-1.89				0.380		
87	1	2.01				0.510		
88	0	4.68				0.599		
89	4	0.21				0.450		
90	3	0.84					0.471	
91	0	-2.49				0.360		
96	2	-1.05				0.408		
97	3	0.51			0.460			
102	3	-0.99				0.410		
105	4	-0.39			0.430			
107	4	-0.33				0.432		
113	3	-0.69				0.420		
114	4	-0.39				0.430		
118	3	-0.99					0.410	
127	1	1.62		0.497				
134	4	-0.15				0.438		
138	4	-0.39				0.430		
140	3	-0.90			0.413			
141	0	-3.57				0.324		
142	3	0.66			0.465			
143	4	-0.09				0.440		
145	3	0.51				0.460		
146	3	0.72				0.467		
158	4	-0.06				0.441		
180	4	0.06				0.445		
185	4	-0.15				0.438		
190	4	-0.21				0.436		
191	3	-0.69		0.420				
200	0	-4.29	0.300					
203	3	0.69						0.466
204	4	0.27				0.452		
205	4	0.45				0.458		
208	4	0.06		0.445				
209	0	-7.16		0.204				
212	1	2.01				0.510		
215	4	-0.39				0.430		
221	3	0.99			0.476			
224	4	0.30		0.453				
227	0	18.32		1.054				
234	4	-0.33		0.432				
241	4	0.45		0.458				
243	4	0.21				0.450		
248	0	-7.61	0.189					
253	1	-1.86			0.381			
284	0	25.09				1.280		
285	0	3.87			0.572			
290	0	7.40				0.690		
291	0	-10.28				0.100		
292	4	-0.39		0.430				
294	1	-1.89				0.380		

Table 16. *Statistical summary of reported data for standard reference sample N-55 (Nutrient constituents)--Continued*

total P as P (total Phosphorus as phosphorus) mg/L



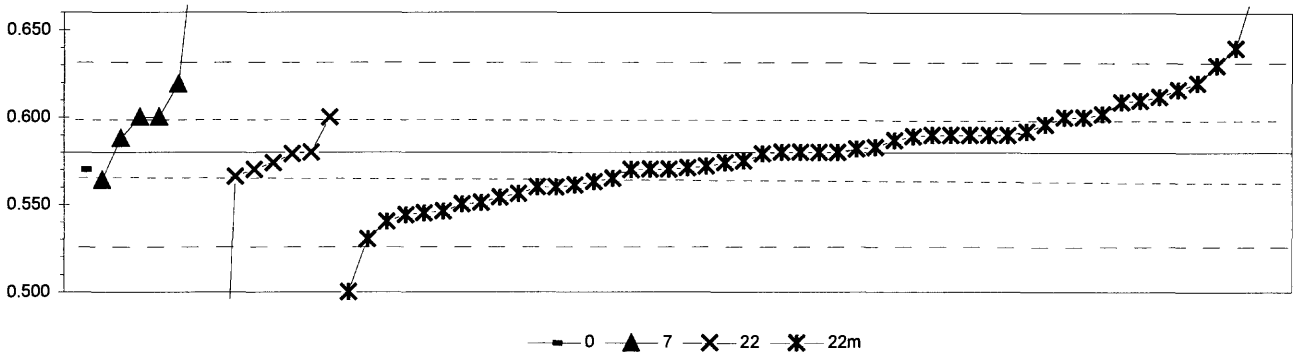
4. ICP			
22. Colorimetric			
22m. Color:phosphomolybdate			
N =	1	8	52
Minimum =	0.619	0.520	0.195
Maximum =		0.718	0.760
Median =		0.595	0.604
F-pseudosigma =		0.079	0.032

MPV =	0.602
F-pseudosigma =	0.032
N =	61
Hu =	0.630
Hl =	0.587

Lab	Rating	Z-value	4	22	22m
1	2	-1.41			0.557
9	4	0.25			0.610
10	4	0.00			0.602
11	3	0.88			0.630
12	2	-1.32			0.560
13	3	0.56			0.620
16	3	0.97		0.633	
19	4	-0.38			0.590
21	4	0.19			0.608
22	4	-0.35			0.591
23	3	0.56			0.620
38	2	1.07			0.636
39	4	0.00			0.602
46	4	-0.06			0.600
48	3	0.88			0.630
51	4	-0.22			0.595
57	1	-1.63			0.550
59	4	-0.06			0.600
70	4	0.16			0.607
86	0	4.96			0.760
87	3	1.00			0.634
89	4	-0.06			0.600
91	4	0.25			0.610
96	2	-1.25			0.562
97	4	-0.38		0.590	
102	4	0.19			0.608
105	0	-2.57		0.520	
107	3	-0.66			0.581
113	4	-0.28			0.593
118	0	4.96			0.760
127	4	0.31			0.612
134	2	-1.07			0.568
138	3	0.56			0.620
140	1	-1.95		0.540	
141	4	-0.38			0.590
142	4	-0.47			0.587
143	4	-0.47			0.587
145	2	1.19			0.640
146	3	0.88			0.630
158	3	-0.56			0.584
180	3	0.94			0.632
185	0	2.35			0.677
190	4	-0.50			0.586
203	2	-1.07			0.568
204	4	0.35			0.613
212	2	-1.32			0.560
213	4	-0.06		0.600	
215	1	1.82			0.660
221	4	-0.41		0.589	
224	4	0.09			0.605
227	3	0.53	0.619		
234	3	0.88			0.630
241	4	-0.16			0.597
243	3	-1.00			0.570
248	2	1.25			0.642
284	0	3.64		0.718	
285	0	3.36		0.709	
287	0	-12.77			0.195
290	3	0.88			0.630
292	0	4.64			0.750
294	3	-0.69			0.580

Table 16. *Statistical summary of reported data for standard reference sample N-55 (Nutrient constituents)--Continued*

PO_4 as P (Orthophosphate as phosphorus) mg/L



0. Other			22m. Color: phosphomolybdate		
7. Ion chromatography					
22. Colorimetric					
N =	1	6	7	52	
Minimum =	0.570	0.564	0.300	0.500	
Maximum =		0.716	0.600	1.730	
Median =			0.574	0.580	
F-pseudosigma =			0.009	0.026	

MPV = 0.580
F-pseudosigma = 0.026
N = 66
Hu = 0.600
HI = 0.565

Lab	Rating	Z-value	0	7	22	22m
1	4	-0.23				0.574
5	2	1.22				0.612
9	3	-0.65				0.563
10	3	-0.57				0.565
11	1	-1.52				0.540
12	3	-0.76				0.560
13	2	1.48		0.619		
16	4	-0.23			0.574	
19	4	-0.38				0.570
21	4	0.00				0.580
23	1	1.90				0.630
25	4	0.00				0.580
38	4	-0.30				0.572
39	2	-1.33				0.545
46	3	0.76				0.600
48	3	0.76				0.600
51	2	-1.29				0.546
53	4	0.27				0.587
57	0	-3.04				0.500
59	4	-0.38				0.570
84	0	5.17		0.716		
86	3	-0.76				0.560
87	4	-0.04				0.579
88	2	1.10				0.609
89	4	0.38				0.590
96	4	-0.34				0.571
97	3	-0.53			0.566	
102	3	0.84				0.602
105	4	0.00			0.580	
107	4	0.00				0.580
113	3	-0.72				0.561
118	4	0.38				0.590
127	4	0.11				0.583
134	4	0.46				0.592
138	4	-0.38				0.570
140	3	0.76			0.600	
141	4	0.38				0.590
142	2	1.14				0.610
143	2	-1.10				0.551
145	1	-1.90				0.530
146	2	-1.37				0.544
158	3	-0.99				0.554
180	4	-0.19				0.575
185	0	3.57				0.674
190	4	-0.27				0.573
191	3	0.76		0.600		
200	4	-0.38	0.570			
203	3	-0.91				0.556
204	4	0.34				0.589
208	4	0.30		0.588		
212	4	0.38				0.590
213	4	-0.38			0.570	
215	0	2.28				0.640
221	0	-10.64			0.300	
224	2	1.37				0.616
227	4	0.00				0.580
234	3	0.76		0.600		
241	3	-0.61		0.564		
248	3	0.61				0.596
253	4	0.38				0.590
284	4	0.08				0.582
285	4	-0.04			0.579	
287	0	43.70				1.730
290	1	1.52				0.620
292	3	0.53				0.594
294	2	-1.14				0.550

Table 17. *Statistical summary of reported data for standard reference sample N-56 (nutrient constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported		
4. ICP	=	inductively coupled plasma
5. DCP	=	direct coupled plasma
7. IC	=	ion chromatography
20. Titrate: color	=	titration: colorimetric (color reagent specified)
21. Titrate: electro	=	titration: electrometric
22. Color:	=	colorimetric (color reagent specified)
40. Ion electrode	=	ion selective electrode

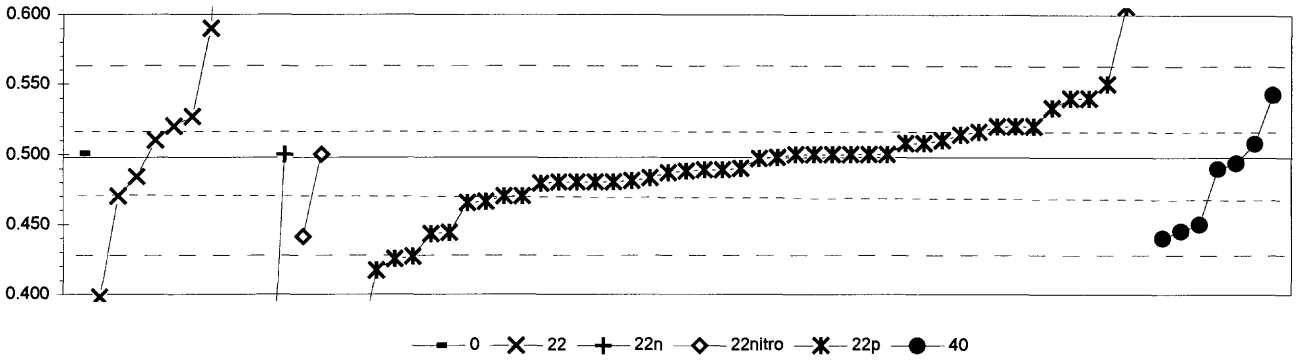
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
NH_3 as N	Ammonia as nitrogen	104
NH_3+Org N as N	Ammonia plus organic nitrogen as nitrogen	105
NO_3+NO_2 as N	Nitrate plus nitrite as nitrogen	106
Total P as P	Total Phosphorus as phosphorus	107
PO_4 as P	Orthophosphate as phosphorus	108

Table 17. *Statistical summary of reported data for standard reference sample N-56 (Nutrient constituents)--Continued*

NH_3 as N (Ammonia as Nitrogen) mg/L



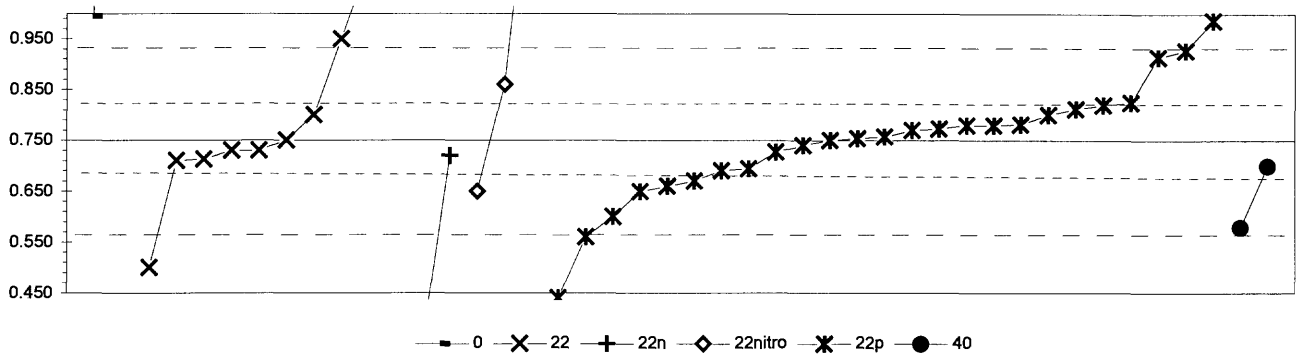
0. Other				22nitro. Color: nitroprusside				
22. Colorimetric				22p. Color: phenate				
22n. Color: Nesslerization				40. Ion selective electrode				
		N =	1	9	2	2	46	8
		Minimum =	0.501	0.398	0.250	0.441	0.344	0.440
		Maximum =		0.990	0.500	0.500	0.745	0.543
		Median =		0.520			0.497	0.490
		F-pseudosigma =		0.079			0.026	0.040

MPV =	0.498
F-pseudosigma =	0.034
N =	68
Hu =	0.516
Hl =	0.470

Lab	Rating	Z-value	0	22	22n	22nitro	22p	40
1	3	-0.95					0.465	
3	0	2.71		0.590				
5	0	-2.13					0.425	
9	1	-1.57					0.444	
10	4	-0.22						0.490
11	3	0.66					0.520	
12	4	0.07					0.500	
13	4	0.37					0.510	
16	0	-2.92		0.398				
19	4	0.07					0.500	
23	4	0.07					0.500	
25	0	10.04		0.840				
33	4	0.07					0.500	
38	0	3.18					0.606	
39	0	-4.50					0.344	
46	4	-0.48					0.481	
48	0	-4.33					0.350	
59	4	0.07					0.500	
70	4	-0.25					0.489	
76	4	0.31					0.508	
84	2	-1.39						0.450
86	4	-0.01					0.497	
87	3	-0.81					0.470	
88	0	-2.07					0.427	
89	3	0.66					0.520	
90	4	-0.25					0.489	
91	3	-0.51					0.480	
96	3	0.54					0.516	
97	3	0.87		0.527				
102	4	0.07				0.500		
105	4	0.37		0.510				
107	4	-0.22					0.490	
113	3	-0.54					0.479	
118	1	1.54					0.550	
127	1	-1.60					0.443	
134	4	0.48					0.514	
138	3	-0.51					0.480	
140	3	0.66		0.520				
142	2	1.25					0.540	
143	4	-0.43					0.483	
145	2	1.25					0.540	
146	4	0.01					0.498	
158	0	-2.36					0.417	
180	4	-0.28					0.488	
185	4	-0.40		0.484				
190	4	0.44					0.513	
203	3	-0.92					0.466	
204	3	0.66					0.520	
205	2	1.04					0.533	
209	4	0.10	0.501					
212	0	14.44		0.990				
213	NR		< 1					
215	3	-0.81					0.470	
217	4	0.07					0.500	
221	1	-1.54						0.445
224	4	0.31					0.508	
227	0	-7.26			0.250			
234	4	-0.10						0.494
241	2	1.33						0.543
243	3	-0.51					0.480	
253	1	-1.66				0.441		
284	4	0.31						0.508
285	1	-1.69						0.440
289	4	-0.31					0.487	
290	3	-0.81		0.470				
292	3	-0.51						0.480
294	0	6.82					0.730	
297	0	7.26					0.745	
302	4	0.07			0.500			

Table 17. *Statistical summary of reported data for standard reference sample N-56 (Nutrient constituents)--Continued*

NH_3 + Organic N as N (Ammonia + organic Nitrogen as nitrogen) mg/L



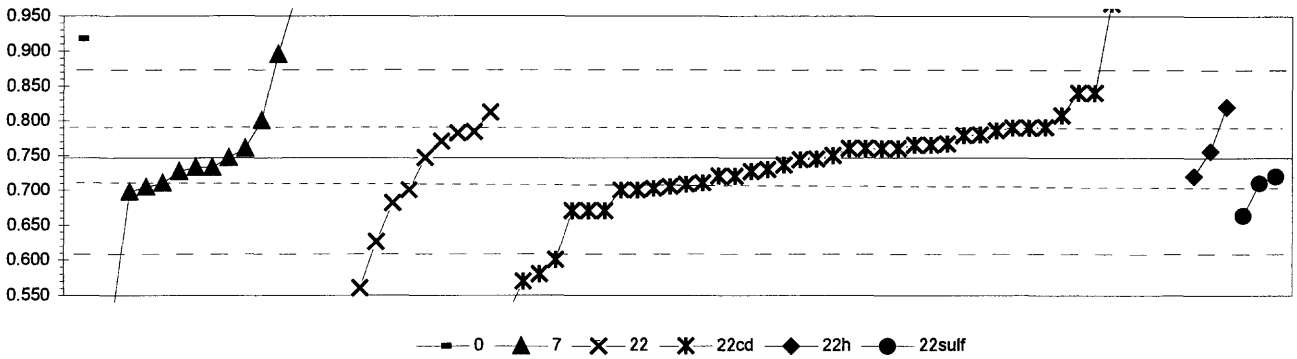
0. Other				22nitro. Color: nitroprusside				
22. Colorimetric				22p. Color: phenate				
22n. Color: Nesslerization				40. Ion selective electrode				
		N =	2	10	2	3	25	2
		Minimum =	0.994	0.500	0.350	0.650	0.440	0.579
		Maximum =	3.680	1.560	0.720	1.332	1.241	0.700
		Median =		0.740			0.756	
		F-pseudosigma =		0.176			0.093	

MPV = 0.750
F-pseudosigma = 0.097
N = 44
Hu = 0.823
HI = 0.692

Lab	Rating	Z-value	0	22	22n	22nitro	22p	40
1	3	-0.94					0.659	
3	0	3.62		1.100				
9	4	0.31					0.780	
10	4	0.00					0.750	
11	3	0.52		0.800				
12	1	-1.55					0.600	
16	4	0.00		0.750				
23	3	-0.62					0.690	
25	0	8.37		1.560				
38	4	-0.31			0.720			
46	1	-1.96					0.560	
48	4	-0.10					0.740	
59	3	0.52					0.800	
70	4	0.07					0.757	
87	4	0.21					0.770	
89	4	0.31					0.780	
90	3	-0.58					0.694	
96	4	-0.24					0.727	
97	4	-0.41		0.710				
102	2	-1.03				0.650		
105	NR			< 1				
113	0	2.45					0.987	
118	2	1.14				0.860		
127	3	0.64					0.812	
134	4	0.33					0.782	
138	3	0.72					0.820	
140	4	-0.21		0.730				
142	3	0.78					0.825	
145	3	-0.83					0.670	
146	2	-1.04					0.649	
180	4	0.04					0.754	
190	1	1.70					0.914	
204	4	-0.38		0.713				
212	0	2.07		0.950				
213	NR		< 1					
215	0	-2.58					< 0.5	
217	0	-3.20					0.440	
221	0	2.52	0.994					
224	4	0.24					0.773	
227	0	-4.13			0.350			
241	3	-0.52						0.700
253	0	6.02				1.332		
284	0	30.29	3.680					
285	1	-1.77						0.579
289	4	-0.21		0.730				
290	0	-2.58		0.500				
297	1	1.83					0.927	

Table 17. *Statistical summary of reported data for standard reference sample N-56 (Nutrient constituents)--Continued*

$NO_3 + NO_2$ as N (Nitrate + Nitrite as Nitrogen) mg/L



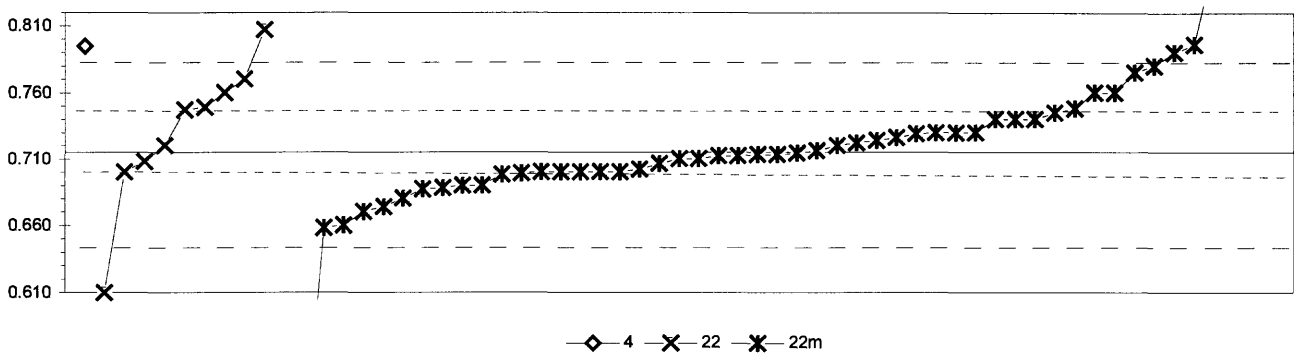
0. Other				22cd. Cd diazotization				
7. Ion chromatography				22h. Color: hydrazine diazotization				
22. Colorimetric				22sulf. Color: sulfanilamide				
		N =	1	17	9	43	3	3
		Minimum =	0.918	0.480	0.560	0.520	0.720	0.663
		Maximum =		3.280	0.812	2.640	0.820	0.720
		Median =		0.740	0.747	0.755		
		F-pseudosigma =		0.168	0.075	0.063		

MPV = 0.747
F-pseudosigma = 0.064
N = 76
Hu = 0.790
HI = 0.704

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
1	4	-0.31				0.727		
3	0	-2.93			0.560			
5	4	-0.27				0.730		
9	3	0.96				0.808		
10	4	0.20				0.760		
11	4	-0.42						0.720
12	4	0.20				0.760		
13	3	-0.67		0.704				
16	2	-1.04			0.681			
19	3	0.52				0.780		
23	3	0.67				0.790		
25	3	0.83		0.800				
30	4	-0.22		0.733				
38	3	0.61				0.786		
39	4	-0.22		0.733				
42	0	-3.56		0.520				
45	3	0.69				0.791		
46	4	0.50				0.779		
48	2	1.15					0.820	
53	0	2.68	0.918					
59	3	-0.58				0.710		
69	4	0.20				0.760		
70	2	-1.21				0.670		
84	0	2.32		0.895				
86	0	-3.56				0.520		
87	2	1.46				0.840		
88	0	3.47				0.968		
89	3	0.67				0.790		
90	4	0.14					0.756	
91	2	-1.21				0.670		
96	4	0.05				0.750		
97	4	0.36			0.770			
102	3	-0.74				0.700		
105	3	-0.74			0.700			
107	3	-0.71				0.702		
113	4	-0.17				0.736		
114	0	17.46				1.860		
118	4	-0.42					0.720	
127	4	0.00		0.747				
134	0	-2.62				0.580		
138	4	0.20				0.760		
140	1	-1.90			0.626			
142	3	0.55			0.782			
143	4	0.28				0.765		
145	0	-2.78				0.570		
146	4	0.31				0.767		
158	4	-0.05				0.744		
180	3	-0.61				0.708		
185	4	-0.03				0.745		
190	4	-0.17				0.736		
191	3	-0.58		0.710				
196	3	-0.78		0.697				
203	2	-1.32						0.663
204	4	0.28				0.765		
205	3	-0.66				0.705		
208	4	0.20		0.760				
209	0	-4.19		0.480				
212	2	1.46				0.840		
215	4	-0.42				0.720		
217	3	-0.58						0.710
221	3	0.58			0.784			
224	0	3.53		0.972				
227	0	4.25		1.018				
234	4	-0.31		0.727				
241	0	7.58		1.230				
243	3	-0.74				0.700		
253	4	0.00			0.747			
284	0	12.13				1.520		
285	2	1.02			0.812			
289	4	-0.42				0.720		
290	0	5.22				1.080		
291	0	-2.31				0.600		
292	2	-1.05		0.680				
294	2	-1.21				0.670		
297	0	29.69				2.640		
302	0	39.73		3.280				

Table 17. *Statistical summary of reported data for standard reference sample N-56 (Nutrient constituents)--Continued*

total P as P (total Phosphorus as phosphorus) mg/L



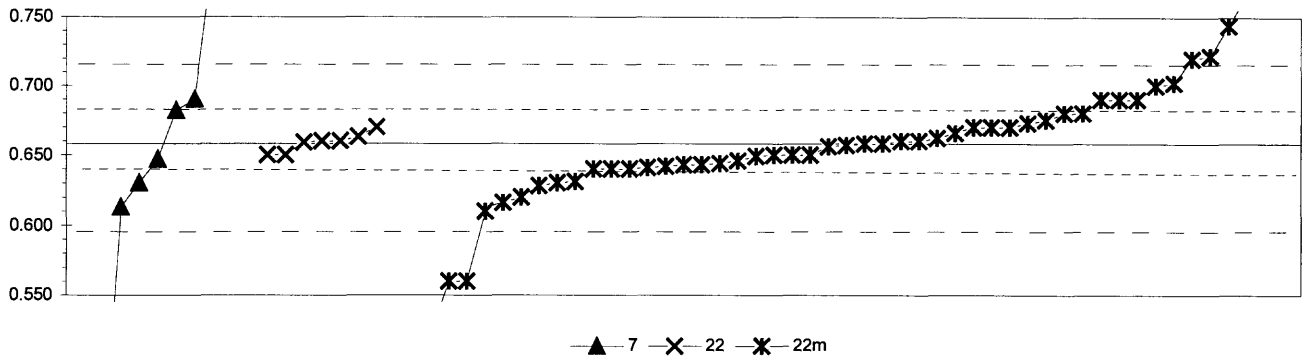
4. ICP			
22. Colorimetric			
22m. Color:phosphomolybdate			
N =	1	9	50
Minimum =	0.795	0.610	0.023
Maximum =		0.807	1.050
Median =		0.747	0.713
F-pseudosigma =		0.039	0.031

MPV =	0.715
F-pseudosigma =	0.035
N =	60
Hu =	0.747
HI =	0.700

Lab	Rating	Z-value	4	22	22m
1	3	-0.77			0.688
3	2	1.29		0.760	
9	4	-0.06			0.713
10	3	0.86			0.745
11	4	0.43			0.730
12	1	-1.58			0.660
13	4	0.14			0.720
16	3	0.98		0.749	
19	4	-0.14			0.710
22	4	-0.03			0.714
23	3	-1.00			0.680
38	4	0.40			0.729
39	3	-0.72			0.690
46	3	0.95			0.748
48	0	2.15			0.790
59	4	-0.43			0.700
70	4	0.32			0.726
86	0	9.62			1.050
87	1	1.72			0.775
89	4	0.43			0.730
91	4	0.43			0.730
96	2	-1.18			0.674
97	4	0.14		0.720	
102	3	-0.80			0.687
105	0	-3.01		0.610	
107	4	0.03			0.716
113	4	-0.09			0.712
118	0	7.61			0.980
127	4	-0.26			0.706
134	4	-0.37			0.702
138	2	1.29			0.760
140	4	-0.43		0.700	
142	4	-0.46			0.699
143	4	-0.06			0.713
145	1	1.87			0.780
146	4	0.26			0.724
158	4	-0.43			0.700
180	1	-1.64			0.658
185	0	2.32			0.796
190	4	-0.43			0.700
203	4	-0.49			0.698
204	4	0.20			0.722
212	3	-0.72			0.690
213	3	0.72			0.740
215	4	-0.43			0.700
217	4	-0.14			0.710
221	3	0.92		0.747	
224	4	-0.43			0.700
227	0	2.30	0.795		
234	2	1.29			0.760
241	4	-0.09			0.712
243	2	-1.29			0.670
284	1	1.58		0.770	
285	0	2.64		0.807	
287	0	-19.86			0.023
289	4	-0.20		0.708	
290	3	0.72			0.740
292	0	0.00			0.860
294	3	0.72			0.740
297	0	-6.49			0.489

Table 17. *Statistical summary of reported data for standard reference sample N-56 (Nutrient constituents)--Continued*

PO_4 as P (Orthophosphate as phosphorus) mg/L



7. Ion chromatography			
22. Colorimetric			
22m. Color:phosphomolybdate			
N =	10	7	52
Minimum =	0.377	0.650	0.030
Maximum =	1.850	0.670	2.100
Median =	0.665	0.660	0.657
F-pseudosigma =	0.135	0.005	0.030

MPV = 0.658
F-pseudosigma = 0.030
N = 69
Hu = 0.681
Hl = 0.640

Lab	Rating	Z-value	7	22	22m
1	3	-0.92			0.630
3	4	0.07		0.660	
5	4	-0.07			0.656
9	4	-0.49			0.643
10	3	-0.56			0.641
11	0	-3.22			0.560
12	2	-1.25			0.620
13	0	-9.25	0.377		
16	4	0.03		0.659	
19	4	-0.26			0.650
23	4	-0.26			0.650
25	0	11.48			1.007
30	0	10.63	0.981		
38	4	0.00			0.658
39	4	-0.26			0.650
46	0	-5.20			0.500
48	4	0.07			0.660
53	2	1.05			0.690
59	4	0.07			0.660
70	4	-0.03			0.657
84	0	4.51	0.795		
86	3	-0.59			0.640
87	2	1.05			0.690
88	0	3.55			0.766
89	4	0.39			0.670
96	4	-0.39			0.646
97	4	0.16		0.663	
102	3	-0.53			0.642
105	4	-0.26		0.650	
107	4	-0.46			0.644
113	4	-0.30			0.649
114	1	2.04			0.720
118	0	-3.22			0.560
127	3	0.79	0.682		
134	4	0.26			0.666
138	3	-0.59			0.640
140	4	-0.26		0.650	
142	0	2.11			0.722
143	4	-0.49			0.643
145	1	-1.58			0.610
146	2	-1.38			0.616
158	3	-0.89			0.631
180	0	2.83			0.744
185	0	4.21			0.786
190	4	0.00			0.658
191	3	-0.92	0.630		
196	4	-0.36	0.647		
203	3	-0.99			0.628
204	3	0.56			0.675
208	2	1.05	0.690		
212	3	0.72			0.680
213	3	0.72			0.680
215	3	-0.59			0.640
217	4	0.39			0.670
221	4	0.07		0.660	
224	2	1.45			0.702
227	2	1.05			0.690
234	0	-8.06	0.413		
241	2	-1.48	0.613		
253	4	0.13			0.662
284	2	1.38			0.700
285	4	0.39		0.670	
287	0	-20.66			0.030
289	4	0.49			0.673
290	0	-4.54			0.520
292	3	0.89			0.685
294	4	0.39			0.670
297	0	47.45			2.100
302	0	39.22	1.850		

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0	Other/Not reported		
1	AA: direct, air	=	atomic absorption: direct, air
2	AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3	AA: graphite furnace	=	atomic absorption: graphite furnace
4	ICP	=	inductively coupled plasma
5	DCP	=	direct current plasma
6	ICP/MS	=	inductively coupled plasma / mass spectrometry
7	IC	=	ion chromatography
12	Flame emission	=	flame emission
20	Titrate: color	=	titration: colorimetric (color reagent specified)
21	Titrate: electro	=	titration: electrometric
22	Color:	=	colorimetric (color reagent specified)
40	ion electrode	=	ion selective electrode
41	Electro	=	electrometric: (type meter specified)
50	Gravimetric	=	gravimetric: (precipitate specified)
51	Turbidimetric	=	turbidimetric: (precipitate specified)

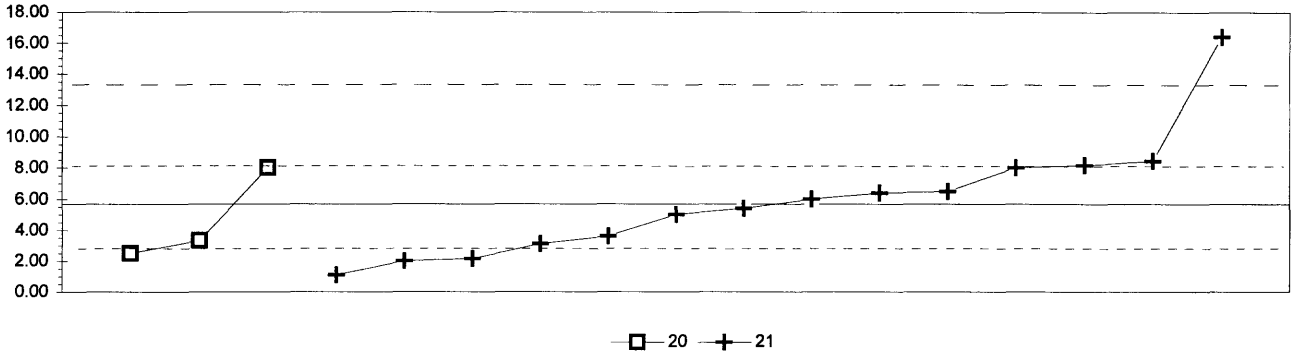
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
mg/L	=	milligrams per liter
µS/cm	=	microsiemens per centimeter at 25^0 C
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
Acid	Acidity as $CaCO_3$	110
Ca	Calcium	111
Cl	Chloride	112
F	Fluoride	113
K	Potassium	114
Mg	Magnesium	115
Na	Sodium	116
pH		117
PO_4 as P	Orthophosphate as Phosphorus	118
SO_4	Sulfate	119
Sp Cond	Specific Conductance	120

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Acidity (as $CaCO_3$) mg/L



20. Titrate: colorimetric
21. Titrate: electrometric

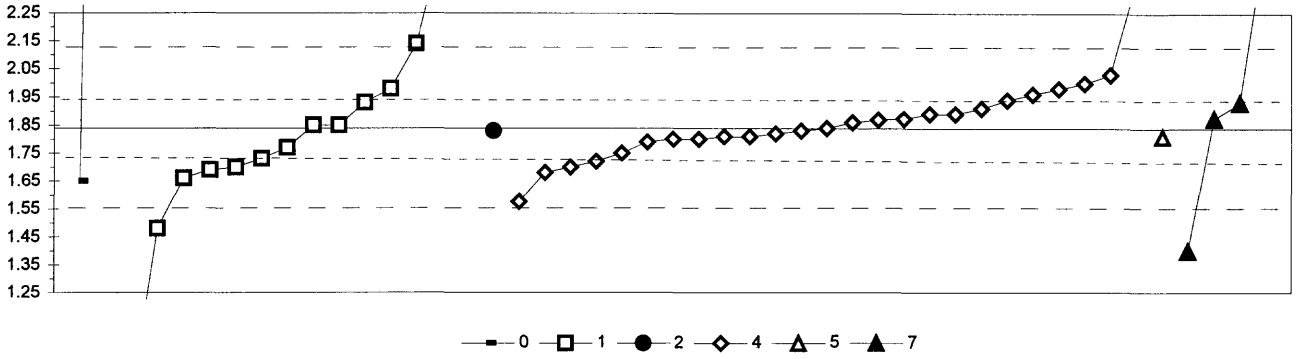
N =	3	14
Minimum =	2.50	1.10
Maximum =	8.00	16.40
Median =		6.00
F-pseudosigma =		3.63

MPV =	5.70
F-pseudosigma =	3.85
N =	17
Hu =	8.00
Hl =	2.80

Lab	Rating	Z-value	20	21
3	NR			< 10
5	3	0.71		8.44
8	4	0.08		6.00
25	NR			< 8
38	3	0.64		8.18
39	3	-0.92		2.16
42	0	2.78		16.40
59	4	-0.18		5.00
89	3	-0.67		3.10
119	3	0.60		8.00
136	4	-0.08		5.40
141	2	-1.19		1.10
146	NR			< 10
215	3	-0.83	2.50	
228	4	0.18		6.39
237	4	0.21		6.50
246	3	0.60	8.00	
247	3	-0.55		3.60
283	3	-0.61	3.33	
297	3	-0.96		2.00

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Ca (Calcium) mg/L

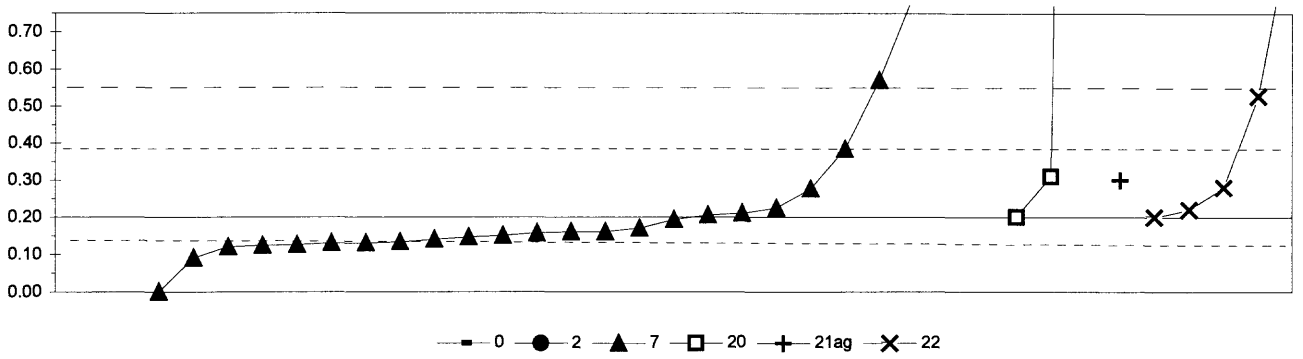


0. Other				4. ICP				
1. AA: direct air				5. DCP				
2. AA: direct nitrous oxide				7. ion chromatography				
		N =	2	14	1	25	1	5
		Minimum =	1.65	0.87	1.83	1.58	1.81	1.40
		Maximum =	6.34	4.67		2.36		2.58
		Median =		1.77		1.84		
		F-pseudosigma =		0.18		0.08		
Lab	Rating	Z-value	0	1	2	4	5	7
1	4	-0.21				1.81		
2	4	0.24						1.87
3	3	0.83				1.96		
5	4	0.21				1.87		
8	4	0.00				1.84		
23	0	19.58		4.67				
25	4	-0.35				1.79		
26	0	4.70						2.52
33	4	-0.21					1.81	
38	4	-0.07			1.83			
39	4	0.48				1.91		
46	4	-0.28				1.80		
48	0	31.13	6.34					
59	3	-0.97		1.70				
64	3	0.97		1.98				
83	4	-0.07				1.83		
86	4	-0.14				1.82		
89	2	-1.25		1.66				
100	3	0.69				1.94		
105	0	2.08		2.14				
107	2	-1.04		1.69				
110	3	0.62		1.93				
119	2	1.11				2.00		
134	4	0.23				1.87		
138	4	0.14				1.86		
140	4	-0.48		1.77				
141	2	-1.11				1.68		
145	4	-0.21				1.81		
146	3	-0.83				1.72		
180	2	1.31				2.03		
190	0	-3.04						1.40
196	0	-6.70		0.87				
203	0	-2.49		1.48				
204	3	-0.76		1.73				
209	0	3.60				2.36		
215	4	-0.28				1.80		
220	1	-1.82				1.58		
221	4	0.07		1.85				
228	0	5.12						2.58
237	3	0.62						1.93
241	4	0.07		1.85				
246	3	-0.62				1.75		
247	3	1.00				1.98		
255	4	0.35				1.89		
283	4	0.35				1.89		
284	2	-1.31	1.65					
287	0	4.57		2.50				
297	3	-0.97				1.70		

MPV =	1.84
F-pseudosigma =	0.14
N =	48
Hu =	1.94
Hl =	1.74

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Cl (Chloride) mg/L

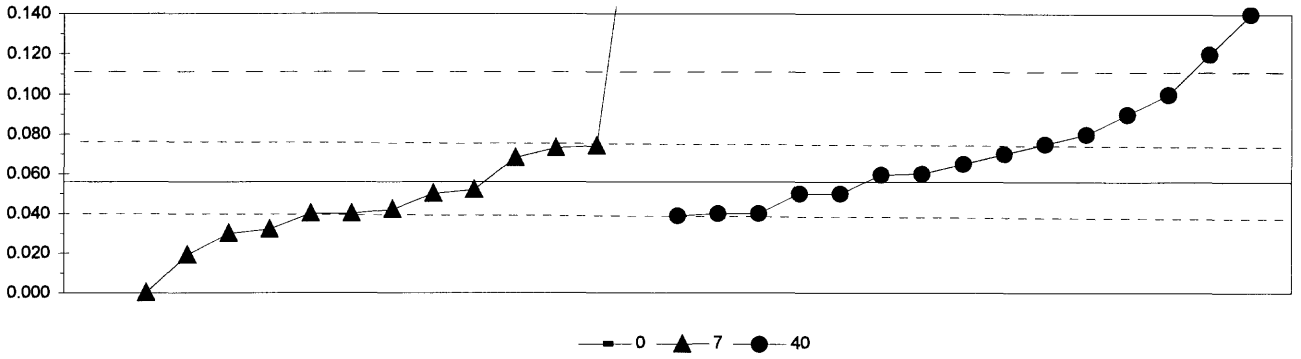


0. Other				20. Titrate: colorimetric				
2. AA: direct nitrous oxide				20hg: Titrate: mercury				
7. Ion chromatography				22. Colorimetric				
		N =	1	1	25	3	0	5
		Minimum =	1.11	1.00	0.00	0.20	< 0.6	0.20
		Maximum =			1.70	6.00	< 2	1.00
		Median =			0.16			
		F-pseudosigma =			0.06			
Lab	Rating	Z-value	0	2	7	20	21ag	22
1	4	-0.30			0.15			
2	4	-0.24			0.16			
3	1	1.81						0.53
5	0	5.03	1.11					
8	4	0.06			0.21			
23	4	-0.22			0.16			
25	NR				< 1			
26	4	-0.37			0.13			
30.1	4	-0.28			0.15			
33	4	-0.39			0.13			
39	4	0.00				0.20		
42	NR				< 0.5			
46	4	0.00						0.20
48	0	4.42						1.00
59	0	8.29			1.70			
64	4	-0.22			0.16			
89	3	0.61				0.31		
96	NR							< 2
100	NR				< 4			
105	NR				< 0.5			
107	NR						< 0.6	
110	4	0.03			0.21			
119	NR	-1.11			0.00			
134	4	-0.04			0.19			
138	NR				< 0.2			
140	4	0.44						0.28
141	4	-0.41			0.13			
145	NR				< 0.5			
146	NR							< 1
158	0	3.30			0.80			
180	2	1.02			0.38			
190	4	-0.44			0.12			
196	4	0.43			0.28			
203	NR						< 2	
204	NR		< 1					
209	4	-0.17			0.17			
215	0	32.07				6.00		
220	4	0.11						0.22
221	0	4.42		1.00				
224	4	0.13			0.22			
228	3	-0.61			0.09			
237	4	-0.33			0.14			
241	4	-0.43			0.12			
246	NR				< 1.5			
247	0	5.78			1.24			
283	1	2.05			0.57			
284	NR		< 5					
294	4	-0.39			0.13			
297	NR							< 1

MPV =	0.20
F-pseudosigma =	0.18
N =	35
Hu =	0.38
HI =	0.14

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

F (Fluoride) mg/L



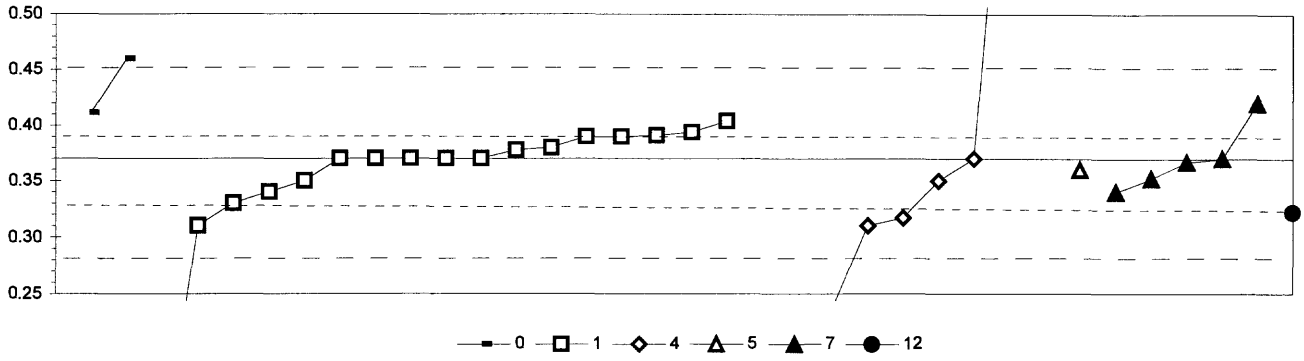
0. Other					
7. Ion chromatography					
40. Ion selective electrode					
		N =	1	13	15
		Minimum =	0.180	0.000	0.039
		Maximum =		0.220	0.140
		Median =		0.041	0.065
		F-pseudosigma =		0.023	0.026

MPV =	0.056
F-pseudosigma =	0.028
N =	29
Hu =	0.078
HI =	0.040

Lab	Rating	Z-value	0	7	40
1	3	0.62		0.073	
2	3	-0.86		0.032	
3	NR				< 0.1
8	3	-0.57		0.040	
23	3	-0.57		0.040	
25	1	1.59			0.100
33	3	-0.93		0.030	
39	4	0.33			0.065
42	4	-0.14		0.052	
48	3	0.51			0.070
59	0	2.31			0.120
83	NR				< 0.1
89	4	-0.21			0.050
100	3	0.69			0.075
105	NR			< 0.2	
107	3	-0.57			0.040
110	4	-0.21			0.050
119	3	-0.57			0.040
134	4	0.15			0.060
138	NR				< 0.1
140	3	-0.60			0.039
141	4	-0.50		0.042	
145	NR			< 0.2	
146	NR				< 0.2
158	3	0.65		0.074	
180	NR			< 0.05	
190	NR	-2.01		0.000	
196	2	-1.32		0.019	
215	4	0.14			0.060
241	0	3.03			0.140
246	NR			< 0.5	
247	4	0.43		0.068	
255	3	0.87			0.080
283	0	5.91		0.220	
284	0	4.47	0.180		
287	2	1.23			0.090
294	4	-0.21		0.050	

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

K (Potassium) mg/L

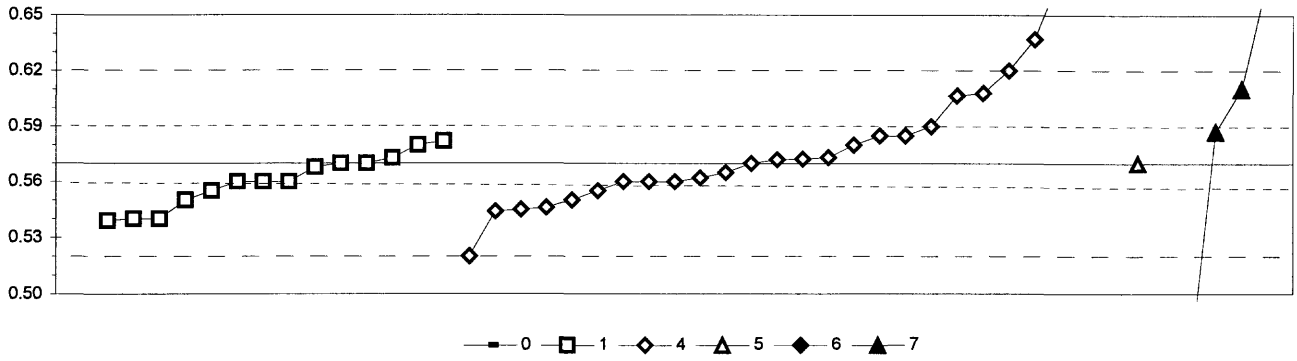


0. Other				5. DCP				
1. AA: direct air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	2	17	9	1	5	1
		Minimum =	0.41	0.10	0.00	0.36	0.34	0.32
		Maximum =	0.46	0.40	0.80		0.42	
		Median =		0.37	0.31			
		F-pseudosigma =		0.03	0.10			
Lab	Rating	Z-value	0	1	4	5	7	12
1	4	0.00		0.37				
2	4	-0.40					0.35	
3	2	-1.35			0.31			
5	NR				< 1			
8	NR				< 1			
23	3	-0.90		0.33				
25	NR				< 1.21			
26	4	-0.07					0.37	
33	4	-0.22				0.36		
38	4	0.22		0.38				
48	1	2.02	0.46					
59	3	0.54		0.39				
64	4	0.00		0.37				
83	4	0.45		0.39				
89	3	-0.67		0.34				
100	NR				< 1			
105	NR				< 0.5			
107	4	0.45		0.39				
110	4	0.00		0.37				
119	NR	-8.32			0.00			
134	4	0.47		0.39				
138	4	0.00			0.37			
140	3	0.76		0.40				
141	4	-0.45			0.35			
145	0	-3.82			0.20			
146	NR				< 1			
180	NR				< .422			
190	3	-0.67					0.34	
196	4	0.18		0.38				
203	4	0.00		0.37				
204	2	-1.08						0.32
209	2	-1.35		0.31				
215	NR				< 1			
221	4	-0.45		0.35				
228	4	0.00					0.37	
237	2	1.12					0.42	
241	0	-6.07		0.10				
246	NR				< 0.5			
247	0	9.10			0.73			
255	0	9.67			0.80			
283	0	-2.99			0.24			
284	3	0.93	0.41					
287	4	0.00		0.37				
297	2	-1.19			0.32			

MPV =	0.37
F-pseudosigma =	0.04
N =	35
Hu =	0.39
HI =	0.33

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Mg (Magnesium) mg/L

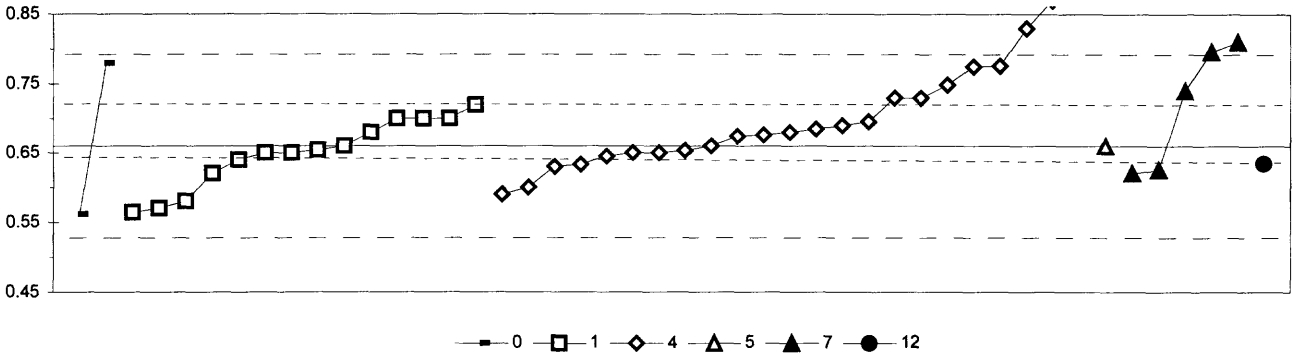


0. Other				5. DCP				
1. AA: direct air				6. ICP/MS				
4. ICP				7. Ion chromatography				
		N =	1	14	26	1	1	5
		Minimum =	0.49	0.54	0.52	0.57	0.85	0.46
		Maximum =		0.58	1.00			0.69
		Median =		0.56	0.57			
		F-pseudosigma =		0.01	0.03			
Lab	Rating	Z-value	0	1	4	5	6	7
1	3	0.81			0.59			
2	3	0.68						0.59
3	4	0.40			0.58			
5	4	-0.40			0.56			
8	4	0.00			0.57			
23	4	-0.40		0.56				
25	4	-0.20			0.57			
26	0	4.83						0.69
33	4	0.00				0.57		
38	2	-1.25		0.54				
39	4	0.08			0.57			
46	3	-0.60			0.56			
48	0	11.28					0.85	
59	4	0.12		0.57				
64	4	0.00		0.57				
83	4	-0.32			0.56			
86	3	-0.97			0.55			
89	4	-0.40		0.56				
100	0	4.11			0.67			
105	1	2.01			0.62			
107	3	-0.81		0.55				
110	4	0.40		0.58				
119	0	17.32			1.00			
134	4	0.13			0.57			
138	4	-0.40			0.56			
140	4	0.00		0.57				
141	1	-2.01			0.52			
145	4	-0.40			0.56			
146	2	-1.05			0.54			
180	3	0.60			0.59			
190	0	-4.43						0.46
196	4	0.48		0.58				
203	2	-1.21		0.54				
204	3	-0.60		0.56				
209	0	7.65			0.76			
215	3	-0.81			0.55			
220	2	1.47			0.61			
221	4	-0.08		0.57				
228	0	4.03						0.67
237	1	1.61						0.61
241	4	-0.40		0.56				
246	4	0.10			0.57			
247	3	0.60			0.59			
255	1	1.53			0.61			
283	0	2.70			0.64			
284	0	-3.10	0.49					
287	2	-1.21		0.54				
297	2	-1.01			0.55			

MPV =	0.57
F-pseudosigma =	0.02
N =	48
Hu =	0.59
Hl =	0.56

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Na (Sodium) mg/L

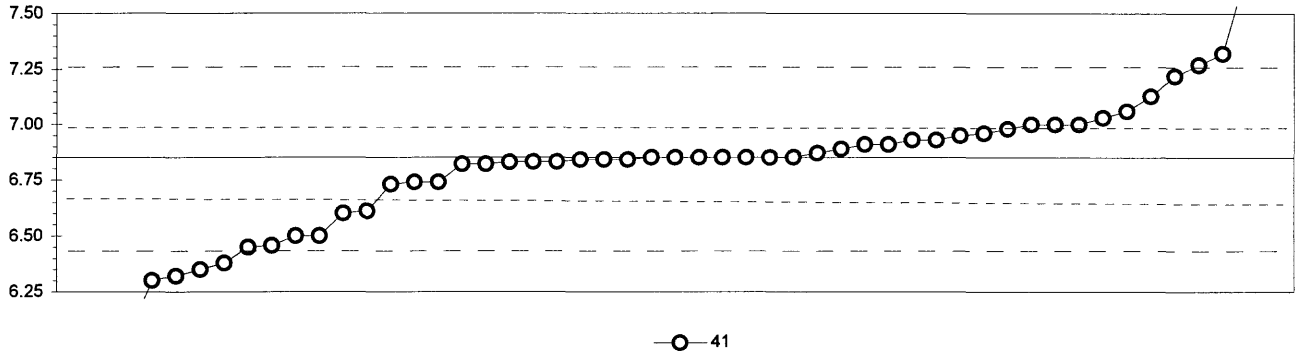


0. Other				5. DCP				
1. AA: direct air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	2	14	23	1	5	1
		Minimum =	0.56	0.56	0.59	0.66	0.62	0.64
		Maximum =	0.78	0.72	2.00		0.81	
		Median =		0.65	0.68			
		F-pseudosigma =		0.06	0.06			
Lab	Rating	Z-value	0	1	4	5	7	12
1	4	0.32			0.68			
2	0	2.16					0.80	
3	4	-0.48			0.63			
5	2	1.11			0.73			
8	4	-0.16			0.65			
23	4	-0.16		0.65				
25	4	0.25			0.68			
26	3	-0.56					0.63	
33	4	0.00				0.66		
38	3	-0.63		0.62				
39	4	-0.24			0.65			
46	4	-0.11			0.65			
48	1	1.90	0.78					
59	1	-1.52		0.56				
64	4	-0.16		0.65				
83	4	-0.16			0.65			
86	4	-0.43			0.63			
89	2	-1.27		0.58				
100	0	3.32			0.87			
105	2	1.11			0.73			
107	4	0.32		0.68				
110	4	0.00		0.66				
119	0	21.27			2.00			
134	3	0.63		0.70				
138	4	0.00			0.66			
140	3	0.63		0.70				
141	4	0.48			0.69			
145	3	-0.95			0.60			
146	0	-2.54			< 0.5			
180	2	1.41			0.75			
190	3	-0.63					0.62	
196	4	-0.10		0.65				
203	2	-1.43		0.57				
204	4	-0.40						0.64
209	4	-0.32		0.64				
215	2	-1.11			0.59			
220	4	0.23			0.67			
221	3	0.95		0.72				
228	0	2.38					0.81	
237	2	1.27					0.74	
241	3	0.63		0.70				
246	3	0.56			0.70			
247	0	2.83			0.83			
255	4	0.40			0.69			
283	1	1.84			0.78			
284	1	-1.57	0.56					
297	1	1.83			0.78			

MPV =	0.66
F-pseudosigma =	0.06
N =	46
Hu =	0.72
HI =	0.64

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

pH



41. Direct reading

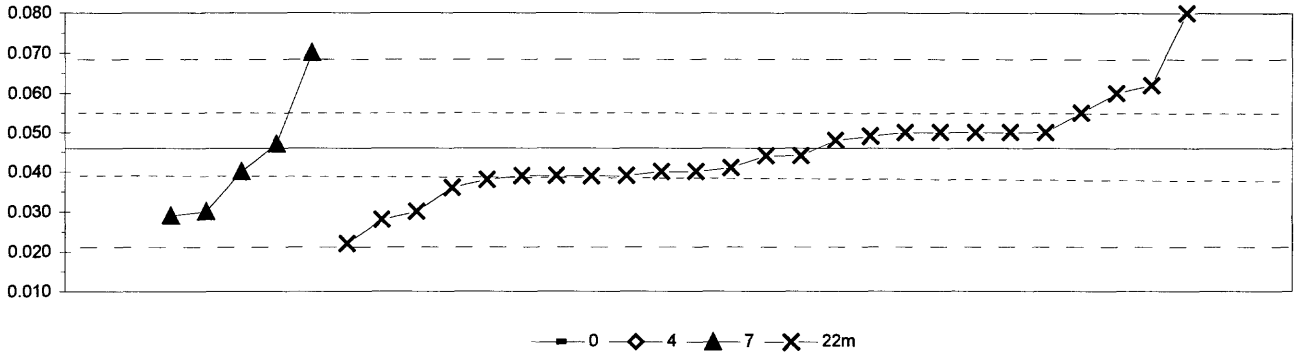
N =	52
Minimum =	5.93
Maximum =	8.07
Median =	6.85
F-pseudosigma =	0.21

MPV =	6.85
F-pseudosigma =	0.21
Rating Criterion =	0.34 **
N =	52
Hu =	6.96
Hl =	6.67

Lab	Rating	Z-value	41
1	4	0.00	6.85
2	4	-0.06	6.83
3	4	0.00	6.85
5	2	-1.47	6.35
8	4	0.32	6.96
23	2	1.09	7.22
25	3	0.62	7.06
26	2	-1.38	6.38
30.1	3	0.82	7.13
33	4	-0.32	6.74
38	4	0.44	7.00
39	4	-0.06	6.83
42	0	2.47	7.69
46	0	3.59	8.07
48	2	-1.03	6.50
59	2	-1.18	6.45
64	4	0.29	6.95
86	4	-0.09	6.82
89	2	1.24	7.27
96	4	0.00	6.85
100	4	0.24	6.93
107	4	0.24	6.93
110	4	0.01	6.85
119	4	0.12	6.89
134	2	-1.16	6.46
136	4	0.06	6.87
138	4	0.18	6.91
140	1	-1.62	6.30
141	4	-0.03	6.84
146	2	1.38	7.32
158	4	0.00	6.85
180	4	-0.06	6.83
190	3	-0.74	6.60
196	4	-0.35	6.73
203	0	-2.71	5.93
204	4	-0.03	6.84
209	4	-0.03	6.84
215	4	0.44	7.00
221	4	0.00	6.85
224	3	0.53	7.03
228	4	0.00	6.85
237	4	0.38	6.98
241	0	-2.35	6.05
243	4	-0.32	6.74
244	4	0.18	6.91
246	4	-0.09	6.82
247	0	3.71	8.11
255	4	0.44	7.00
283	3	-0.71	6.61
284	1	-1.56	6.32
287	0	-2.65	5.95
294	2	-1.03	6.50

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

PO_4 as P (Orthophosphate as phosphorus) mg/L



0. Other
4. ICP
7. Ion chromatography

22m. Color: phosphomolybdate

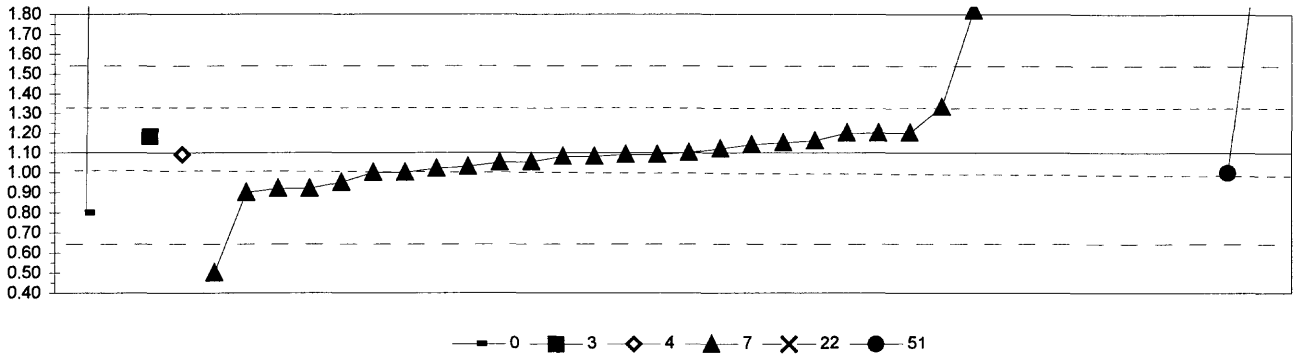
	0	0	5	29
N =	0	0	5	29
Minimum =	< 0.1	< 0.25	0.029	0.022
Maximum =			0.070	0.460
Median =				0.048
F-pseudosigma =				0.012

MPV = 0.046
F-pseudosigma = 0.012
N = 34
Hu = 0.055
HI = 0.039

Lab	Rating	Z-value	0	4	7	22m
1	3	-0.55				0.039
3	4	0.21				0.048
5	3	-0.55				0.039
8	0	-3.00			< 0.01	
23	2	-1.31			0.030	
25	2	-1.48				0.028
33	4	-0.46			0.040	
38	3	-0.63				0.038
39	3	-0.80				0.036
42	NR				< 0.05	
46	3	-0.55				0.039
48	2	1.39				0.062
83	3	0.80				0.055
89	4	0.38				0.050
96	4	-0.46				0.040
100	NR					< 0.5
105	0	34.95				0.460
107	4	-0.13				0.044
119	1	-1.98				0.022
134	4	-0.46				0.040
138	0	34.95				0.460
140	0	2.91				0.080
141	4	0.38				0.050
146	NR					< 0.05
158	0	2.07			0.070	
180	4	0.38				0.050
190	0	32.42				0.430
196	2	-1.39			0.029	
203	3	-0.55				0.039
204	4	0.30				0.049
215	2	-1.31				0.030
220	4	-0.38				0.041
221	4	0.38				0.050
224	4	0.38				0.050
241	4	0.13			0.047	
246	NR			< 0.25		
283	2	1.22				0.060
284	NR		< 0.1			
287	NR					< 0.1
294	4	-0.13				0.044
297	0	10.33				0.168

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

SO_4 (Sulfate) mg/L

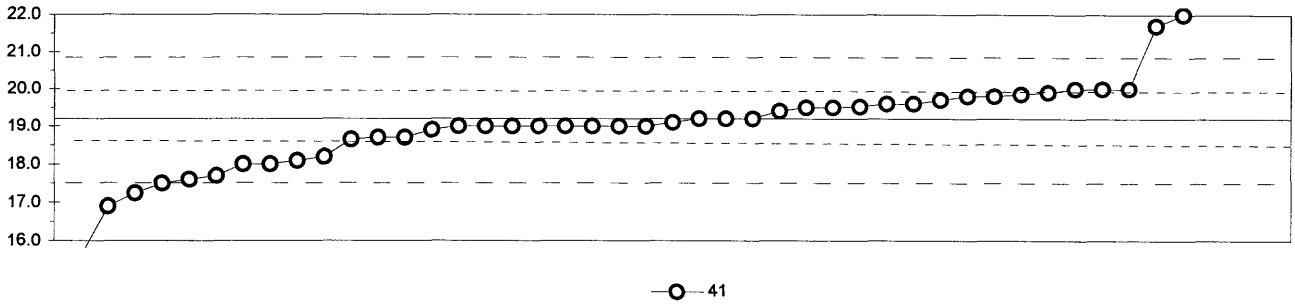


0. Other				7. Ion chromatography				
3. AA: graphite furnace				22. Colorimetric				
4. ICP				51. Turbidimetric				
		N =	2	1	1	31	0	3
		Minimum =	0.80	1.18	1.09	0.50	< 2	1.00
		Maximum =	20.00			7.44		4.00
		Median =				1.10		
		F-pseudosigma =				0.13		
Lab	Rating	Z-value	0	3	4	7	22	51
1	4	0.17				1.14		
2	4	-0.20				1.05		
3	NR						< 10	
5	4	0.35		1.18				
8	4	0.43				1.20		
23	4	0.26				1.16		
25	NR					< 5		
26	4	-0.35				1.02		
30.1	4	-0.30				1.03		
33	4	-0.22				1.05		
34	NR							< 1
39	4	-0.43				1.00		
42	NR					< 2.5		
46	4	0.00				1.10		
48	NR							< 1
59	0	7.72				2.88		
64	4	-0.04				1.09		
83	4	-0.04			1.09			
89	4	0.43				1.20		
96	4	-0.43						1.00
100	NR					< 7		
105	3	-0.78				0.92		
110	4	0.08				1.12		
119	0	3.90				2.00		
134	4	-0.09				1.08		
138	4	-0.04				1.09		
140	NR							< 2
141	3	-0.87				0.90		
145	0	-2.60				0.50		
146	NR							< 5
158	0	4.77				2.20		
180	4	0.43				1.20		
196	4	0.22				1.15		
203	NR						< 2.5	
204	NR						< 2	
209	0	3.12				1.82		
220	0	4.90						2.23
221	2	-1.30	0.80					
224	3	1.00				1.33		
228	3	-0.65				0.95		
237	4	-0.09				1.08		
241	4	-0.43				1.00		
246	NR					< 2.5		
247	0	5.13				2.28		
283	0	7.94				2.93		
284	0	81.98	20.00					
287	0	12.58						4.00
294	3	-0.78				0.92		
297	0	27.50				7.44		

MPV =	1.10
F-pseudosigma =	0.23
N =	38
Hu =	1.33
HI =	1.02

Table 18. *Statistical summary of reported data for standard reference sample P-29 (low ionic strength constituents)--Continued*

Sp Cond (Specific Conductance) µS/cm



41. Direct reading

N =	47
Minimum =	15.6
Maximum =	1900.0
Median =	19.2
F-pseudosigma =	0.9

MPV =	19.2
F-pseudosigma =	0.9
N =	47
Hu =	19.9
HI =	18.7

Lab	Rating	Z-value	41
1	4	0.00	19.2
2	0	-4.24	15.6
3	2	-1.41	18.0
5	0	2206.3	1900.0
8	0	-2.70	16.9
23	1	-1.99	17.5
25	4	-0.23	19.0
26	3	0.70	19.8
33	2	-1.29	18.1
38	4	0.00	19.2
39	3	0.59	19.7
42	0	3.28	22.0
46	3	0.94	20.0
48	1	-1.76	17.7
59	2	-1.17	18.2
64	1	-1.88	17.6
86	4	0.47	19.6
89	4	0.35	19.5
96	4	0.23	19.4
100	4	-0.35	18.9
105	4	-0.12	19.1
107	3	0.70	19.8
119	4	-0.23	19.0
134	4	0.38	19.5
136	4	0.00	19.2
138	3	-0.59	18.7
140	3	0.82	19.9
141	4	0.47	19.6
145	0	-21.36	< 1
146	0	5.16	23.6
180	4	-0.23	19.0
193	3	-0.67	18.6
196	3	0.76	19.9
203	3	0.94	20.0
204	0	199.18	189.0
215	4	0.35	19.5
224	4	-0.23	19.0
228	3	-0.65	18.7
241	2	-1.41	18.0
243	4	-0.23	19.0
244	3	-0.59	18.7
246	3	0.94	20.0
247	4	-0.23	19.0
255	0	6.57	24.8
283	0	2.93	21.7
284	0	7.98	26.0
287	0	-2.30	17.2
297	4	-0.23	19.0

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported		
1. AA: direct, air	=	atomic absorption: direct air
2. AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma / mass spectrometry
7. IC	=	ion chromatography
10. AA: extraction	=	atomic absorption: extraction (chelating agent[s] specified)
11. AA: hydride	=	atomic absorption: hydride (reducing agent specified)
12. AA: flame emission	=	atomic absorption: flame emission
22. Color	=	colorimetric (color reagent specified)

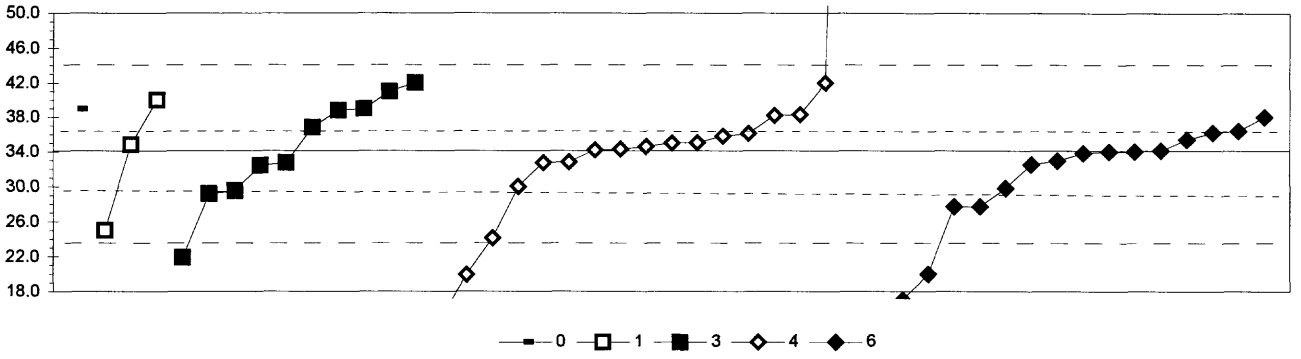
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
µg/L	=	micrograms per liter
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page	Constituent		page
Ag	Silver	122	Li	Lithium	135
Al	Aluminum	123	Mg	Magnesium	136
As	Arsenic	124	Mn	Manganese	137
B	Boron	125	Mo	Molybdenum	138
Ba	Barium	126	Na	Sodium	139
Be	Beryllium	127	Ni	Nickel	140
Ca	Calcium	128	Pb	Lead	141
Cd	Cadmium	129	Sb	Antimony	142
Co	Cobalt	130	Se	Selenium	143
Cr	Chromium	131	SiO_2	Silica	144
Cu	Copper	132	Sr	Strontium	145
Fe	Iron	133	V	Vanadium	146
K	Potassium	134	Zn	Zinc	147

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Ag (Silver) µg/L

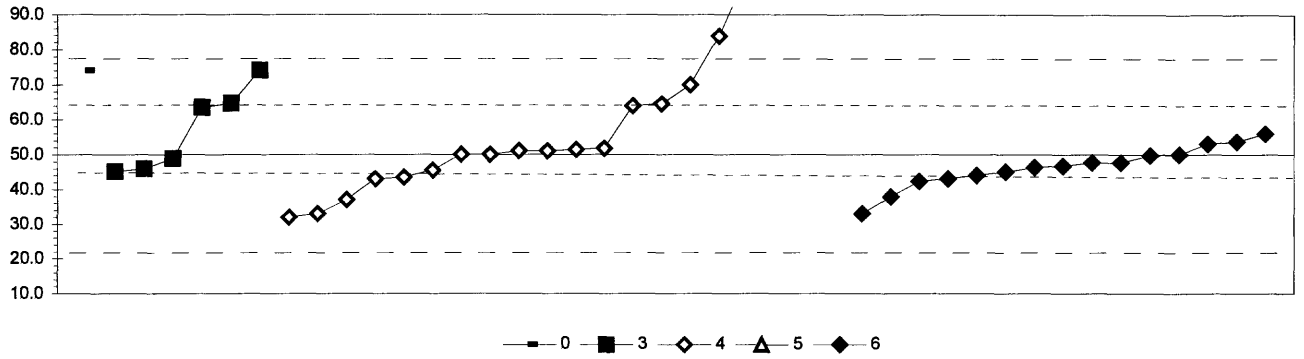


0. Other				4. ICP			
1. AA: direct, air				6. ICP/MS			
3. AA: graphite furnace							
		N =	1	3	10	17	16
		Minimum =	39.0	25.0	21.9	15.0	2.2
		Maximum =		40.0	42.0	144.0	38.0
		Median =			34.8	34.6	33.4
		F-pseudosigma =			7.0	2.5	5.2
Lab	Rating	Z-value	0	1	3	4	6
1	4	0.41					36.2
5	0	-2.37			21.9		
8	0	-3.71				15.0	
11	0	-2.76				19.9	
12	1	1.53			42.0		
13	4	0.39				36.1	
16	4	-0.02					34.0
18	4	0.17				35.0	
25	0	-5.40				< 6	
26	1	-1.94				24.1	
30.1	2	-1.24					27.7
32	4	-0.02					34.0
34	3	0.52			36.8		
42	4	-0.06					33.8
46	4	-0.27			32.7		
48	2	-1.24					27.7
59	4	-0.31					32.5
69	4	-0.33			32.4		
85	2	1.15		40.0			
86	4	0.04				34.3	
89	2	1.34			41.0		
100	3	0.80				38.2	
102	0	21.33				144.0	
105	4	0.45					36.4
119	4	0.14		34.8			
126	3	-0.89			29.5		
134	4	0.18				35.0	
138	4	0.00					34.1
140	1	-1.77		25.0			
141	4	-0.25				32.8	
142	4	-0.23					32.9
146	4	-0.27				32.7	
151	3	-0.83					29.8
180	4	0.10				34.6	
212	0	-2.74					20.0
215	3	0.95			39.0		
234	4	0.02				34.2	
235	3	0.91			38.8		
236	3	-0.80				30.0	
241	3	-0.95			29.2		
246	3	0.82				38.3	
247	4	0.25					35.4
255	4	0.33				35.8	
283	0	-3.32					17.0
284	3	0.95	39.0				
292	1	1.53				42.0	
300	0	-6.19					2.2
304	3	0.76					38.0

MPV =	34.1
F-pseudosigma =	5.2
N =	47
Hu =	36.6
Hl =	29.7

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Al (Aluminum) µg/L



0. Other
3. AA: graphite furnace
4. ICP
5. DCP
6. ICP/MS

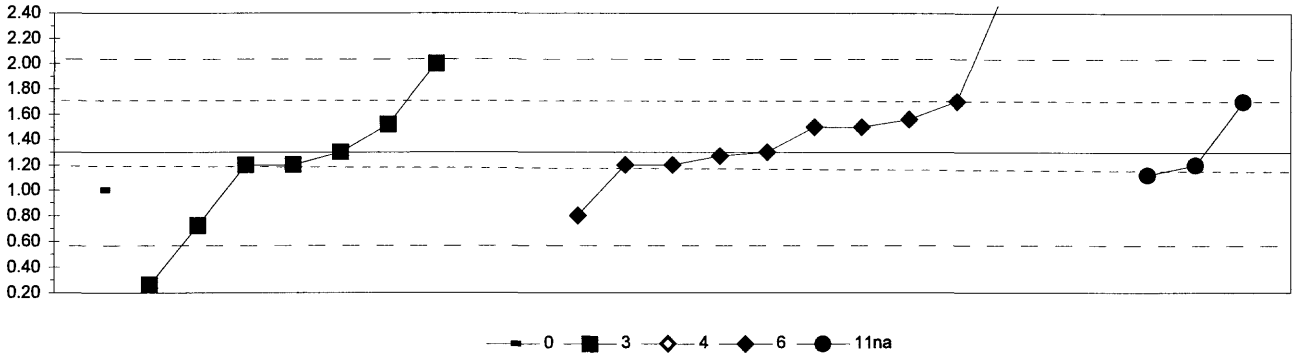
	0	3	4	5	6
N =	1	6	19	1	15
Minimum =	74.0	45.1	32.0	170.0	33.0
Maximum =		74.1	1159.0		56.0
Median =			51.0		46.7
F-pseudosigma =			16.9		4.7

MPV = 50.0
F-pseudosigma = 14.1
N = 42
Hu = 64.0
HI = 45.0

Lab	Rating	Z-value	0	3	4	5	6
1	4	-0.26					46.3
5	4	0.07			51.0		
8	3	-0.92			37.0		
13	4	-0.35		45.1			
16	4	0.43					56.0
18	NR				< 100		
25	0	-2.20			< 19		
26	4	-0.08		48.9			
32	4	-0.36					45.0
33	0	8.52				170.0	
42	3	-0.55					42.3
46	4	0.10			51.4		
48	4	0.21					53.0
59	3	-0.86					37.9
69	NR			< 50			
83	2	-1.21			33.0		
85	0	-2.84			< 10		
89	1	1.71		74.1			
100	2	1.42			70.0		
102	4	-0.50			43.0		
105	4	-0.23					46.7
119	4	-0.49					43.1
134	4	-0.46			43.5		
136	0	78.74			1159.0		
138	4	0.12			51.7		
141	NR				< 100		
142	3	0.99			64.0		
145	0	6.67			144.0		
146	NR				< 200		
151	2	-1.21					33.0
180	0	2.40			83.8		
191	4	0.00					50.0
204	4	-0.43					44.0
212	NR				< 100		
215	4	0.00			50.0		
220	0	3.69			102.0		
221	3	0.96		63.5			
234	4	-0.32			45.5		
235	4	-0.16					47.7
236	4	0.07			51.0		
241	2	1.04		64.7			
246	2	1.03			64.5		
247	4	0.26					53.7
254	4	0.00			50.0		
255	NR				< 34		
283	2	-1.28			32.0		
284	1	1.70	74.0				
287	4	-0.28		46.0			
292	0	-2.84			< 10		
300	4	-0.02					49.7
304	4	-0.16					47.7

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

As (Arsenic) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS
11. AA: hydride NaBH4

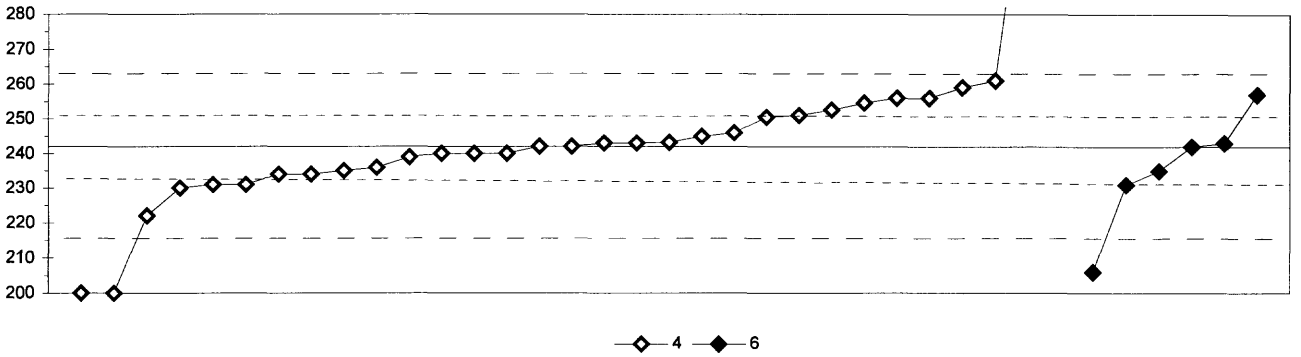
	0	3	4	6	11na
N =	1	7	2	12	3
Minimum =	1.00	0.26	19.00	0.80	1.12
Maximum =		2.00	45.00	2.88	1.70
Median =		1.20		1.50	
F-pseudosigma =		0.33		0.67	

MPV = 1.30
F-pseudosigma = 0.37
N = 25
Hu = 1.70
Hl = 1.20

Lab	Rating	Z-value	0	3	4	6	11na
1	2	1.08					1.70
5	3	0.59		1.52			
8	4	-0.27					1.20
13	NR			< 5			
16	4	-0.27				1.20	
18	4	-0.27		1.20			
25	NR				< 50		
26	4	-0.49					1.12
30.1	4	0.00				1.30	
32	4	-0.27				1.20	
42	0	3.48				2.59	
48	2	-1.35				0.80	
59	2	1.08				1.70	
69	NR			< 5			
89	NR						< 2
100	NR			< 2			
102	NR				< 15		
105	NR					< 4	
119	NR						< 2
134	0	-2.81		0.26			
136	0	117.90			45.00		
138	NR					< 2	
141	1	1.89		2.00			
142	0	4.26				2.88	
145	0	47.75			19.00		
146	NR				< 10		
151	3	0.54				1.50	
180	NR				< 40.1		
191	4	-0.08				1.27	
204	0	4.02				2.79	
212	NR					< 5	
215	NR			< 5			
220	4	-0.27		1.20			
221	4	0.00		1.30			
234	1	-1.56		0.72			
236	NR				< 35		
241	NR			< 5			
246	NR				< 65		
247	NR					< 2	
254	NR				< 110		
255	NR			< 2			
283	NR					< 5	
284	3	-0.81	1.00				
292	NR			< 3			
300	3	0.70				1.56	
304	3	0.54				1.50	

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

B (Boron) µg/L



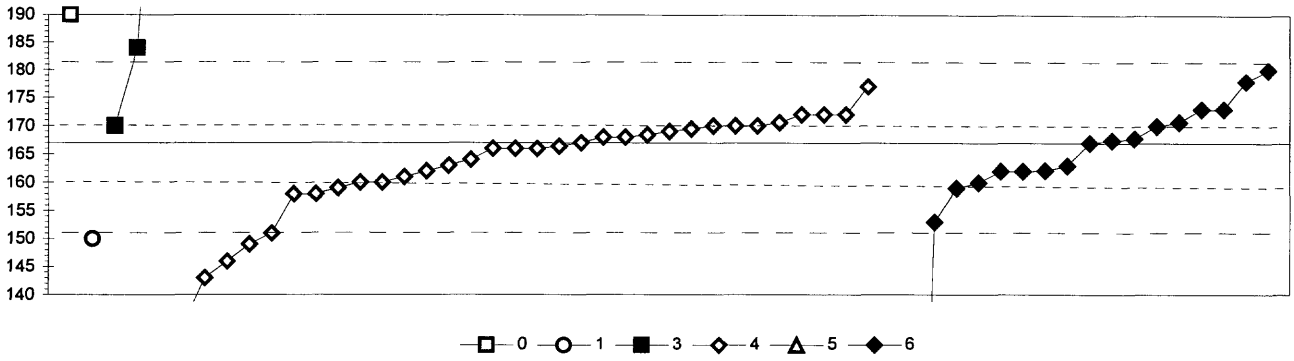
4. ICP			
6. ICP/MS			
N =	31	6	
Minimum =	200	206	
Maximum =	354	257	
Median =	242		
F-pseudosigma =	13		

MPV =	242
F-pseudosigma =	13
N =	37
Hu =	251
Hl =	234

Lab	Rating	Z-value	4	6
1	4	0.00	242	
5	4	0.24	245	
8	1	-1.59	222	
11	4	0.08	243	
16	0	8.89	354	
18	3	-0.56	235	
24	3	0.71	251	
25	0	6.82	328	
26	3	-0.63	234	
30.1	4	0.08		243
32	2	1.19		257
42	4	0.00		242
46	2	1.35	259	
48	0	-2.86		206
85	4	-0.16	240	
86	4	0.00	242	
100	1	1.51	261	
119	0	-3.33	200	
134	3	0.67	250	
136	3	-0.87	231	
138	3	1.00	255	
141	4	-0.48	236	
142	4	-0.24	239	
145	4	0.08	243	
180	2	1.11	256	
212	3	-0.95	230	
215	0	-3.33	200	
220	4	0.10	243	
234	4	-0.16	240	
235	4	0.32	246	
236	3	-0.87	231	
246	3	0.84	253	
247	3	-0.56		235
254	4	-0.16	240	
255	2	1.11	256	
283	3	-0.63	234	
300	3	-0.87		231

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Ba (Barium) µg/L



0. Other			4. ICP					
1. AA: direct, air			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	1	1	3	32	1	17
		Minimum =	190	150	170	134	202	12
		Maximum =			240	177		180
		Median =				166		167
		F-pseudosigma =				8		6

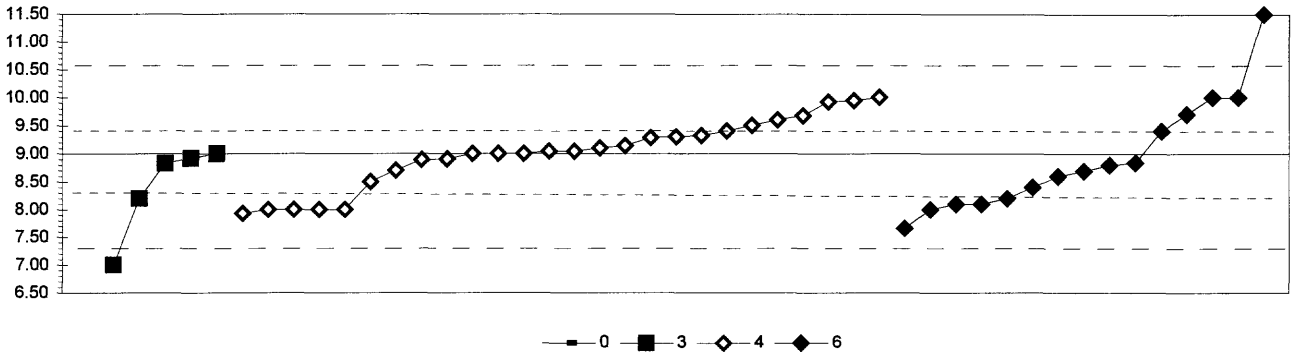
Lab	Rating	Z-value	0	1	3	4	5	6
1	4	0.39						170
5	4	0.26				169		
8	0	-2.10				151		
11	2	-1.18				158		
13	4	-0.39				164		
16	3	-0.52						163
18	3	-0.92				160		
24	3	0.65				172		
25	4	0.13				168		
26	4	-0.13				166		
30.1	3	0.79						173
32	2	-1.05						159
33	0	4.58					202	
42	4	0.07						168
46	4	0.00				167		
48	1	-1.83						153
59	3	-0.64						162
76	4	0.48						171
83	2	-1.05				159		
85	0	-2.36				149		
86	4	0.13				168		
89	0	2.23			184			
100	2	1.31				177		
102	3	0.65				172		
105	4	0.00						167
119	4	0.39				170		
121	3	-0.65				162		
134	4	-0.08				166		
136	0	-2.75				146		
138	4	0.18				168		
140	0	-2.23		150				
141	0	-3.14				143		
142	4	0.10						168
145	4	0.39				170		
146	3	0.65				172		
149	4	0.39			170			
151	3	-0.65						162
180	4	-0.13				166		
191	0	-20.27						12
204	2	1.44						178
212	3	-0.92						160
215	3	-0.92				160		
220	4	0.47				171		
234	4	-0.13				166		
235	3	-0.79				161		
236	2	-1.18				158		
241	0	9.56			240			
246	4	0.33				170		
247	3	0.79						173
255	4	0.39				170		

MPV =	167
F-pseudosigma =	8
N =	55
Hu =	170
Hl =	160

Lab	Rating	Z-value	0	1	3	4	5	6
283	0	-4.32				134		
284	0	3.01	190					
292	3	-0.52				163		
300	1	1.70						180
304	3	-0.65						162

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Be (Beryllium) µg/L

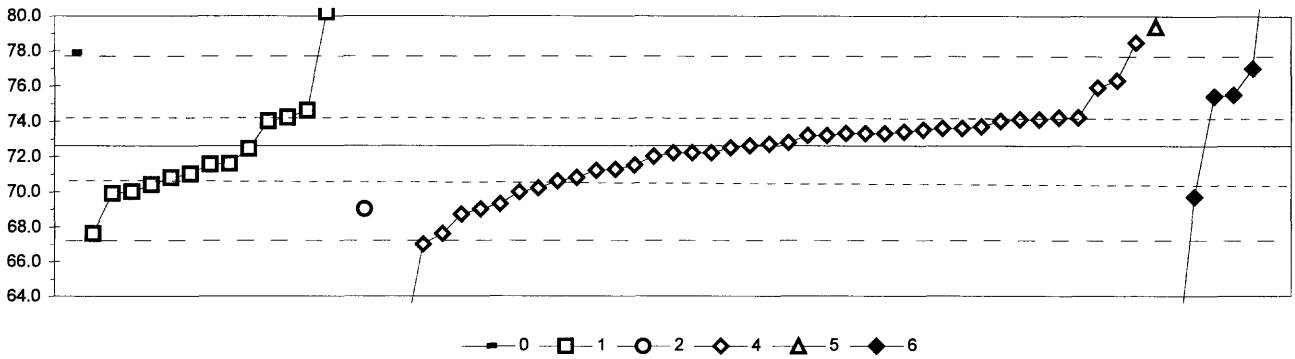


0. Other			6. ICP/MS			
3. AA: graphite furnace						
4. ICP						
		N =	1	5	26	15
		Minimum =	17.00	7.00	7.93	7.66
		Maximum =		9.00	10.00	11.50
		Median =			9.04	8.69
		F-pseudosigma =			0.52	1.04
Lab	Rating	Z-value	0	3	4	6
1	4	-0.20				8.84
5	4	0.17			9.14	
8	4	0.00			9.00	
11	4	0.37			9.30	
13	4	0.49			9.40	
16	2	-1.10				8.10
18	4	-0.12			8.90	
25	2	-1.23			8.00	
26	2	1.15			9.94	
30.1	0	3.07				11.50
32	3	0.86				9.70
42	1	-1.64				7.66
46	2	1.13			9.92	
48	2	-1.10				8.10
59	3	-0.98				8.20
69	4	-0.21		8.83		
83	4	-0.37			8.70	
85	2	-1.23			8.00	
86	4	0.12			9.10	
89	3	-0.98		8.20		
100	4	0.39			9.32	
102	2	-1.23			8.00	
105	2	1.23				10.00
119	4	-0.10		8.92		
134	4	0.05			9.04	
138	4	0.00			9.00	
141	2	-1.31			7.93	
142	4	-0.38				8.69
145	2	1.23			10.00	
146	3	0.61			9.50	
151	2	-1.23				8.00
180	3	-0.61			8.50	
212	3	-0.74				8.40
215	4	0.00		9.00		
220	3	0.82			9.67	
234	4	0.34			9.28	
235	2	1.23				10.00
236	4	0.00			9.00	
241	0	-2.45		7.00		
246	3	0.74			9.60	
247	4	0.49				9.40
255	4	0.05			9.04	
283	4	-0.13			8.89	
284	0	9.81	17.00			
292	2	-1.23			8.00	
300	4	-0.49				8.60
304	4	-0.25				8.80

MPV =	9.00
F-pseudosigma =	0.82
N =	47
Hu =	9.40
Hl =	8.30

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Ca (Calcium) mg/L



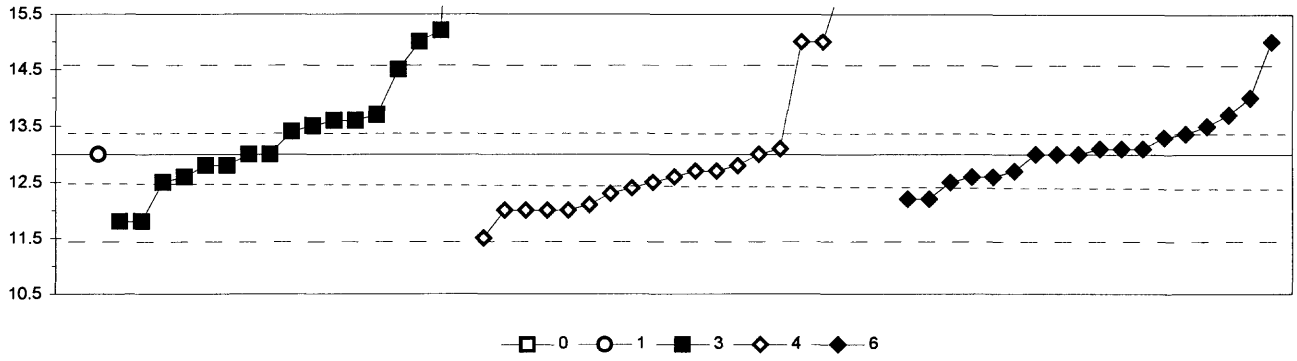
0. Other				4. ICP				
1. AA: direct, air				5. DCP				
2. AA: direct, nitrous oxide				6. ICP/MS				
		N =	1	14	1	40	1	6
		Minimum =	77.9	67.6	69.0	60.0	79.4	59.0
		Maximum =		87.1		78.5		86.9
		Median =		71.6		72.7		
		F-pseudosigma =		2.8		2.1		
Lab	Rating	Z-value	0	1	2	4	5	6
1	4	-0.04				72.5		
5	1	-1.87				67.6		
8	4	0.37				73.6		
11	3	0.56				74.1		
13	2	1.24				75.9		
16	3	0.52				74.0		
18	2	-1.24				69.3		
23	3	0.60		74.2				
24	3	0.60				74.2		
25	0	2.21				78.5		
26	4	0.00				72.6		
30.1	0	-5.10						59.0
30.2	2	-1.35			69.0			
32	1	1.65						77.0
33	0	2.55					79.4	
43	4	-0.15				72.2		
46	4	0.22				73.2		
48	2	1.05						75.4
59	4	-0.37		71.6				
64	4	0.41				73.7		
69	3	-0.82		70.4				
83	3	-0.52				71.2		
85	3	-0.67		70.8				
86	4	0.37				73.6		
89	0	5.43		87.1				
100	4	0.26				73.3		
102	2	-1.35				69.0		
105	3	-0.75				70.6		
109	4	-0.06		72.5				
119	4	0.04				72.7		
121	4	0.34				73.5		
134	4	-0.50				71.3		
136	2	-1.46				68.7		
138	4	0.30				73.4		
140	3	-0.60		71.0				
141	0	-4.35				61.0		
142	3	-0.67				70.8		
145	3	0.56				74.1		
146	4	-0.15				72.2		
149	3	0.52		74.0				
180	4	0.07				72.8		
191	2	-1.09						69.7
196	4	-0.39		71.6				
204	2	-1.01		69.9				
212	4	-0.22				72.0		
215	0	-2.10				67.0		
220	3	-0.99				70.0		
221	1	-1.87		67.6				
234	3	0.60				74.2		
235	2	1.39				76.3		

MPV =	72.6
F-pseudosigma =	2.7
N =	63
Hu =	74.1
HI =	70.5

Lab	Rating	Z-value	0	1	2	4	5	6
236	3	-0.90				70.2		
241	0	2.85		80.2				
246	4	-0.15				72.2		
247	4	0.22				73.2		
254	4	-0.41				71.5		
255	4	0.26				73.3		
283	0	-4.72				60.0		
284	1	1.99	77.9					
287	3	-0.97		70.0				
292	3	0.75		74.6				
297	4	0.26				73.3		
300	0	5.36						86.9
304	2	1.09						75.5

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Cd (Cadmium) µg/L



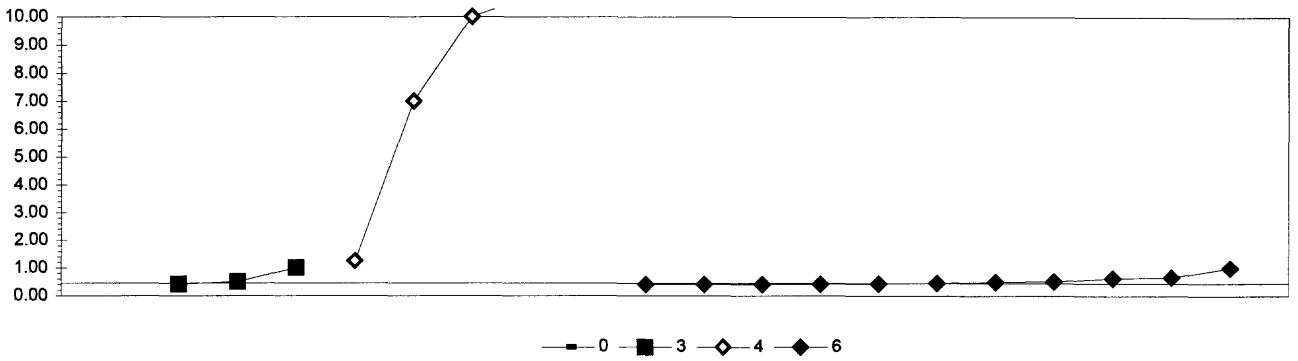
0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	1	17	20	18
		Minimum =	10.0	13.0	11.8	11.5	12.2
		Maximum =			22.0	17.0	15.0
		Median =			13.4	12.7	13.1
		F-pseudosigma =			0.7	1.5	0.6
Lab	Rating	Z-value	0	1	3	4	6
1	4	-0.49					12.6
5	2	-1.47			11.8		
8	4	0.00				13.0	
11	4	-0.37				12.7	
12	4	-0.25			12.8		
13	3	-0.86				12.3	
16	4	0.12					13.1
18	2	-1.23				12.0	
24	4	-0.49				12.6	
25	0	-8.75				< 6	
26	3	0.61			13.5		
30.1	0	2.45					15.0
32	2	1.23					14.0
34	3	0.74			13.6		
42	4	0.12					13.1
46	3	0.74			13.6		
48	4	-0.37					12.7
59	4	0.00					13.0
69	2	-1.47			11.8		
83	2	-1.10				12.1	
86	4	-0.37				12.7	
89	0	2.70			15.2		
100	0	3.92				16.2	
102	2	-1.23				12.0	
105	3	-0.61					12.5
119	4	0.49			13.4		
126	1	1.84			14.5		
134	3	-0.74				12.4	
136	1	-1.84				11.5	
138	4	-0.49					12.6
140	4	0.00		13.0			
141	4	-0.25			12.8		
142	4	0.45					13.4
145	0	2.45				15.0	
146	4	0.12				13.1	
149	0	2.45			15.0		
151	4	0.12					13.1
180	0	4.91				17.0	
191	3	-0.98					12.2
204	3	-0.98					12.2
212	4	0.00					13.0
215	2	-1.23				12.0	
220	0	4.17				16.4	
221	3	-0.61			12.5		
234	3	0.86			13.7		
235	4	-0.49			12.6		
236	2	-1.23				12.0	
241	4	0.00			13.0		
246	3	-0.61				12.5	
247	3	0.61					13.5

MPV =	13.0
F-pseudosigma =	0.8
N =	57
Hu =	13.6
Hl =	12.5

Lab	Rating	Z-value	0	1	3	4	6
254	0	2.45				15.0	
255	4	-0.25				12.8	
283	4	0.00					13.0
284	0	-3.68	10.0				
287	0	11.04			22.0		
292	4	0.00			13.0		
300	3	0.86					13.7
304	4	0.37					13.3

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Co (Cobalt) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS

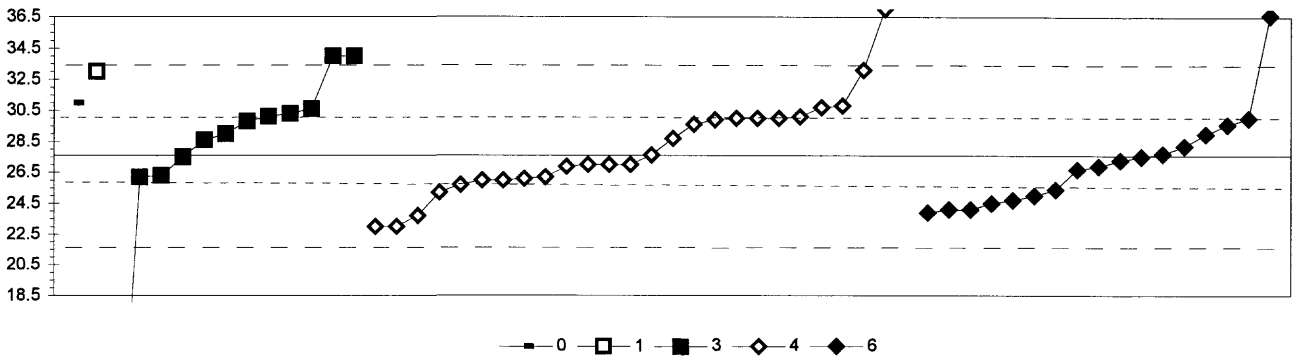
MPV = Insufficient data

N = 19

			0	3	4	6
		N =	< 100	3	5	11
		Minimum =		0.41	1.25	0.40
		Maximum =		1.00	43.20	1.00
		Median =				0.45
		F-pseudosigma =				0.13
Lab	Rating	Z-value	0	3	4	6
1	NR			< 1		
5	NR				< 3	
8	NR				< 10	
13	NR				< 5	
16	NR					1.00
18	NR				< 5	
25	NR				< 12	
26	NR				< 6	
30.1	NR					0.50
32	NR					0.40
42	NR					< 2
48	NR					0.40
85	NR				< 10	
89	NR			< 5		
100	NR				1.25	
102	NR				10.00	
105	NR					< 1
119	NR					0.41
134	NR			0.41		
136	NR				10.70	
138	NR					0.67
141	NR				< 10	
142	NR					< 1
145	NR				7.00	
146	NR				< 10	
180	NR				< 5.22	
191	NR					0.45
212	NR					< 1
215	NR				< 5	
221	NR			1.00		
234	NR			0.50		
235	NR					0.40
236	NR				< 6	
246	NR				< 10	
247	NR					< 1
254	NR				< 5	
255	NR				43.20	
283	NR					0.52
284	NR		< 100			
300	NR					0.63
304	NR					0.43

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Cr (Chromium) µg/L



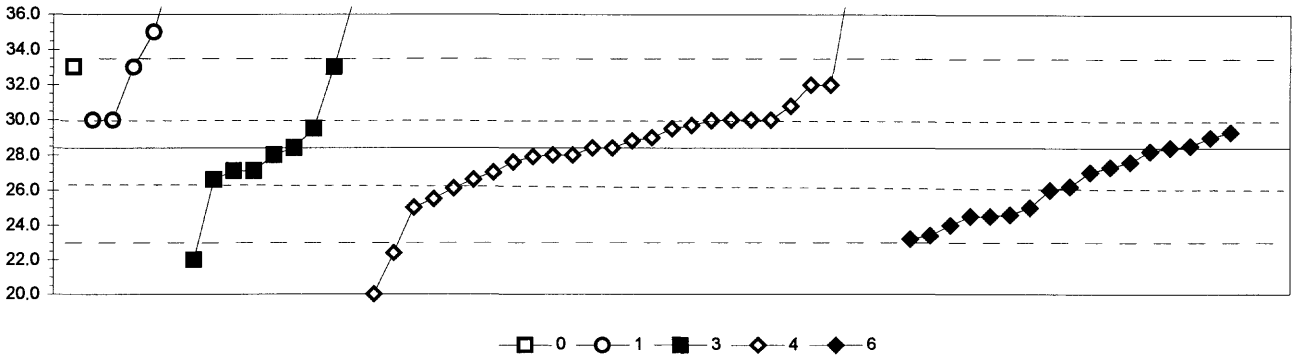
0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	1	12	26	17
		Minimum =	31.0	33.0	3.2	23.0	23.9
		Maximum =			34.0	48.0	36.6
		Median =			29.4	27.3	26.9
		F-pseudosigma =			2.6	3.0	2.6
Lab	Rating	Z-value	0	1	3	4	6
1	4	-0.11					27.3
5	4	-0.21				27.0	
8	1	-1.56				23.0	
13	2	1.04				30.7	
16	3	-0.98					24.7
18	4	-0.21				27.0	
24	3	0.84				30.1	
25	3	0.80				30.0	
26	3	0.74			29.8		
30.1	4	0.47					29.0
32	4	-0.24					26.9
34	4	-0.48			26.2		
42	2	-1.19					24.1
46	4	0.33			28.6		
48	2	-1.25					23.9
59	4	-0.31					26.7
69	4	-0.04			27.5		
76	3	0.66					29.6
83	3	-0.65				25.7	
85	3	0.80				30.0	
86	3	-0.82				25.2	
89	3	0.90			30.3		
100	3	-0.51				26.1	
102	1	-1.56				23.0	
105	4	0.03					27.7
119	4	-0.45			26.3		
134	4	-0.25				26.9	
136	1	1.85				33.1	
138	4	0.00				27.6	
140	1	1.81		33.0			
141	2	-1.32				23.7	
142	4	-0.03					27.5
145	0	3.16				37.0	
146	4	0.36				28.7	
149	0	2.15			34.0		
151	2	-1.19					24.1
180	4	-0.48				26.2	
191	3	-0.75					25.4
204	2	-1.05					24.5
212	3	-0.88					25.0
215	4	0.47			29.0		
220	0	6.87				48.0	
221	2	1.01			30.6		
234	3	0.84			30.1		
235	3	-0.55				26.0	
236	3	-0.55				26.0	
241	0	-8.24			3.2		
246	3	0.77				29.9	
247	4	0.20					28.2
254	3	0.80				30.0	

MPV =	27.6
F-pseudosigma =	3.0
N =	57
Hu =	30.0
Hl =	26.0

Lab	Rating	Z-value	0	1	3	4	6
255	2	1.07				30.8	
283	3	0.67				29.6	
284	2	1.14	31.0				
287	0	2.15			34.0		
292	4	-0.21				27.0	
300	0	3.03					36.6
304	3	0.80					30.0

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Cu (Copper) µg/L



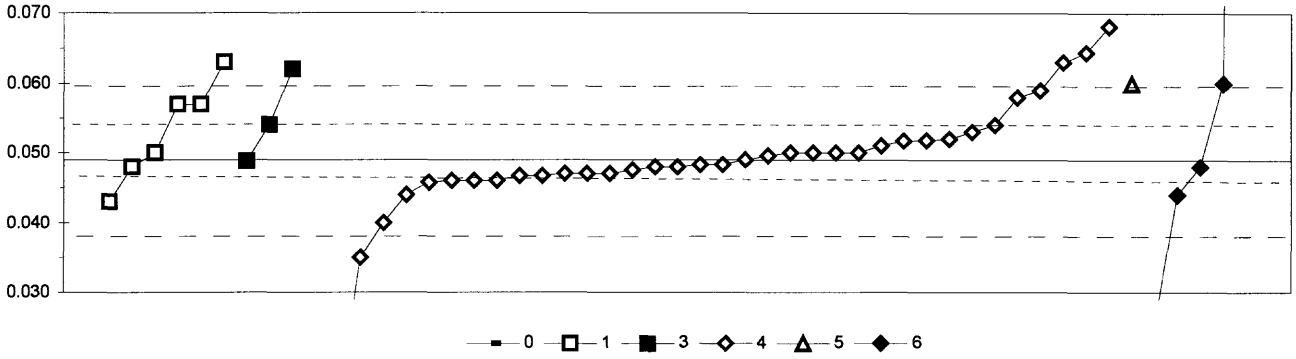
0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	5	9	27	17
		Minimum =	33.0	30.0	22.0	20.0	23.2
		Maximum =		39.0	37.0	42.0	29.3
		Median =			28.0	28.8	26.2
		F-pseudosigma =			1.8	2.0	2.7
Lab	Rating	Z-value	0	1	3	4	6
1	4	-0.41					27.3
5	4	0.41				29.5	
8	2	1.35				32.0	
11	3	0.90				30.8	
12	4	-0.15			28.0		
13	0	-3.15				20.0	
16	4	0.22				29.0	
18	3	-0.52				27.0	
23	4	-0.49			27.1		
24	4	0.49				29.7	
25	4	-0.15				28.0	
26	4	-0.30				27.6	
30.1	4	0.22					29.0
32	3	-0.82					26.2
42	2	-1.46					24.5
46	4	0.00			28.4		
48	1	-1.87					23.4
59	2	-1.27					25.0
69	NR			< 50			
76	4	0.34					29.3
83	4	0.00				28.4	
85	0	2.47		35.0			
86	3	0.60				30.0	
89	4	-0.49			27.1		
100	4	-0.19				27.9	
102	2	-1.27				25.0	
105	3	-0.90					26.0
119	3	0.60				30.0	
126	1	1.72		33.0			
134	3	0.59				30.0	
136	0	4.80				41.2	
138	4	-0.07					28.2
140	3	0.60		30.0			
141	2	-1.09				25.5	
142	4	0.04					28.5
145	0	5.10				42.0	
146	2	1.35				32.0	
149	3	0.60		30.0			
151	2	-1.42					24.6
180	3	-0.86				26.1	
191	1	-1.95					23.2
204	2	-1.46					24.5
212	1	-1.65					24.0
215	1	1.72			33.0		
220	0	3.71				38.3	
221	4	0.41			29.5		
234	3	-0.67				26.6	
235	3	-0.67			26.6		
236	4	-0.15				28.0	
241	0	3.22			37.0		

MPV =	28.4
F-pseudosigma =	2.7
N =	59
Hu =	30.0
Hl =	26.4

Lab	Rating	Z-value	0	1	3	4	6
246	4	0.00				28.4	
247	4	0.00					28.4
254	3	0.60				30.0	
255	4	0.15				28.8	
283	0	-2.25				22.4	
284	1	1.72	33.0				
287	0	3.97		39.0			
292	0	-2.40			22.0		
300	3	-0.52					27.0
304	4	-0.30					27.6

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Fe (Iron) mg/L



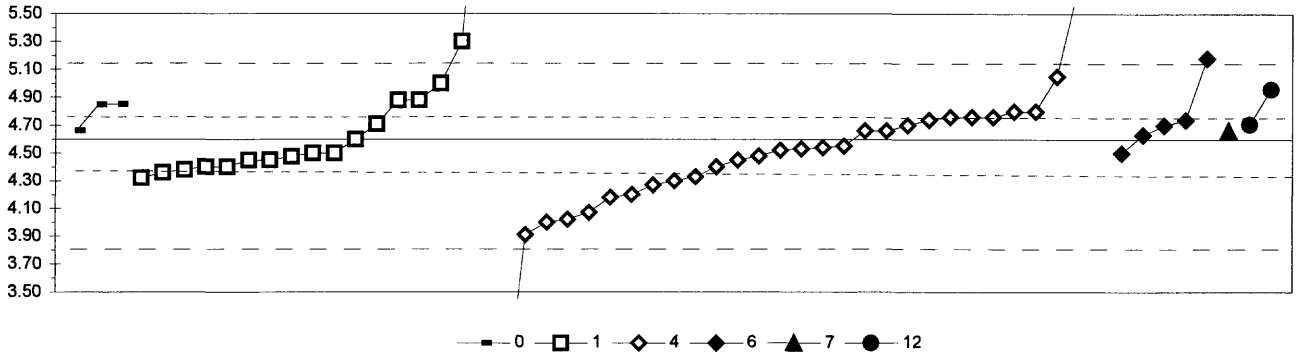
0. Other			4. ICP					
1. AA: direct, air			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	1	6	3	36	1	6
		Minimum =	0.002	0.043	0.049	0.004	0.060	0.025
		Maximum =		0.063	0.062	0.068		0.309
		Median =				0.048		
		F-pseudosigma =				0.004		

MPV = 0.049
F-pseudosigma = 0.005
N = 53
Hu = 0.054
HI = 0.047

Lab	Rating	Z-value	0	1	3	4	5	6
1	4	-0.43				0.047		
5	4	0.11				0.050		
8	0	-2.59				0.035		
13	0	-6.71				0.013		
16	4	-0.18		0.048				
18	NR					< 50		
23	3	0.92			0.054			
24	4	0.37				0.051		
25	1	-1.66				0.040		
26	4	-0.37				0.047		
30.1	0	46.38						0.300
30.2	NR			< 0.5				
33	1	2.03					0.060	
43	4	0.18				0.050		
46	3	-0.55				0.046		
48	3	-0.92						0.044
59	4	-0.18						0.048
69	2	1.48		0.057				
83	3	-0.55				0.046		
85	4	0.18				0.050		
86	4	-0.43				0.047		
89	4	-0.04			0.049			
100	0	2.59				0.063		
102	4	-0.18				0.048		
105	4	-0.18				0.048		
109	2	1.48		0.057				
119	4	0.18				0.050		
121	3	0.74				0.053		
126	NR			< 0.05				
134	3	-0.61				0.046		
136	4	-0.13				0.048		
138	4	-0.28				0.048		
140	2	-1.11		0.043				
141	0	3.53				0.068		
142	3	-0.92				0.044		
145	3	-0.55				0.046		
146	3	0.52				0.052		
151	0	-4.44						0.025
180	0	-8.30				0.004		
191	1	2.03						0.060
204	0	30.20		< 0.02				
212	NR					< 0.1		
215	3	0.92				0.054		
220	3	0.55				0.052		
221	0	2.40			0.062			
234	4	-0.13				0.048		
236	4	-0.37				0.047		
241	4	0.18		0.050				
246	0	2.85				0.064		
247	1	1.66				0.058		
254	4	0.00				0.049		
255	4	0.50				0.052		
283	4	-0.37				0.047		
284	0	-8.69	0.002					
287	0	2.59		0.063				
292	4	0.18				0.050		
297	1	1.85				0.059		
300	0	48.05						0.309

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

K (Potassium) mg/L



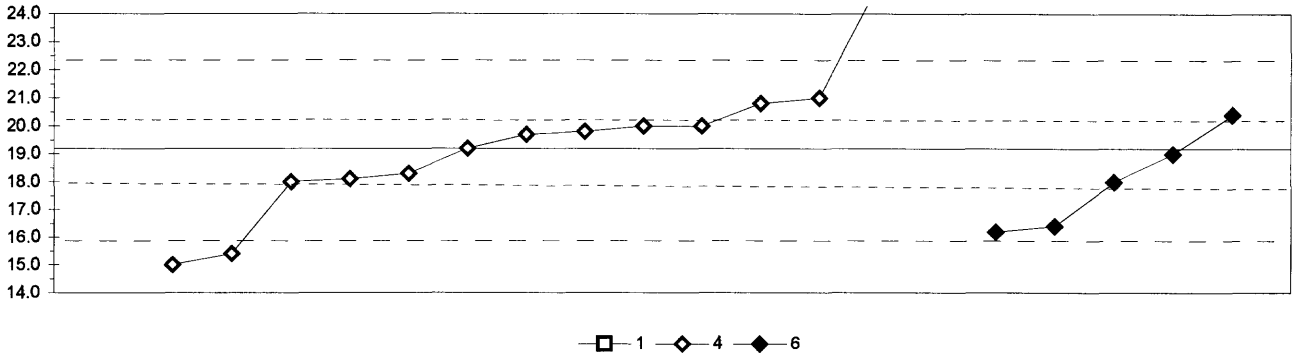
0. Other				6. ICP/MS				
1. AA: direct, air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	3	17	29	5	1	2
		Minimum =	4.66	4.32	2.60	4.50	4.66	4.71
		Maximum =	4.85	7.00	5.85	5.18		4.96
		Median =		4.50	4.53			
		F-pseudosigma =		0.36	0.36			

MPV =	4.60
F-pseudosigma =	0.27
N =	57
Hu =	4.76
HI =	4.40

Lab	Rating	Z-value	0	1	4	6	7	12
1	3	-0.56		4.45				
5	4	0.22			4.66			
8	4	0.37			4.70			
11	1	-1.57			4.18			
13	3	0.60			4.76			
16	4	0.00		4.60				
18	3	0.75			4.80			
23	3	-0.56		4.45				
24	2	-1.24			4.27			
25	0	4.68			5.85			
26	4	0.22					4.66	
32	4	0.37				4.70		
33	4	0.22	4.66					
43	3	-0.75			4.40			
46	3	0.75			4.80			
48	3	0.52				4.74		
59	2	1.50		5.00				
64	2	1.05		4.88				
69	2	1.35						4.96
83	2	-1.05		4.32				
85	4	0.41		4.71				
86	4	-0.45			4.48			
89	3	-0.82		4.38				
100	3	0.52			4.74			
102	2	-1.50			4.20			
105	2	-1.01			4.33			
109	2	1.05		4.88				
119	0	-2.25			4.00			
134	4	-0.47		4.48				
138	2	-1.12			4.30			
140	3	-0.90		4.36				
141	0	-2.59			3.91			
142	4	-0.22			4.54			
145	4	-0.26			4.53			
146	1	1.69			5.05			
149	4	-0.37		4.50				
180	3	-0.56			4.45			
191	4	0.11				4.63		
196	3	-0.75		4.40				
204	4	0.41						4.71
212	NR				< 5			
215	0	-7.49			2.60			
220	0	4.12			5.70			
221	3	0.94	4.85					
234	4	-0.19			4.55			
236	4	0.22			4.66			
241	0	2.62		5.30				
246	3	0.60			4.76			
247	3	0.60			4.76			
254	3	-0.75		4.40				
255	4	-0.30			4.52			
283	1	-1.99			4.07			
284	3	0.93	4.85					
287	0	8.99		7.00				
292	4	-0.37		4.50				
297	0	-2.17			4.02			
300	0	2.17				5.18		
304	4	-0.37				4.50		

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Li (Lithium) µg/L

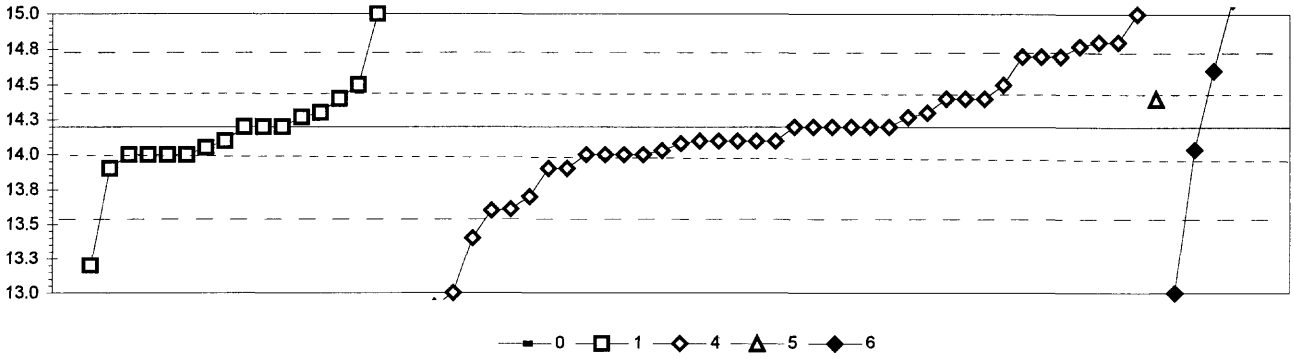


1. AA: direct, air					
4. ICP					
6. ICP/MS					
		N =	0	14	5
		Minimum =	< 50	15.0	16.2
		Maximum =		30.4	20.4
		Median =		19.8	
		F-pseudosigma =		2.0	
Lab	Rating	Z-value	1	4	6
1	3	0.98		20.8	
5	3	-0.67		18.1	
8	NR			< 20	
24	0	6.87		30.4	
25	2	1.10		21.0	
26	4	0.31		19.7	
30.1	4	-0.12			19.0
32	3	-0.74			18.0
69	NR		< 50		
100	4	0.49		20.0	
105	NR			< 50	
134	0	-2.33		15.4	
142	4	0.37		19.8	
145	0	3.56		25.0	
151	1	-1.84			16.2
234	4	0.00		19.2	
236	0	-2.58		15.0	
246	3	-0.55		18.3	
247	3	0.74			20.4
254	4	0.49		20.0	
283	3	-0.74		18.0	
300	1	-1.72			16.4

MPV =	19.2
F-pseudosigma =	1.6
N =	19
Hu =	20.2
Hl =	18.0

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Mg (Magnesium) mg/L



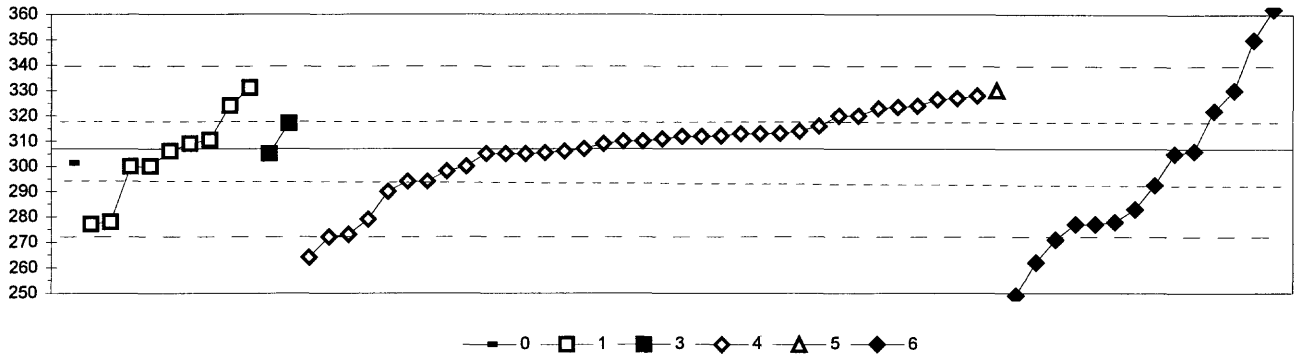
0. Other			5. DCP				
1. AA: direct, air			6. ICP/MS				
4. ICP							
		N =	1	16	40	1	6
		Minimum =	15.1	13.2	12.0	14.4	13.0
		Maximum =		15.0	15.0		16.2
		Median =		14.2	14.1		
		F-pseudosigma =		0.2	0.3		

MPV = 14.2
F-pseudosigma = 0.3
N = 64
Hu = 14.4
Hl = 14.0

Lab	Rating	Z-value	0	1	4	5	6
1	4	-0.34			14.1		
5	4	0.00			14.2		
8	4	0.00			14.2		
11	4	0.00			14.2		
13	3	-0.67			14.0		
16	4	0.34			14.3		
18	0	-4.38			12.9		
23	0	-3.37		13.2			
24	3	0.67			14.4		
25	1	1.69			14.7		
26	3	0.67			14.4		
30.1	0	-4.05					13.0
30.2	0	2.70		15.0			
32	0	4.05					15.4
33	3	0.67				14.4	
43	3	-0.67			14.0		
46	4	0.00			14.2		
48	0	3.04					15.1
59	4	-0.34		14.1			
64	1	-2.02			13.6		
69	4	0.00		14.2			
76	4	0.24		14.3			
83	2	-1.01			13.9		
85	2	-1.01		13.9			
86	1	1.69			14.7		
89	3	0.67		14.4			
100	1	2.02			14.8		
102	0	2.70			15.0		
105	1	-1.69			13.7		
109	3	-0.67		14.0			
119	3	-0.67			14.0		
121	3	-0.67			14.0		
134	4	0.23			14.3		
136	0	-4.05			13.0		
138	4	-0.40			14.1		
140	4	0.00		14.2			
141	0	-7.42			12.0		
142	1	2.02			14.8		
145	1	1.92			14.8		
146	4	-0.34			14.1		
149	3	-0.67		14.0			
180	4	-0.34			14.1		
191	3	-0.54					14.0
196	3	-0.51		14.1			
204	3	-0.67		14.0			
212	4	0.00			14.2		
215	0	-2.70			13.4		
220	1	-1.99			13.6		
221	4	0.34		14.3			
234	2	-1.01			13.9		
235	2	1.01			14.5		
236	3	-0.57			14.0		
241	4	0.00		14.2			
246	1	1.69			14.7		
247	4	0.00			14.2		
254	4	-0.34			14.1		
255	4	-0.34			14.1		
283	0	-4.72			12.8		
284	0	3.04	15.1				
287	3	-0.67		14.0			
292	2	1.01		14.5			
297	3	0.67			14.4		
300	0	6.74					16.2
304	2	1.35					14.6

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Mn (Manganese) µg/L



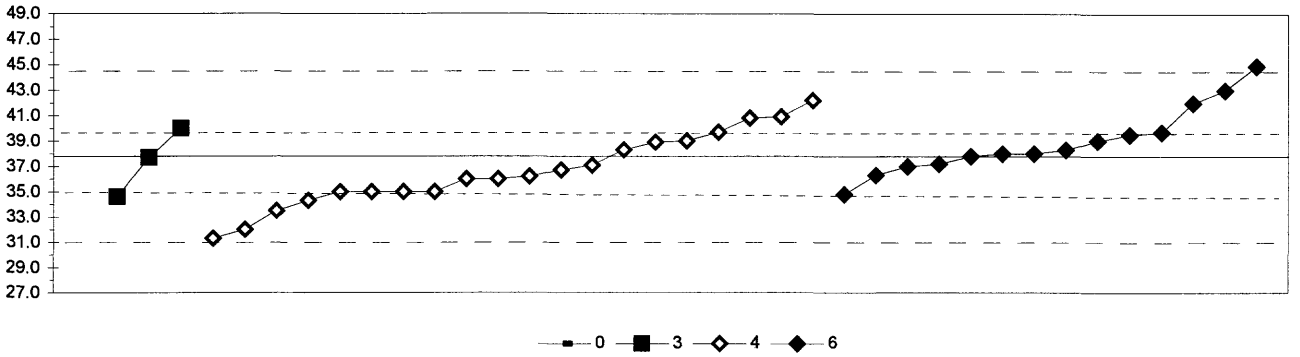
0. Other			8. AA: cold vapor					
1. AA: direct, air			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	1	9	2	35	1	14
		Minimum =	301	277	305	264	330	249
		Maximum =		331	317	328		362
		Median =		306		310		288
		F-pseudosigma =		8		9		33
Lab	Rating	Z-value	0	1	3	4	5	6
1	3	-0.82						293
5	4	-0.09				305		
8	4	0.38				313		
11	4	0.15				309		
13	3	0.79				320		
16	1	-1.73						277
18	4	-0.03				306		
23	4	-0.09			305			
24	3	0.97				323		
25	3	0.56				316		
26	4	0.32				312		
30.1	0	2.55						350
32	2	1.38						330
33	2	1.38					330	
42	0	-2.61						262
43	4	0.32				312		
46	4	0.21				310		
48	2	-1.38						283
59	4	-0.38		300				
69	2	1.44		331				
83	3	-0.73				294		
85	3	0.79				320		
86	4	0.38				313		
89	2	1.03		324				
100	2	1.20				327		
102	3	-0.73				294		
105	4	-0.09						305
109	4	0.23		311				
119	3	0.62			317			
121	4	-0.38				300		
134	4	0.32				312		
136	1	-1.61				279		
138	4	0.39				313		
140	4	-0.38		300				
141	1	-2.02				272		
142	2	1.26				328		
145	2	1.03				324		
146	4	0.26				311		
149	4	-0.03		306				
151	0	-2.08						271
180	4	0.03				307		
191	0	-3.37						249
204	1	-1.73						277
212	4	0.21				310		
215	3	-0.97				290		
220	2	1.17				327		
221	4	0.15		309				
234	0	-2.49				264		
235	1	-1.67						278
236	4	-0.09				305		

MPV =	307
F-pseudosigma =	17
N =	62
Hu =	317
Hl =	294

Lab	Rating	Z-value	0	1	3	4	5	6
241	1	-1.73		277				
246	3	1.00				324		
247	4	-0.03						306
254	4	-0.09				305		
255	4	0.44				314		
283	1	-1.96				273		
284	4	-0.30	301					
287	1	-1.67		278				
292	4	-0.50				298		
297	4	-0.06				305		
300	0	3.26						362
304	3	0.91						322

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Mo (Molybdenum) µg/L

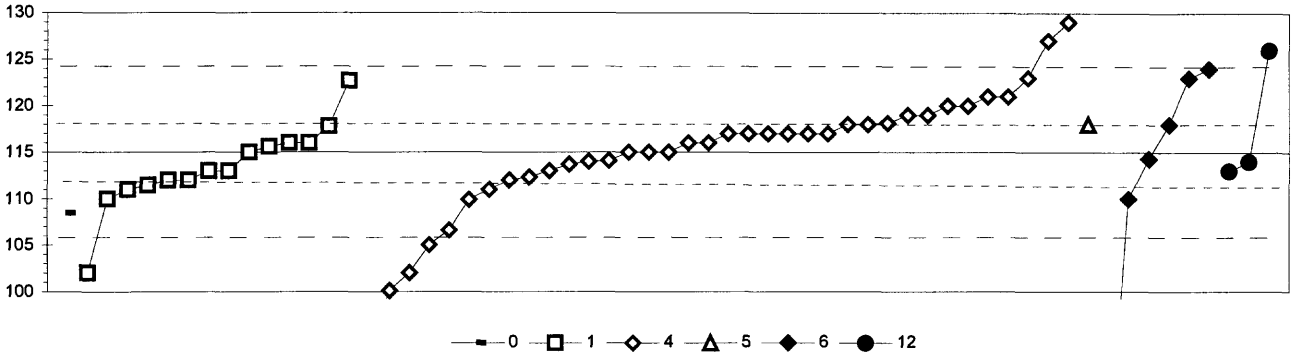


0. Other				6. ICP/MS		
3. AA: graphite furnace						
4. ICP						
		N =	1	3	20	14
		Minimum =	94.0	34.6	31.3	34.8
		Maximum =		40.0	42.2	44.9
		Median =			36.1	38.2
		F-pseudosigma =			2.9	1.9
Lab	Rating	Z-value	0	3	4	6
1	4	0.01				37.8
5	3	-0.99			34.3	
8	0	-5.09			< 20	
11	4	-0.30			36.7	
13	NR				< 50	
16	4	-0.16				37.2
18	3	-0.79			35.0	
24	4	0.33			38.9	
26	4	-0.50			36.0	
30.1	2	1.22				42.0
32	1	1.51				43.0
42	4	-0.22				37.0
46	2	1.28			42.2	
48	4	0.07				38.0
100	4	-0.44			36.2	
105	4	0.36				39.0
119	4	-0.01		37.7		
134	4	0.16			38.3	
136	3	0.90			40.9	
138	4	-0.42				36.3
141	1	-1.85			31.3	
142	4	0.50				39.5
145	4	0.36			39.0	
146	4	-0.19			37.1	
151	3	0.56				39.7
180	3	-0.79			35.0	
215	4	-0.50			36.0	
220	3	0.88			40.8	
221	3	-0.90		34.6		
234	2	-1.22			33.5	
236	3	-0.79			35.0	
241	3	0.65		40.0		
246	3	0.56			39.7	
247	4	0.16				38.3
255	3	-0.79			35.0	
283	3	-0.85				34.8
284	0	16.14	94.0			
292	1	-1.65			32.0	
300	0	2.05				44.9
304	4	0.07				38.0

MPV =	37.8
F-pseudosigma =	3.5
N =	38
Hu =	39.7
Hl =	35.0

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Na (Sodium) mg/L



0. Other				5. DCP				
1. AA: direct, air				6. ICP/MS				
4. ICP				12. Flame emission				
		N =	1	14	36	1	6	3
		Minimum =	108	102	94	118	81	113
		Maximum =		123	129		124	126
		Median =		113	117			
		F-pseudosigma =		3	4			

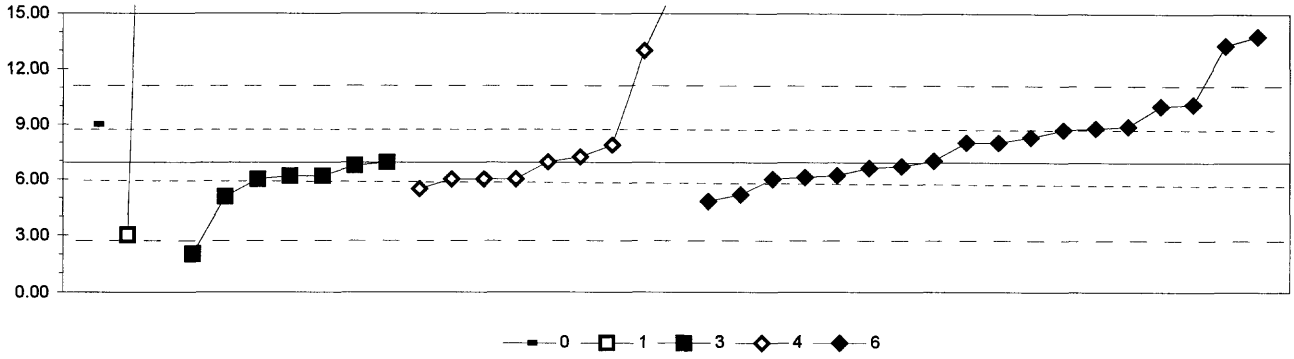
Lab	Rating	Z-value	0	1	4	5	6	12
1	4	-0.29			114			
5	2	1.12			120			
8	4	0.00			115			
11	0	-2.25			105			
13	4	0.45			117			
16	3	0.90			119			
18	3	-0.61			112			
23	3	0.63		118				
24	4	0.45			117			
25	2	1.12			120			
26	3	0.67			118			
30.1	2	-1.12					110	
30.2	0	2.47						126
32	1	1.80					123	
33	3	0.67				118		
43	3	-0.90			111			
46	4	0.45			117			
48	1	2.02					124	
59	2	-1.12		110				
64	4	0.22		116				
69	4	-0.22						114
83	4	0.45			117			
85	3	-0.90		111				
86	3	0.90			119			
89	3	-0.67		112				
100	0	3.15			129			
102	0	-4.72			94			
105	4	-0.22			114			
109	4	-0.45		113				
119	4	0.45			117			
121	4	0.00			115			
134	3	-0.79		112				
138	4	-0.45			113			
140	4	0.22		116				
141	0	-3.35			100			
142	1	1.80			123			
145	3	0.71			118			
146	0	2.70			127			
149	4	0.00		115				
180	4	0.22			116			
191	4	-0.16					114	
196	1	1.73		123				
204	4	-0.45						113
212	3	0.67			118			
215	3	-0.67			112			
220	4	-0.20			114			
221	4	-0.45		113				
234	4	0.45			117			
236	2	-1.15			110			
241	0	-2.92		102				

MPV =	115
F-pseudosigma =	4
N =	61
Hu =	118
HI =	112

Lab	Rating	Z-value	0	1	4	5	6	12
246	1	-1.89			107			
247	2	1.35			121			
254	4	0.00			115			
255	2	1.35			121			
283	0	-2.92			102			
284	2	-1.46	108					
287	3	-0.67		112				
292	4	0.13		116				
297	4	0.22			116			
300	0	-7.67					81	
304	3	0.67					118	

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Ni (Nickel) µg/L



0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	2	7	9	18
		Minimum =	9.00	3.00	2.00	5.46	4.80
		Maximum =		60.00	6.92	16.70	13.80
		Median =			6.17	6.93	8.00
		F-pseudosigma =			0.69	1.38	2.00

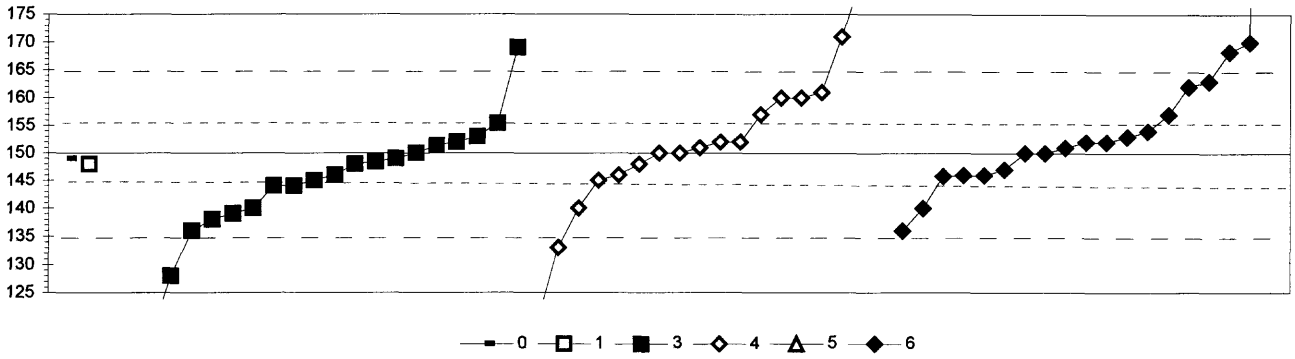
Lab	Rating	Z-value	0	1	3	4	6
1	4	-0.36			6.17		
5	NR					< 10	
8	NR					< 10	
13	NR					< 20	
16	0	3.31					13.80
18	4	-0.44				6.00	
25	NR					< 49	
26	4	-0.36			6.17		
30.1	3	0.66					8.30
32	2	1.48					10.00
42	0	3.07					13.30
48	4	-0.44					6.00
59	3	0.91					8.80
69	NR			< 50			
83	NR					< 15	
85	NR					< 10	
89	3	-0.90			5.06		
100	4	0.00				6.93	
102	0	-2.85				< 1	
105	3	0.52					8.00
119	4	-0.40					6.10
126	0	25.57		60.00			
134	3	-0.70				5.46	
136	0	4.71				16.70	
138	4	0.45				7.86	
140	1	-1.89		3.00			
141	NR					< 20	
142	4	-0.10					6.71
145	0	2.93				13.00	
146	NR					< 40	
149	4	-0.44			6.00		
151	4	-0.15					6.60
180	NR					< 16.3	
191	4	0.04					7.00
204	3	-0.85					5.15
212	3	0.86					8.70
215	4	-0.44				6.00	
220	4	0.13				7.20	
221	4	-0.09			6.74		
234	4	0.00			6.92		
235	4	-0.35					6.20
236	4	-0.44				6.00	
241	NR				< 10		
246	NR					< 15	
247	3	0.95					8.90
254	NR					< 15	
255	NR					< 5.2	
283	3	0.52					8.00
284	3	1.00	9.00				
287	0	-2.37			2.00		

MPV =	6.92
F-pseudosigma =	2.08
N =	37
Hu =	8.80
Hl =	6.00

Lab	Rating	Z-value	0	1	3	4	6
292	NR					< 20	
300	1	1.53					10.10
304	2	-1.02					4.80

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Pb (Lead) µg/L



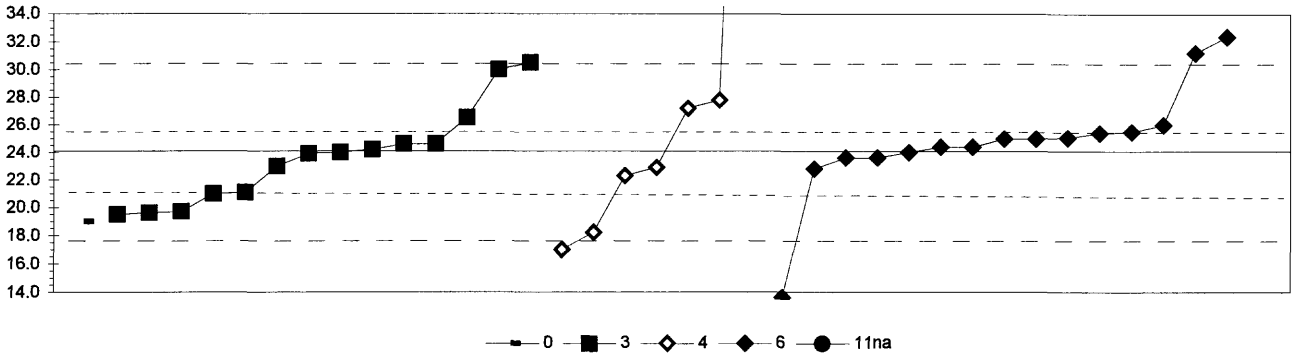
0. Other				4. ICP				
1. AA: direct, air				5. DCP				
3. AA: graphite furnace				6. ICP/MS				
		N =	1	1	21	17	1	19
		Minimum =	149	148	16	120	274	136
		Maximum =			169	182		384
		Median =			145	151		152
		F-pseudosigma =			9	10		10
Lab	Rating	Z-value	0	1	3	4	5	6
1	4	-0.40						147
5	4	0.00			150			
8	0	-2.25				133		
11	3	-0.66				145		
12	0	-2.91			128			
13	4	0.40			153			
16	4	0.26						152
18	2	-1.32			140			
23	1	-1.59			138			
24	3	0.93				157		
25	4	-0.26				148		
26	4	0.13				151		
30.1	4	0.40						153
32	3	-0.53						146
33	0	16.40					274	
42	0	2.42						168
46	3	-0.79			144			
48	3	-0.53						146
59	4	0.00						150
69	1	-1.85			136			
76	3	-0.56						146
83	4	-0.13			149			
89	0	-4.36			117			
100	0	2.51			169			
102	4	0.26				152		
105	1	1.59						162
119	2	-1.45			139			
126	3	-0.66			145			
134	4	-0.21			148			
136	2	1.45				161		
138	3	0.53						154
140	4	-0.26		148				
141	0	-3.97				120		
142	0	30.95						384
145	0	4.23				182		
146	2	1.32				160		
149	4	-0.26			148			
151	4	0.26						152
180	2	1.32				160		
191	1	-1.85						136
204	3	0.93						157
212	2	-1.32						140
215	2	-1.32				140		
220	4	0.19			151			
221	3	-0.79			144			
234	3	-0.53				146		
235	3	-0.53			146			
236	4	0.26				152		
241	4	0.26			152			
246	4	0.00				150		

MPV =	150
F-pseudosigma =	8
N =	60
Hu =	155
Hl =	145

Lab	Rating	Z-value	0	1	3	4	5	6
247	1	1.72						163
254	4	0.00				150		
255	0	2.78				171		
283	4	0.00						150
284	4	-0.13	149					
287	0	-17.72			16			
292	0	-4.63			115			
297	3	0.71			155			
300	0	2.65						170
304	4	0.13						151

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Sb (Antimony) µg/L

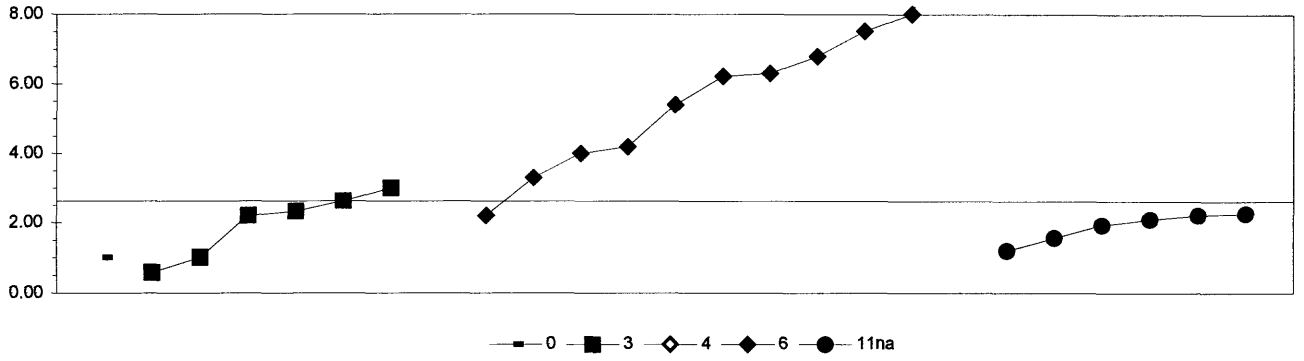


0. Other				6. ICP/MS			
3. AA: graphite furnace				11. AA: hydride $NaBH_4$			
4. ICP							
		N =	1	14	7	15	1
		Minimum =	19.0	19.5	17.0	13.6	2.2
		Maximum =		30.5	78.1	32.4	
		Median =		24.0	22.9	25.0	
		F-pseudosigma =		2.7	5.4	1.2	
Lab	Rating	Z-value	0	3	4	6	11na
1	2	-1.34		19.7			
5	3	0.95			27.2		
8	0	-6.68					2.2
11	3	-0.55			22.3		
13	4	0.03		24.2			
16	0	-3.20				13.6	
18	4	-0.34		23.0			
25	NR				< 51		
26	1	-1.80			18.2		
30.1	3	0.58				26.0	
32	4	-0.03				24.0	
42	4	0.09				24.4	
46	3	-0.95		21.0			
48	4	0.27				25.0	
59	4	0.40				25.4	
69	2	-1.37		19.6			
76	4	0.29				25.1	
89	4	0.15		24.6			
100	4	0.15		24.6			
102	0	-2.17			17.0		
105	4	-0.15				23.6	
119	2	-1.40		19.5			
134	3	-0.92		21.1			
138	4	-0.37			22.9		
141	3	0.73		26.5			
142	0	2.17				31.2	
146	NR				< 50		
151	4	0.09				24.4	
180	2	1.13			27.8		
212	4	0.27				25.0	
215	1	1.80		30.0			
234	4	-0.06		23.9			
241	1	1.95		30.5			
246	NR				< 85		
247	4	0.43				25.5	
255	0	16.48			78.1		
283	4	-0.40				22.8	
284	1	-1.56	19.0				
292	4	-0.03		24.0			
300	0	2.53				32.4	
304	4	-0.15				23.6	

MPV =	24.1
F-pseudosigma =	3.3
N =	38
Hu =	25.5
Hl =	21.1

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Se (Selenium) µg/L



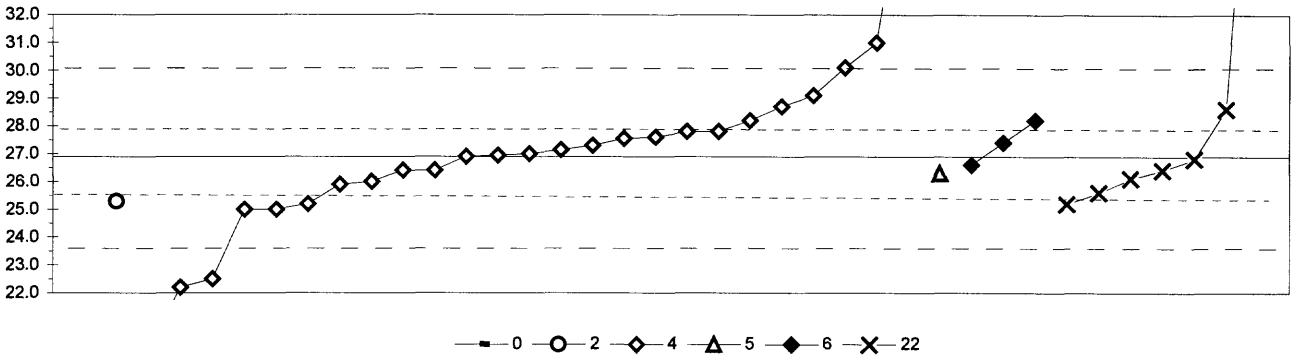
0. Other				6. ICP/MS			
3. AA: graphite furnace				11. AA: hydride $NaBH_4$			
4. ICP							
		N =	1	6	1	11	6
		Minimum =	1.00	0.58	59.60	2.20	1.20
		Maximum =		3.00		11.50	2.26
		Median =				6.22	
		F-pseudosigma =				2.27	
Lab	Rating	Z-value	0	3	4	6	11na
1	NR						2.10
5	NR			2.62			
8	NR						1.20
13	NR			< 5			
16	NR					11.50	
18	NR			< 1			
25	NR				< 129		
26	NR						1.56
30.1	NR					6.80	
32	NR					< 4	
42	NR					8.00	
48	NR					2.20	
59	NR					5.40	
69	NR			< 5			
86	NR						1.93
89	NR						2.22
100	NR			< 2			
102	NR				< 5		
105	NR					< 7	
119	NR						2.26
126	NR						< 1
134	NR			0.58			
136	NR				59.60		
138	NR					3.30	
141	NR			< 2			
142	NR					6.22	
146	NR				< 10		
151	NR					4.00	
180	NR				< 53.2		
191	NR					< 2	
204	NR					7.52	
212	NR					6.30	
215	NR			< 5			
220	NR			2.20			
221	NR			1.00			
234	NR			2.32			
236	NR				< 90		
241	NR			< 5			
246	NR				< 80		
247	NR					< 5	
255	NR			< 2			
283	NR					< 5	
284	NR		1.00				
292	NR			3.00			
300	NR					4.19	

MPV = insufficient data

N = 25

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

SiO_2 (Silica) mg/L

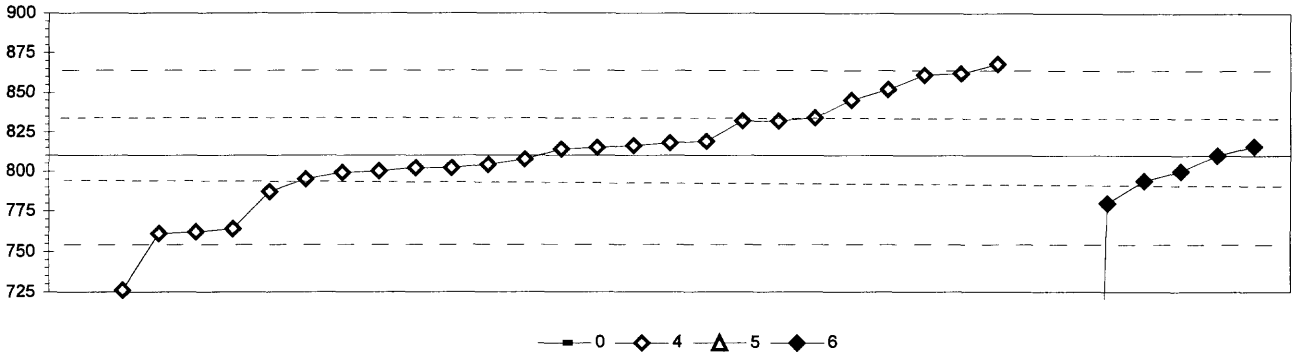


0. Other				5. DCP				
2. AA: direct nitrous, oxide				6. ICP/MS				
4. ICP				22. Colorimetric				
		N =	1	1	25	1	3	7
		Minimum =	20.5	25.3	19.9	26.3	26.6	25.2
		Maximum =			37.7		28.2	43.7
		Median =			27.0			26.4
		F-pseudosigma =			1.4			1.4
Lab	Rating	Z-value	0	2	4	5	6	22
1	3	-0.58			25.9			
5	4	0.09			27.0			
8	2	-1.01						25.2
11	0	-2.85			22.2			
13	4	0.46			27.6			
23	4	-0.28						26.4
24	3	0.58			27.8			
25	0	6.65			37.7			
26	3	0.83			28.2			
32	3	0.83					28.2	
33	4	-0.34				26.3		
43	4	-0.28			26.4			
64	3	-0.52			26.0			
83	2	-1.13			25.0			
89	4	-0.03						26.8
100	2	1.38			29.1			
102	2	-1.13			25.0			
105	2	1.13			28.7			
119	4	0.28			27.3			
121	3	0.58			27.8			
134	4	0.17			27.1			
138	4	-0.46						26.1
140	3	-0.77						25.6
142	1	1.99			30.1			
145	4	0.06			26.9			
151	4	0.34					27.4	
191	4	-0.15					26.6	
204	2	1.07						28.6
212	4	0.03			26.9			
215	0	-2.67			22.5			
234	4	-0.28			26.4			
236	0	-4.26			19.9			
241	3	-0.95		25.3				
246	4	0.43			27.6			
247	0	10.33						43.7
254	2	-1.01			25.2			
283	0	2.54			31.0			
284	0	-3.89	20.5					

MPV =	26.9
F-pseudosigma =	1.6
N =	38
Hu =	27.8
HI =	25.6

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Sr (Strontium) µg/L

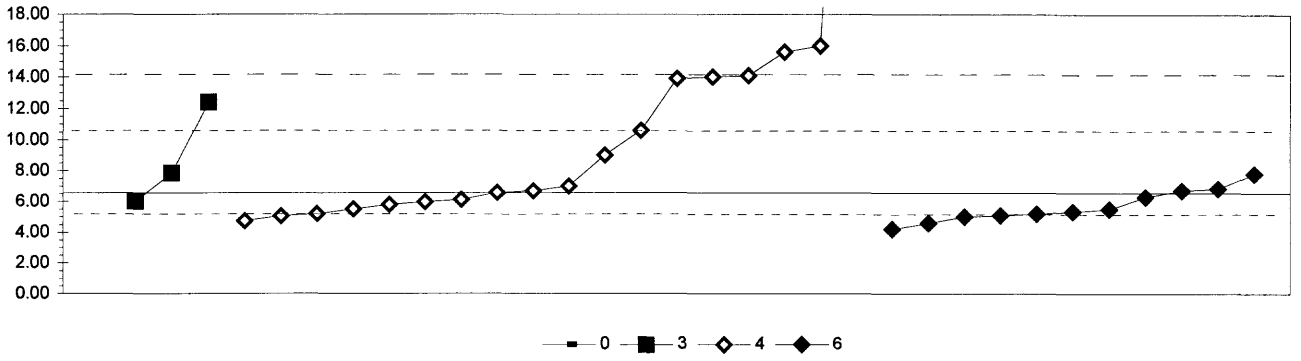


0. Other				6. ICP/MS		
4. ICP						
5. DCP						
		N =	1	25	1	6
		Minimum =	1242	726	914	1
		Maximum =		868		816
		Median =		814		
		F-pseudosigma =		24		
Lab	Rating	Z-value	0	4	5	6
1	3	-0.58				794
5	1	1.53		852		
8	4	-0.40		799		
11	4	-0.22		804		
16	1	-1.68		764		
18	1	-1.79		761		
24	1	1.90		862		
25	0	2.11		868		
30.1	4	0.00				810
32	2	-1.09				780
33	0	3.79			914	
85	4	-0.29		802		
86	2	1.28		845		
100	3	0.80		832		
102	1	1.86		861		
105	3	0.80		832		
121	4	0.15		814		
134	4	-0.09		808		
136	1	-1.75		762		
138	4	0.29		818		
142	4	0.22		816		
145	3	0.88		834		
151	4	0.22				816
191	4	-0.36				800
234	4	-0.29		802		
235	4	0.18		815		
236	3	-0.55		795		
246	4	0.33		819		
247	3	-0.84		787		
254	4	-0.36		800		
283	0	-3.06		726		
284	0	15.75	1242			
300	0	-29.49				1

MPV =	810
F-pseudosigma =	27
N =	33
Hu =	832
Hl =	795

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

V (Vanadium) µg/L

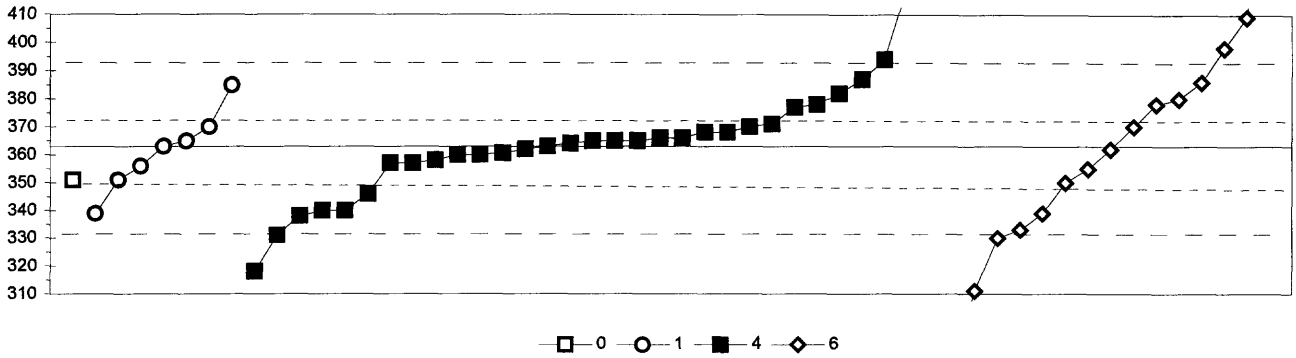


0. Other				6. ICP/MS		
3. AA: graphite furnace						
4. ICP						
		N =	1	3	18	11
		Minimum =	20.00	6.00	4.74	4.20
		Maximum =		12.40	50.00	7.80
		Median =			6.85	5.34
		F-pseudosigma =			6.08	1.07
Lab	Rating	Z-value	0	3	4	6
1	4	0.00			6.56	
5	4	-0.47			4.74	
8	NR				< 10	
13	NR				< 50	
16	4	0.04				6.70
18	4	-0.19			5.80	
23	4	0.33		7.85		
25	NR				< 4	
26	4	-0.27			5.50	
30.1	4	0.32				7.80
32	4	-0.40				5.00
42	3	-0.61				4.20
46	4	0.03			6.69	
48	4	-0.50				4.60
89	2	1.50		12.40		
100	NR				< 10	
102	4	0.11			7.00	
105	NR					< 13
134	4	-0.39			5.04	
136	2	1.04			10.60	
138	4	-0.15			5.96	
141	NR				< 10	
142	4	-0.31				5.34
145	0	2.42			16.00	
146	NR				< 10	
180	0	2.32			15.60	
212	4	-0.35				5.20
215	0	11.14			50.00	
220	1	1.91			14.00	
234	4	-0.12			6.10	
235	4	-0.07				6.30
236	3	0.63			9.00	
241	4	-0.14		6.00		
246	1	1.88			13.90	
247	4	-0.37				5.10
255	1	1.93			14.10	
283	4	-0.35			5.20	
284	0	3.45	20.00			
300	4	0.07				6.82
304	4	-0.27				5.50

MPV =	6.56
F-pseudosigma =	3.90
N =	33
Hu =	10.60
Hl =	5.34

Table 19. *Statistical summary of reported data for standard reference sample GWT-2 (ground-water trace constituents)--Continued*

Zn (Zinc) µg/L



0. Other				6. ICP/MS		
1. AA: direct, air						
4. ICP						
		N =	1	7	30	16
		Minimum =	351	339	318	194
		Maximum =		385	420	490
		Median =		363	365	359
		F-pseudosigma =		10	10	38

MPV =	363
F-pseudosigma =	16
N =	54
Hu =	371
Hl =	350

Lab	Rating	Z-value	0	1	4	6
1	1	-1.93				333
5	4	0.13			365	
8	4	0.00			363	
11	4	-0.06			362	
13	2	1.22			382	
16	0	-3.34				311
18	4	-0.39			357	
24	3	0.90			377	
25	0	-22.44			< 4	
26	4	0.13			365	
30.1	2	1.09				380
32	3	-0.51				355
42	3	-0.84				350
46	3	0.51			371	
48	0	-5.27				281
59	0	2.96				409
69	4	-0.45		356		
83	2	-1.09			346	
86	4	0.06			364	
89	1	-1.54		339		
100	4	0.32			368	
102	2	-1.48			340	
105	4	0.45				370
119	4	0.45			370	
121	0	3.66			420	
126	2	1.41		385		
134	4	0.32			368	
136	1	-1.61			338	
138	4	-0.15			361	
140	4	0.45		370		
141	0	-2.89			318	
142	0	8.16				490
145	3	0.96			378	
146	4	0.13			365	
151	1	-1.54				339
180	4	-0.32			358	
191	4	-0.06				362
204	2	1.48				386
212	0	-2.12				330
215	2	-1.48			340	
220	1	1.54			387	
221	4	0.13		365		
234	0	-2.06			331	
236	4	-0.39			357	
241	4	0.00		363		
246	4	0.19			366	
247	3	0.96				378
254	4	-0.19			360	
255	4	0.19			366	
283	1	1.99			394	
284	3	-0.77	351			
287	3	-0.77		351		
292	4	-0.19			360	
300	0	-10.86				194
304	0	2.25				398

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0	Other/Not reported		
1	AA: direct, air	=	atomic absorption: direct, air
2	AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3	AA: graphite furnace	=	atomic absorption: graphite furnace
4	ICP	=	inductively coupled plasma
5	DCP	=	direct current plasma
6	ICP/MS	=	inductively coupled plasma / mass spectrometry
7	IC	=	ion chromatography
12	Flame emission	=	flame emission
20	Titrate: color	=	titration: colorimetric (color reagent specified)
21	Titrate: electro	=	titration: electrometric
22	Color:	=	colorimetric(color reagent specified)
40	Ion electrode	=	ion selective electrode
41	Electro	=	electrometric: (type meter specified)
50	Gravimetric	=	gravimetric: (precipitate specified)
51	Turbidimetric	=	turbidimetric: (precipitate specified)

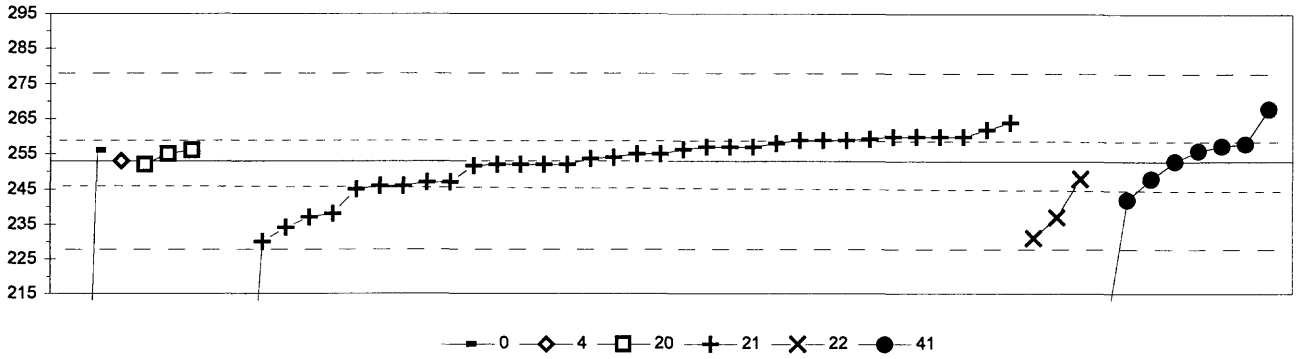
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hi	=	lower hinge value
µg/L	=	micrograms per liter
mg/L	=	milligrams per liter
µS/cm	=	microsiemens per centimeter at 25^0 C
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
Alk	Alkalinity as $CaCO_3$	149
B	Boron	150
Ca	Calcium	151
Cl	Chloride	152
DSRD	Dissolved solids	153
F	Fluoride	154
K	Potassium	155
Mg	Magnesium	156
Na	Sodium	157
total P	Phosphorus	158
SiO_2	Silica	159
SO_4	Sulfate	160
Sp Cond	Specific Conductance	161

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Alkalinity (as $CaCO_3$) mg/L



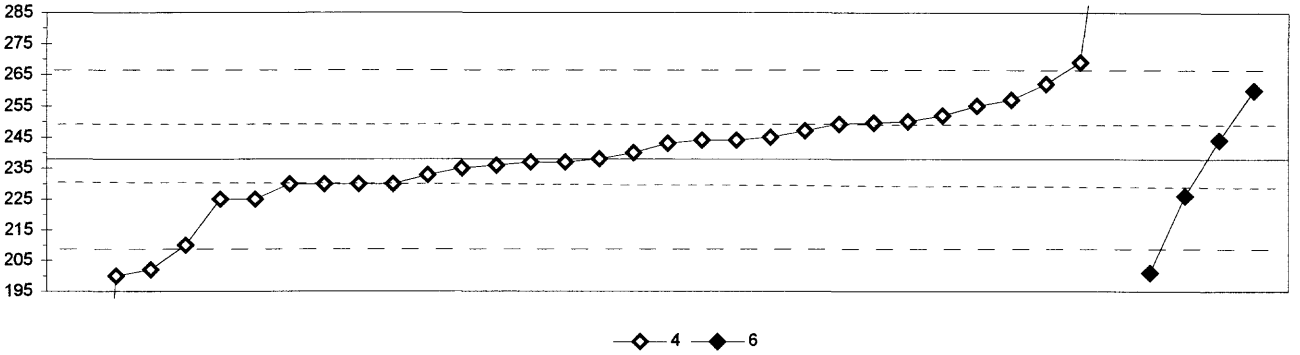
0. Other				21. Titrate: electrometric				
4. ICP				22. Colorimetric				
20. Titrate: colorimetric				41. Direct reading				
		N =	2	1	3	35	3	8
		Minimum =	41	253	252	0	231	200
		Maximum =	256		256	264	248	268
		Median =				254		255
		F-pseudosigma =				9		9
Lab	Rating	Z-value	0	4	20	21	22	41
1	4	0.43				257		
5	4	-0.15				252		
8	4	0.20			255			
11	3	-0.73				247		
12	2	1.23				264		
13	3	-0.84				246		
16	1	-1.76				238		
24	3	0.66				259		
25	3	1.00				262		
26	3	-0.84				246		
33	4	0.35				256		
34	4	0.43				257		
42	0	-29.17				0		
43	3	0.66				259		
46	4	-0.15				252		
48	1	-1.88					237	
59	3	0.54						258
68	4	-0.03		253				
69	3	-0.61					248	
83	4	0.03				254		
85	3	0.77				260		
89	3	0.54				258		
100	0	-13.65				135		
109	4	0.20				255		
119	4	-0.15				252		
134	4	0.47						257
136	4	-0.15				252		
138	3	0.77				260		
141.1	3	0.77				260		
142	0	-2.69				230		
145	0	-2.57					231	
146	3	0.66				259		
151	4	0.20				255		
158	3	-0.96				245		
180	4	-0.03						253
204	1	1.70						268
212	3	-0.73				247		
215	4	-0.15			252			
218	0	-6.15						200
220	4	-0.20				252		
234	4	0.31			256			
236	3	0.77				260		
241	4	0.43				257		
247	2	-1.30						242
255	4	0.31						256
283	3	-0.61						248
284	4	0.31	256					
287	0	-2.23				234		
292	3	0.69				259		
294	4	0.08				254		

MPV =	253
F-pseudosigma =	9
Rating Criterion =	13 **
N =	52
Hu =	258
Hl =	246

Lab	Rating	Z-value	0	4	20	21	22	41
297	1	-1.88				237		
300	0	-24.55	41					

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

B (Boron) µg/L

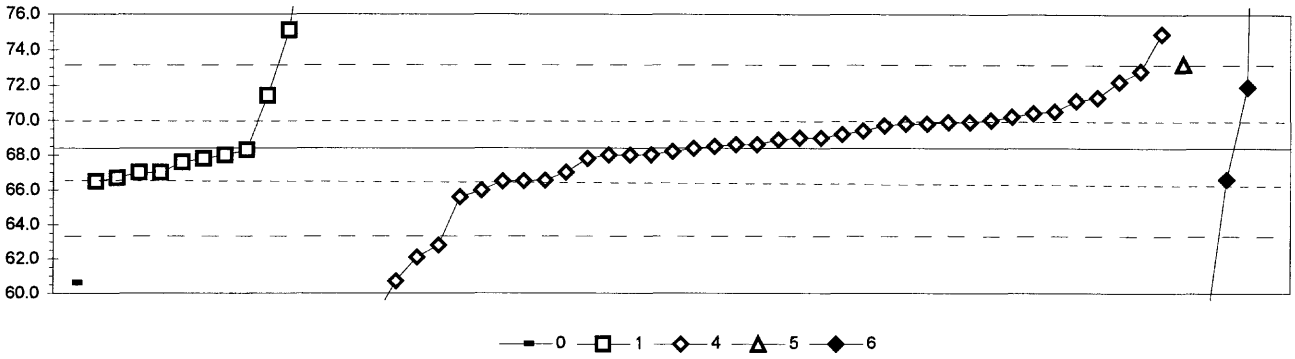


4. ICP				
6. ICP/MS				
		N =	31	4
		Minimum =	54	201
		Maximum =	355	260
		Median =	238	
		F-pseudosigma =	14	
Lab	Rating	Z-value	4	6
1	4	-0.21	235	
5	4	0.42	244	
8	0	-2.50	202	
11	4	0.35	243	
16	0	8.14	355	
18	3	-0.56	230	
24	3	0.83	250	
25	0	2.16	269	
26	3	-0.56	230	
30.1	0	-2.57		201
46	3	0.63	247	
48	3	-0.83		226
85	4	0.14	240	
86	4	-0.07	237	
100	4	-0.14	236	
119	0	-2.64	200	
134	3	0.97	252	
136	0	-12.78	54	
138	3	0.81	250	
141.1	4	0.49	245	
142	4	0.00	238	
145	4	0.42	244	
180	1	1.67	262	
212	3	-0.56	230	
215	1	-1.95	210	
220	4	-0.35	233	
234	4	-0.07	237	
235	2	1.18	255	
236	3	-0.90	225	
246	3	0.78	249	
247	4	0.42		244
254	3	-0.56	230	
255	2	1.32	257	
283	3	-0.90	225	
300	1	1.53		260

MPV =	238
F-pseudosigma =	14
N =	35
Hu =	249
Hl =	230

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Ca (Calcium) mg/L



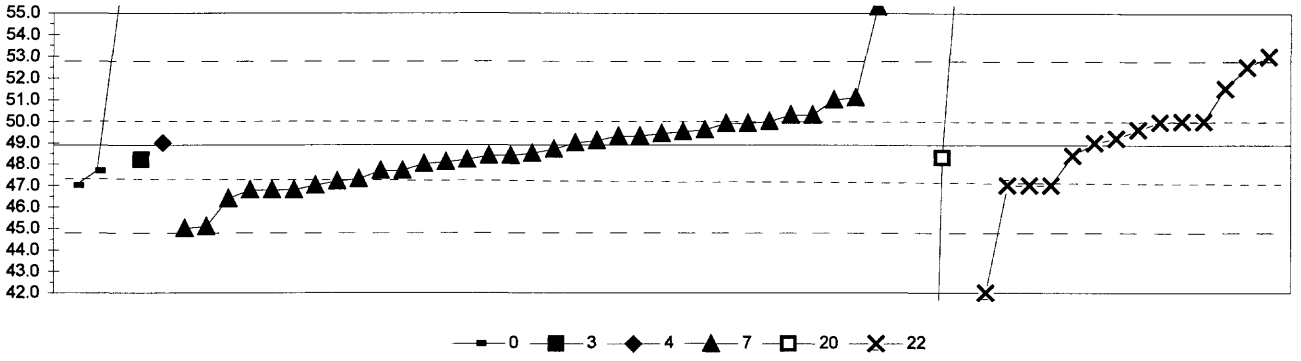
0. Other			5. DCP				
1. AA: direct, air			6. ICP/MS				
4. ICP							
		N =	1	11	40	1	4
		Minimum =	61	67	18	73	57
		Maximum =		83	75		138
		Median =		68	69		
		F-pseudosigma =		2	3		

MPV =	68.4
F-pseudosigma =	2.5
N =	57
Hu =	70.0
Hl =	66.6

Lab	Rating	Z-value	0	1	4	5	6
1	4	0.05			68.5		
5	0	-2.21			62.8		
8	0	-3.05			60.7		
11	2	1.08			71.1		
13	4	0.09			68.6		
16	4	0.09			68.6		
18	2	-1.10			65.6		
24	3	0.56			69.8		
25	0	2.59			74.9		
26	4	0.25			69.0		
30.1	0	-4.51					57.0
33	1	1.91				73.2	
43	4	0.41			69.4		
46	3	-0.75			66.5		
48	2	1.40					71.9
59	4	-0.15		68.0			
64	3	0.72			70.2		
68	2	1.16			71.3		
69	4	-0.23		67.8			
83	3	-0.95			66.0		
85	3	-0.67		66.7			
86	3	0.80			70.4		
89	0	5.96		83.4			
100	3	0.56			69.8		
102	3	-0.55			67.0		
109	4	-0.03		68.3			
119	4	-0.15			68.0		
134	4	0.00			68.4		
136	0	-19.83			18.4		
138	4	0.20			68.9		
140	3	-0.75		66.5			
141.1	0	-4.91			56.0		
142	4	-0.23			67.8		
145	4	0.33			69.2		
146	4	-0.07			68.2		
180	4	0.25			69.0		
191	3	-0.71					66.6
204	3	-0.55		67.0			
212	3	0.60			69.9		
215	0	-2.49			62.1		
218	3	0.64			70.0		
220	3	-0.73			66.5		
221	4	-0.31		67.6			
234	3	0.84			70.5		
235	1	1.75			72.8		
236	3	-0.74			66.5		
241	0	2.67		75.1			
246	4	-0.15			68.0		
247	3	0.60			69.9		
254	4	-0.15			68.0		
255	3	0.52			69.7		
283	0	-3.92			58.5		
284	0	-3.09	60.6				
287	3	-0.55		67.0			
292	2	1.20		71.4			
297	1	1.52			72.2		
300	0	27.62					138.0

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Cl (Chloride) mg/L



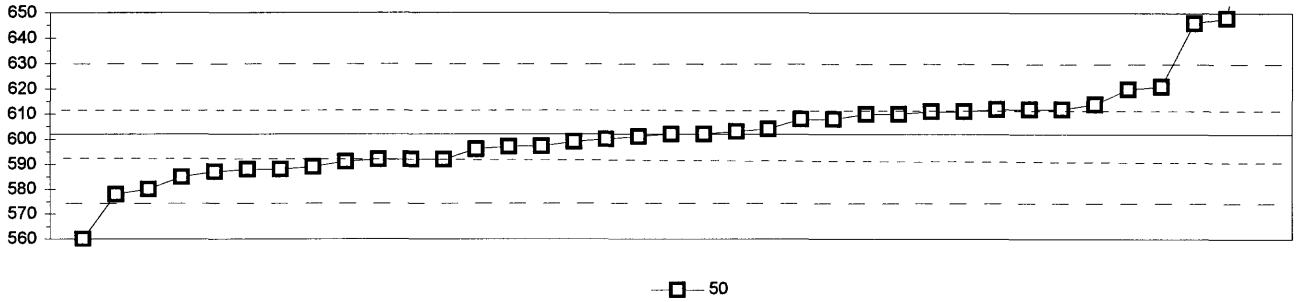
0. Other				7. Ion chromatography				
3. AA: graphite furnace				20. Titrate: colorimetric				
4. ICP				22. Colorimetric				
		N =	3	1	1	34	3	14
		Minimum =	47.0	48.2	49.0	45.0	4.0	42.0
		Maximum =	55.5			68.0	62.0	53.0
		Median =				48.6		49.4
		F-pseudosigma =				1.9		2.2
Lab	Rating	Z-value	0	3	4	7	20	22
1	3	-0.82				47.2		
5	4	-0.32		48.2				
8	1	-1.90				45.0		
11	3	0.57						50.0
12	3	-0.91						47.0
13	3	-0.57				47.7		
16	3	-0.91						47.0
24	4	-0.22						48.4
25	3	-0.91				47.0		
26	4	0.22				49.3		
30.1	2	-1.01				46.8		
42	3	0.72				50.3		
46	4	0.17						49.2
48	0	-3.38						42.0
59	4	-0.42				48.0		
64	4	0.12				49.1		
68	1	1.80						52.5
69	3	0.57						50.0
76	4	0.33				49.5		
83	3	-0.91	47.0					
85	4	0.37				49.6		
86	4	-0.07				48.7		
89	3	-0.77				47.3		
100	0	3.19				55.3		
102	4	0.07			49.0			
119	2	-1.21				46.4		
134	4	0.29				49.4		
138	4	-0.32				48.2		
140	3	0.55						50.0
141.1	3	-0.91						47.0
141.2	2	-1.01				46.8		
142	2	1.11				51.1		
145	4	0.22				49.3		
146	0	2.05						53.0
151	4	0.07				49.0		
180	3	0.57				50.0		
191	4	-0.22				48.4		
204	3	-0.57	47.7					
208	4	-0.17				48.5		
212	2	1.06				51.0		
215	0	6.50					62.0	
220	2	1.32						51.5
221	4	-0.27					48.3	
234	4	-0.37				48.1		
236	3	0.52				49.9		
241	3	0.52				49.9		
246	2	-1.01				46.8		
247	4	-0.22				48.4		
255	4	0.37						49.6
283	1	-1.85				45.1		

MPV =	48.9
F-pseudosigma =	2.0
N =	56
Hu =	50.0
Hl =	47.3

Lab	Rating	Z-value	0	3	4	7	20	22
284	0	3.29	55.5					
287	0	-22.16					4.0	
292	3	-0.57				47.7		
294	3	0.72				50.3		
297	4	0.07						49.0
300	0	9.46				68.0		

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

DSRD (Dissolved solids) mg/L



50. Gravimetric

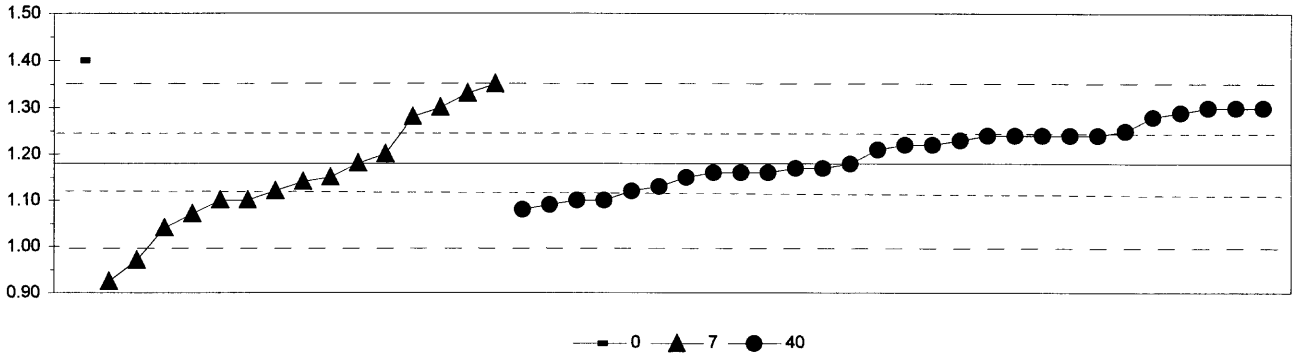
N =	37
Minimum =	560
Maximum =	711
Median =	602
F-pseudosigma =	14

MPV =	602
F-pseudosigma =	14
N =	37
Hu =	611
Hl =	592

Lab	Rating	Z-value	50
1	2	1.35	621
5	3	0.64	611
8	3	0.57	610
11	4	0.14	604
12	1	-1.56	580
13	3	-0.99	588
16	4	-0.34	597
18	3	-0.99	588
25	0	-2.98	560
26	3	-0.78	591
43	3	0.57	610
46	3	0.71	612
48	2	1.28	620
59	3	0.64	611
69	3	0.85	614
76	4	0.07	603
85	3	-0.92	589
89	4	-0.21	599
100	4	0.43	608
109	2	-1.21	585
119	3	-0.71	592
134	3	0.71	612
138	4	-0.43	596
140	2	-1.07	587
141.1	4	-0.36	597
142	1	-1.70	578
146	3	-0.71	592
212	4	0.00	602
215	4	-0.07	601
221	4	0.43	608
234	3	0.71	612
236	4	0.00	602
241	4	-0.14	600
247	0	7.74	711
283	0	3.27	648
284	3	-0.71	592
292	0	3.12	646

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

F (Fluoride) mg/L

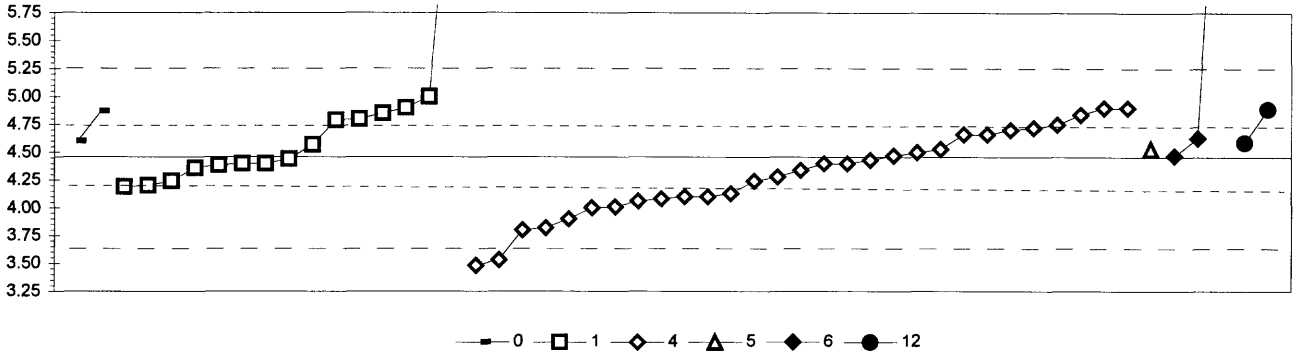


0. Other					
7. Ion chromatography					
40. Ion selective electrode					
		N =	1	15	28
		Minimum =	1.40	0.92	1.08
		Maximum =		1.35	1.30
		Median =		1.14	1.22
		F-pseudosigma =		0.11	0.06
Lab	Rating	Z-value	0	7	40
1	4	0.44			1.22
8	3	-0.86		1.10	
11	3	-0.97			1.09
13	1	-1.51		1.04	
18	4	-0.32			1.15
18	4	0.33			1.21
24	4	0.44			1.22
25	3	0.65			1.24
42	1	1.84		1.35	
46	3	0.65			1.24
48	2	1.30			1.30
59	3	0.65			1.24
69	4	-0.10			1.17
76	3	-0.86			1.10
83	2	1.30			1.30
85	4	-0.21			1.16
86	2	1.08		1.28	
89	3	0.65			1.24
100	3	-0.64			1.12
119	4	-0.21			1.16
134	4	-0.10			1.17
138	2	1.08			1.28
140	3	0.54			1.23
141.1	2	1.19			1.29
141.2	0	-2.76		0.92	
142	4	-0.01			1.18
145	4	-0.43		1.14	
146	3	0.65			1.24
151	2	-1.07			1.08
180	1	1.62		1.33	
208	0	-9.09		< 0.3	
212	3	-0.86			1.10
215	4	-0.21			1.16
234	3	-0.64		1.12	
236	3	-0.86		1.10	
241	3	-0.53			1.13
246	4	-0.32		1.15	
247	4	0.01		1.18	
255	3	0.76			1.25
283	4	0.22		1.20	
284	0	2.38	1.40		
287	2	1.30			1.30
292	2	-1.18		1.07	
294	0	-2.28		0.97	
300	2	1.30		1.30	

MPV =	1.18
F-pseudosigma =	0.09
N =	44
Hu =	1.25
Hl =	1.12

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

K (Potassium) mg/L



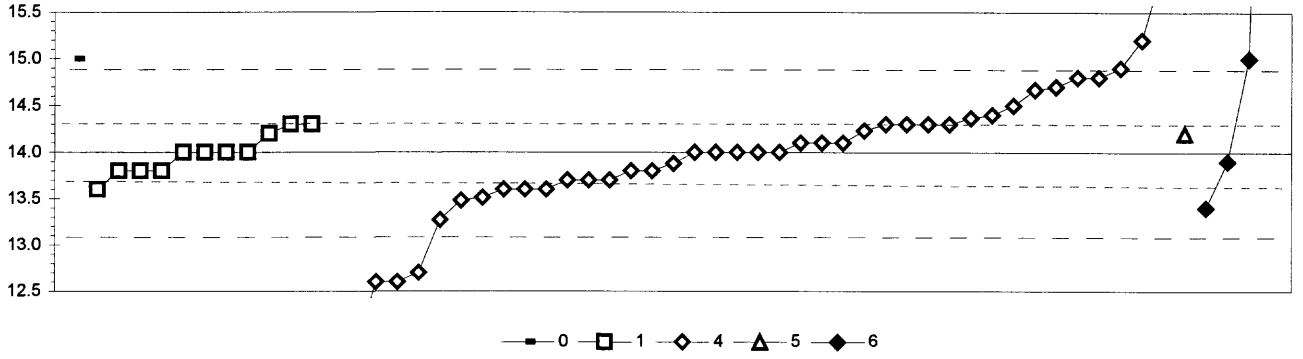
0. Other				5. DCP				
1. AA: direct, air				6. ICP/MS				
4. ICP				12. Flame emission				
		N =	2	15	29	1	3	2
		Minimum =	4.60	4.19	3.48	4.53	4.47	4.59
		Maximum =	4.87	7.40	4.90		8.20	4.89
		Median =		4.44	4.34			
		F-pseudosigma =		0.34	0.44			

MPV =	4.46
F-pseudosigma =	0.40
N =	52
Hu =	4.74
Hl =	4.20

Lab	Rating	Z-value	0	1	4	5	6	12
1	4	-0.04		4.44				
5	0	-2.31			3.53			
8	1	-1.64			3.80			
11	3	-0.81			4.13			
13	3	0.96			4.84			
16	4	-0.14		4.40				
18	3	0.61			4.70			
24	2	-1.11			4.01			
25	4	0.19			4.53			
26	4	0.36	4.60					
33	4	0.19				4.53		
43	4	-0.14			4.40			
46	4	0.11			4.50			
48	4	0.44					4.63	
59	2	1.11		4.90				
64	3	0.86		4.80				
68	3	0.51			4.66			
69	2	1.09						4.89
83	3	-0.54		4.24				
85	4	0.29		4.57				
86	4	-0.29			4.34			
89	3	-0.66		4.19				
100	4	-0.44			4.28			
102	2	-1.39			3.90			
109	3	0.99		4.85				
119	2	-1.14			4.00			
134	4	-0.17		4.39				
138	3	-0.89			4.10			
140	4	-0.24		4.36				
141.1	1	-1.59			3.82			
142	4	0.04			4.47			
145	3	-0.94			4.08			
146	3	0.74			4.75			
180	3	-0.99			4.06			
191	4	0.04					4.47	
204	4	0.34						4.59
212	NR				< 5			
215	0	-8.65			< 1			
218	2	1.11			4.90			
220	2	1.11			4.90			
221	3	0.84		4.79				
234	4	-0.14			4.40			
236	3	-0.54			4.24			
241	2	1.36		5.00				
246	3	0.51			4.66			
247	3	0.66			4.72			
254	3	-0.64		4.20				
255	4	-0.06			4.43			
283	0	-2.44			3.48			
284	2	1.04	4.87					
287	0	7.36		7.40				
292	4	-0.14		4.40				
297	3	-0.89			4.10			
300	0	9.36					8.20	

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Mg (Magnesium) mg/L



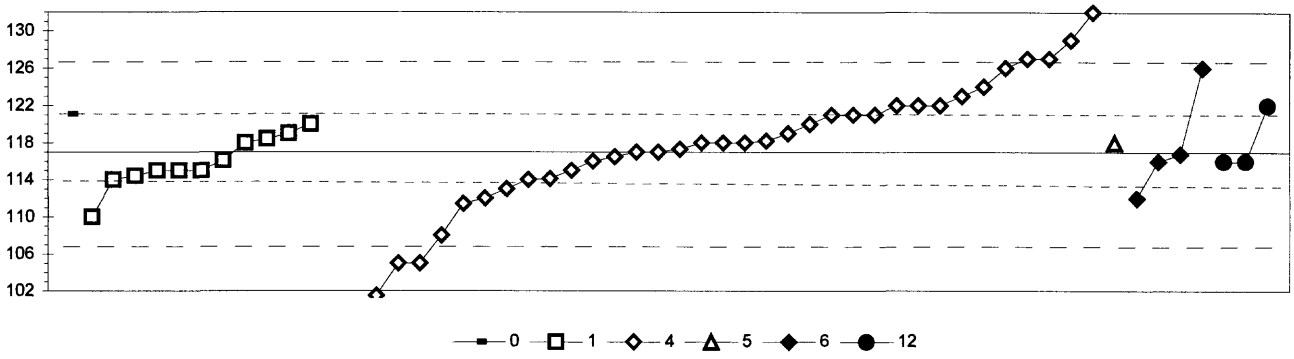
0. Other				5. DCP			
1. AA: direct, air				6. ICP/MS			
4. ICP							
		N =	1	11	40	1	4
		Minimum =	15.0	13.6	3.5	14.2	13.4
		Maximum =		14.3	16.0		21.6
		Median =		14.0	14.0		
		F-pseudosigma =		0.2	0.5		
Lab	Rating	Z-value	0	1	4	5	6
1	3	-0.67			13.7		
5	4	-0.45			13.8		
8	0	-3.15			12.6		
11	4	0.00			14.0		
13	4	0.22			14.1		
16	3	-0.90			13.6		
18	0	-2.92			12.7		
24	4	0.22			14.1		
25	1	1.80			14.8		
26	3	0.67			14.3		
30.1	2	-1.35					13.4
33	4	0.45				14.2	
43	4	0.00			14.0		
46	3	-0.90			13.6		
48	0	2.25					15.0
59	4	0.00		14.0			
64	3	-0.67			13.7		
68	1	2.02			14.9		
69	4	0.00		14.0			
83	1	-1.64			13.3		
85	4	-0.45		13.8			
86	2	1.12			14.5		
89	4	0.00		14.0			
100	1	1.80			14.8		
102	4	0.00			14.0		
109	4	-0.45		13.8			
119	4	0.00			14.0		
134	3	0.82			14.4		
136	0	-23.59			3.5		
138	2	-1.10			13.5		
140	3	-0.90		13.6			
141.1	0	-4.95			11.8		
142	1	1.57			14.7		
145	3	0.52			14.2		
148	4	0.00			14.0		
180	4	-0.45			13.8		
191	4	-0.22					13.9
204	4	-0.45		13.8			
212	3	0.67			14.3		
215	0	-3.15			12.6		
218	0	4.50			16.0		
220	2	-1.17			13.5		
221	3	0.67		14.3			
234	3	-0.90			13.6		
235	3	0.67			14.3		
236	4	-0.27			13.9		
241	3	0.67		14.3			
246	1	1.51			14.7		
247	3	0.67			14.3		
254	3	-0.67			13.7		

MPV =	14.0
F-pseudosigma =	0.4
N =	57
Hu =	14.3
Hl =	13.7

Lab	Rating	Z-value	0	1	4	5	6
255	4	0.22			14.1		
283	0	2.70			15.2		
284	0	2.25	15.0				
287	4	0.00		14.0			
292	4	0.45		14.2			
297	3	0.90			14.4		
300	0	17.09					21.6

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Na (Sodium) mg/L



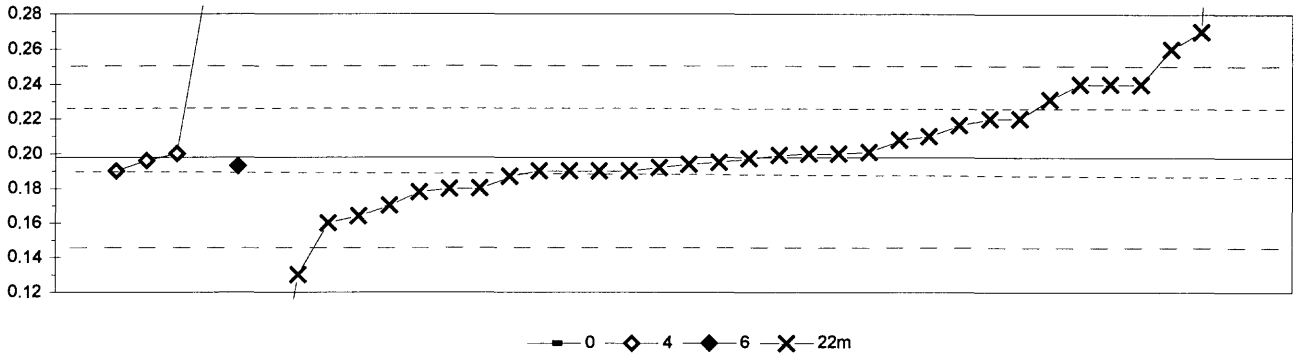
0. Other				5. DCP				
1. AA: direct, air				6. ICP/MS				
4. ICP				12. Flame emission				
		N =	1	11	36	1	4	3
		Minimum =	121	110	91	118	112	116
		Maximum =		120	132		126	122
		Median =		115	118			
		F-pseudosigma =		3	6			
Lab	Rating	Z-value	0	1	4	5	6	12
1	4	-0.23			116			
5	3	0.77			121			
8	0	-2.43			105			
11	1	-1.83			108			
13	4	-0.03			117			
16	4	0.17			118			
18	4	-0.13			117			
24	3	0.77			121			
25	1	1.77			126			
26	2	1.17			123			
30.1	4	-0.23					116	
30.2	3	0.97						122
33	4	0.17				118		
43	4	-0.43			115			
46	2	-1.03			112			
48	1	1.77					126	
59	3	-0.55		114				
64	4	0.37		119				
68	4	0.17			118			
69	4	-0.23						116
83	4	0.17			118			
85	3	-0.63		114				
86	3	0.97			122			
89	4	-0.43		115				
100	3	0.77			121			
102	0	-4.43			95			
109	4	-0.21		116				
119	3	-0.83			113			
134	3	0.57		120				
138	3	-0.63			114			
140	4	0.17		118				
141.1	0	-3.13			102			
142	1	1.97			127			
145	4	0.21			118			
146	0	2.37			129			
180	4	0.37			119			
191	4	-0.07					117	
204	4	-0.23						116
212	3	0.97			122			
215	0	-2.43			105			
218	1	1.97			127			
220	4	0.03			117			
221	4	-0.43		115				
234	3	0.57			120			
236	3	-0.61			114			
241	2	-1.43		110				
246	2	-1.15			111			
247	3	0.97			122			
254	4	-0.03			117			
255	2	1.37			124			

MPV =	117
F-pseudosigma =	5
N =	56
Hu =	121
Hl =	114

Lab	Rating	Z-value	0	1	4	5	6	12
283	0	-5.15			91			
284	3	0.79	121					
287	4	-0.43		115				
292	4	0.25		118				
297	0	2.97			132			
300	2	-1.03					112	

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

total P as P (total Phosphorus as phosphorus) mg/L

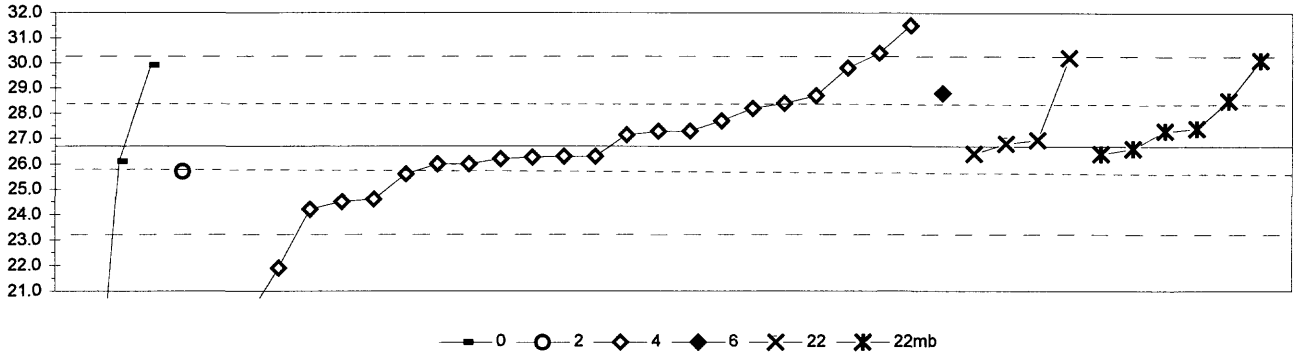


0. Other				22m. Color: phosphomolybdate		
4. ICP						
6. ICP/MS						
		N =	1	4	1	34
		Minimum =	0.65	0.19	0.19	0.03
		Maximum =		0.30		0.62
		Median =				0.20
		F-pseudosigma =				0.02
Lab	Rating	Z-value	0	4	6	22m
1	3	-0.76				0.18
8	3	-0.68				0.18
11	4	-0.30				0.19
12	2	-1.44				0.16
13	0	-2.58				0.13
16	3	0.69				0.22
25	0	-3.00		< 0.121		
46	1	1.60				0.24
48	1	1.60				0.24
83	4	-0.30		0.19		
85	4	0.46				0.21
86	0	3.84		0.30		
89	4	-0.30				0.19
102	4	-0.11				0.20
119	4	0.08				0.20
134	2	-1.29				0.16
138	4	-0.04				0.20
140	4	-0.30				0.19
141.1	0	2.36				0.26
142	4	0.38				0.21
145	2	-1.06				0.17
146	2	1.25				0.23
151	4	-0.23				0.19
158	3	-0.68				0.18
180	4	-0.42				0.19
191	4	-0.19			0.19	
204	4	0.04				0.20
212	4	0.08				0.20
215	4	-0.30				0.19
220	3	0.84				0.22
221	1	1.60				0.24
234	4	0.11				0.20
236	4	-0.08		0.20		
241	4	-0.15				0.19
254	4	0.08		0.20		
283	0	2.74				0.27
284	0	17.18	0.65			
287	0	13.38				0.55
292	3	0.84				0.22
294	0	-6.31				0.03
297	0	16.19				0.62

MPV =	0.20
F-pseudosigma =	0.03
N =	40
Hu =	0.23
Hl =	0.19

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

SiO_2 (Silica) mg/L

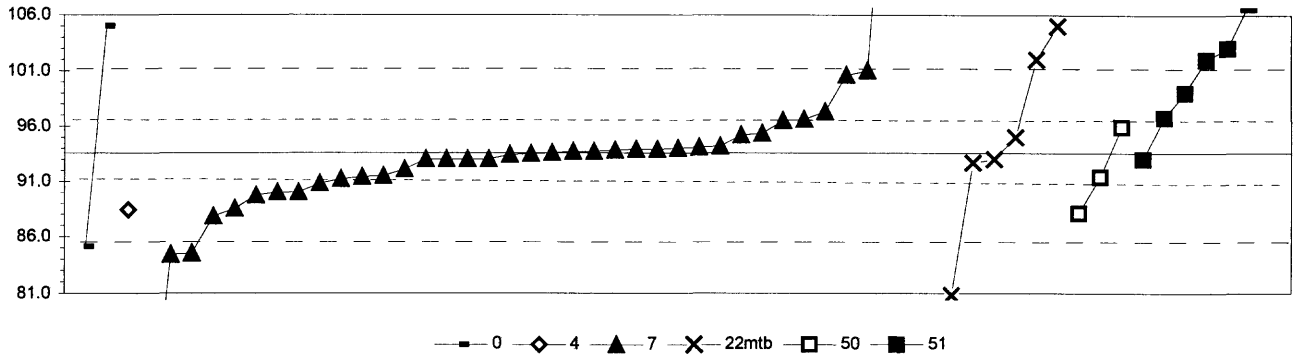


0. Other				6. ICP/MS				
2. AA: direct, nitrous oxide				22. Colorimetric				
4. ICP				22mb. Color: molybdate blue				
		N =	3	1	23	1	4	6
		Minimum =	10.9	25.7	19.2	28.8	26.4	26.4
		Maximum =	29.9		31.5		30.2	30.1
		Median =			26.3			
		F-pseudosigma =			2.1			
Lab	Rating	Z-value	0	2	4	6	22	22mb
1	3	-0.62			25.6			
5	4	-0.22			26.3			
8	4	-0.17						26.4
11	0	-2.70			21.9			
13	3	0.56			27.7			
24	3	0.96			28.4			
25	0	2.70			31.5			
26	3	0.84			28.2			
33	4	-0.34	26.1					
43	4	-0.28			26.2			
46	4	0.39						27.4
64	4	-0.22			26.3			
83	2	-1.41			24.2			
85	4	-0.06						26.6
89	4	0.06					26.8	
100	2	1.12			28.7			
102	2	-1.24			24.5			
119	4	-0.39			26.0			
134	4	0.25			27.1			
138	4	-0.17					26.4	
140	4	0.13					26.9	
142	0	2.08			30.4			
145	4	-0.25			26.3			
151	4	0.34						27.3
191	2	1.18				28.8		
204	2	1.01						28.5
212	4	0.34			27.3			
215	0	-4.22			19.2			
234	4	-0.39			26.0			
236	0	-3.82			19.9			
241	3	-0.56		25.7				
246	4	0.33			27.3			
247	1	1.97					30.2	
254	2	-1.18			24.6			
255	1	1.91						30.1
283	1	1.74			29.8			
284	0	-8.88	10.9					
294	1	1.80	29.9					

MPV =	26.7
F-pseudosigma =	1.8
N =	38
Hu =	28.4
HI =	26.0

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

SO_4 (Sulfate) mg/L



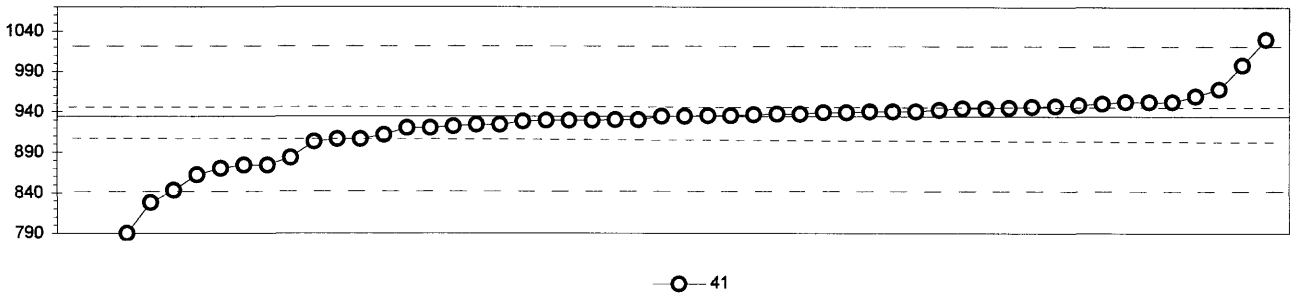
0. Other				22mtb. Color: methyl thymol blue				
4. ICP				50. Gravimetric				
7. Ion chromatography				51. Turbidimetric				
		N =	2	4	37	7	3	7
		Minimum =	85.1	0.0	66.7	78.7	88.1	93.0
		Maximum =	105.0	88.4	127.0	105.0	95.9	412.0
		Median =			93.5	93.0		102.0
		F-pseudosigma =			2.2	13.1		5.3
Lab	Rating	Z-value	0	4	7	22mtb	50	51
1	3	-0.55			91.4			
5	0	-2.12	85.1					
8	4	-0.15			93.0			
11	4	-0.15			93.0			
12	0	2.85				105.0		
13	4	0.07			93.9			
16	0	-3.72				78.7		
24	4	-0.22				92.7		
25	0	-2.27			84.5			
26	4	0.10			94.0			
30.1	3	-0.60			91.2			
34	0	3.35						107.0
42	1	1.75			100.6			
43	3	-0.55					91.4	
46	3	0.92			97.3			
48	2	1.35						99.0
59	0	-2.30			84.4			
64	4	-0.02			93.5			
68	0	2.10				102.0		
69	4	-0.15				93.0		
76	4	0.43			95.3			
83	2	-1.30		88.4				
85	4	-0.05			93.4			
86	4	0.02			93.7			
89	4	-0.37			92.1			
100	1	1.85			101.0			
102	4	0.35				95.0		
109	3	0.57					95.9	
119	3	-0.70			90.8			
134	4	0.05			93.8			
138	4	0.00			93.6			
140	0	2.35						103.0
141.1	0	2.10						102.0
141.2	2	-1.45			87.8			
142	4	-0.15			93.0			
145	3	-0.90			90.0			
146	0	2.85	105.0					
151	4	-0.15			93.0			
180	3	0.75			96.6			
191	0	-6.72			66.7			
204	0	-3.20				80.8		
208	3	-0.52			91.5			
212	3	0.72			96.5			
215	0	79.54						412.0
220	3	0.79						96.8
221	2	-1.37					88.1	
234	4	0.12			94.1			
236	2	-1.27			88.5			
241	4	0.40			95.2			
246	3	-0.90			90.0			

MPV =	93.6
F-pseudosigma =	4.0
N =	57
Hu =	96.6
Hl =	91.2

Lab	Rating	Z-value	0	4	7	22mtb	50	51
247	4	0.15			94.2			
283	3	-0.97			89.7			
284	0	-22.15	< 5					
287	4	-0.15						93.0
292	4	0.02			93.7			
294	4	0.07			93.9			
297	0	8.07			125.9			
300	0	8.34			127.0			

Table 20. *Statistical summary of reported data for standard reference sample GWM-2 (ground-water major constituents)--Continued*

Sp Cond (Specific Conductance) µS/cm



41. Direct reading

N =	52
Minimum =	9
Maximum =	1030
Median =	934
F-pseudosigma =	47

MPV =	934
F-pseudosigma =	26
Rating Criterion =	47 **
N =	52
Hu =	944
Hl =	909

Lab	Rating	Z-value	41
1	4	0.06	937
5	4	0.02	935
8	2	-1.09	883
11	4	-0.30	920
12	0	-5.20	691
13	4	0.21	944
16	4	0.17	942
18	2	-1.28	874
24	4	0.13	940
25	4	-0.26	922
26	4	0.34	950
33	2	-1.37	870
42	4	-0.21	924
43	4	0.00	934
46	4	-0.09	930
48	4	0.24	945
59	4	0.11	939
64	4	0.13	940
85	4	-0.13	928
86	3	0.73	968
89	4	0.02	935
100	4	0.11	939
102	4	0.39	952
109	4	-0.11	929
119	4	0.06	937
134	4	-0.11	929
136	1	-1.54	862
138	4	-0.49	911
140	3	0.54	959
141.1	4	0.30	948
142	4	0.26	946
145	4	-0.11	929
146	0	-2.27	828
151	4	-0.21	924
158	4	0.21	944
180	2	-1.28	874
204	3	-0.60	906
212	3	-0.66	903
215	2	1.37	998
218	0	-19.80	9
234	4	0.39	952
236	4	0.13	940
241	0	-3.08	790
246	4	-0.30	920
247	4	0.39	952
255	0	2.06	1030
283	4	0.28	947
284	4	0.00	934
287	1	-1.95	843
292	4	0.04	936
294	4	-0.09	930
297	3	-0.60	906

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported		
1. AA: direct, air	=	atomic absorption: direct, air
2. AA: direct, N_2O	=	atomic absorption: direct, nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma / mass spectrometry
7. IC	=	ion chromatography
10. AA: extraction	=	atomic absorption: extraction (chelating agent[s] specified)
11. AA: hydride	=	atomic absorption: hydride (reducing agent specified)
12. AA: flame emission	=	atomic absorption: flame emission
22. Color:	=	colorimetric (color reagent specified)

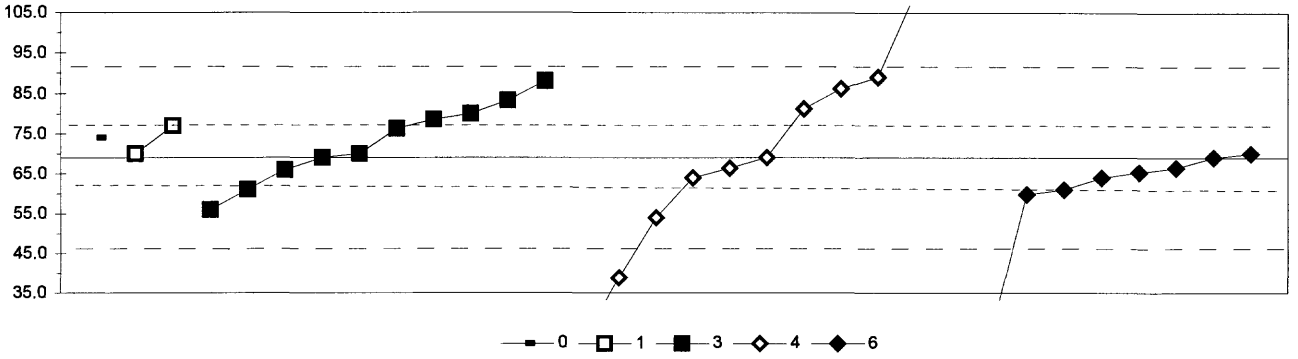
Abbreviations and symbols

N =	number of analyses--(excluding less than values)
MPV =	most probable value
F-pseudosigma =	nonparametric statistic deviation
Hu =	upper hinge value
Hl =	lower hinge value
µg/L =	micrograms per liter
mg/L =	milligrams per liter
Lab =	laboratory code number
NR =	not rated, less than value reported or insufficient data
< =	less than

Constituent		page	Constituent		page
Ag	Silver	163	Li	Lithium	176
Al	Aluminum	164	Mg	Magnesium	177
As	Arsenic	165	Mn	Manganese	178
B	Boron	166	Mo	Molybdenum	179
Ba	Barium	167	Na	Sodium	180
Be	Beryllium	168	Ni	Nickel	181
Ca	Calcium	169	Pb	Lead	182
Cd	Cadmium	170	Sb	Antimony	183
Co	Cobalt	171	Se	Selenium	184
Cr	Chromium	172	SiO_2	Silica	185
Cu	Copper	173	Sr	Strontium	186
Fe	Iron	174	V	Vanadium	187
K	Potassium	175	Zn	Zinc	188

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Ag (Silver) µg/L

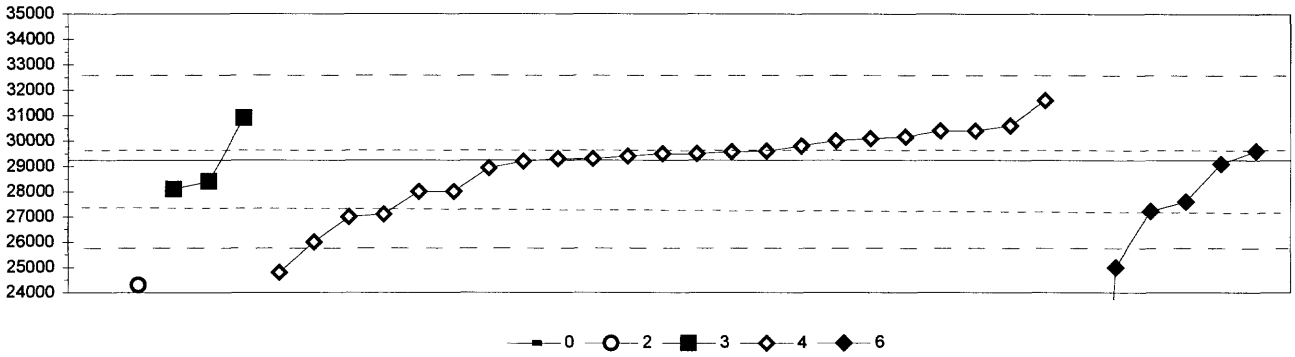


0. Other				4. ICP			
1. AA: direct, air				6. ICP/MS			
3. AA: graphite furnace							
		N =	1	2	10	10	8
		Minimum =	74.0	70.0	56.0	22.0	23.0
		Maximum =		77.0	88.0	110.0	70.0
		Median =			73.2	67.7	64.0
		F-pseudosigma =			10.4	23.9	5.4
Lab	Rating	Z-value	0	1	3	4	6
1	3	0.65			76.3		
5	4	0.09			70.0		
8	0	-4.17				22.0	
11	0	-2.68				38.8	
12	1	1.69			88.0		
16	4	-0.44					64.0
18	4	0.00				69.0	
25	NR	-5.58				< 6	
30.1	4	0.00					69.0
34	3	0.84			78.5		
42	3	-0.82					59.8
46	4	-0.27			66.0		
48	3	-0.71					61.0
59	4	0.09					70.0
69	3	-0.70			61.1		
85	3	0.71		77.0			
89	4	0.00			69.0		
100	1	1.78				89.0	
105	4	-0.22					66.5
127	0	3.64				110.0	
134	4	-0.44				64.0	
140	4	0.09		70.0			
141	1	1.53				86.2	
146	4	-0.23				66.4	
212	2	-1.33				54.0	
215	3	0.98			80.0		
235	2	1.27			83.3		
241	2	-1.15			56.0		
246	2	1.08				81.2	
247	4	-0.33					65.3
283	0	-4.08					23.0
284	4	0.44	74.0				

MPV =	69.0
F-pseudosigma =	11.3
N =	31
Hu =	77.8
Hl =	62.6

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Al (Aluminum) µg/L



0. Other
2. AA: direct, nitrous oxide
3. AA: graphite furnace
4. ICP
6. ICP/MS

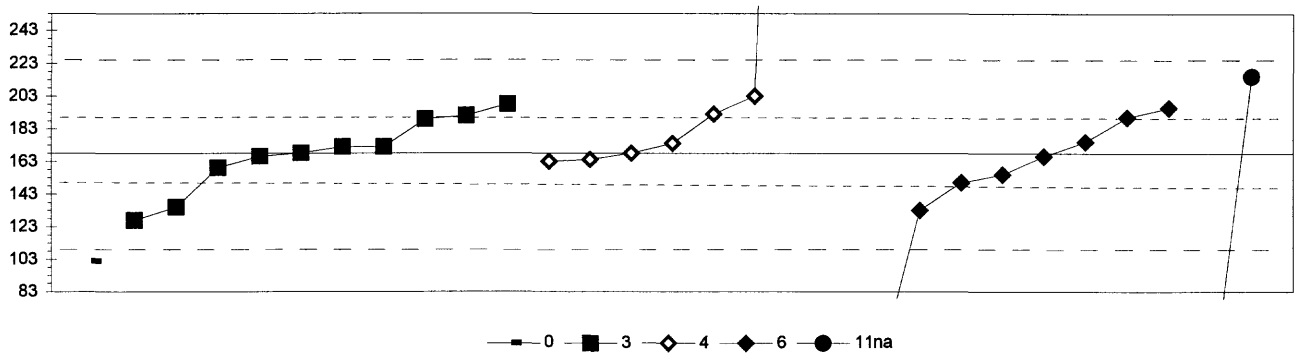
	0	2	3	4	6
N =	1	1	3	22	6
Minimum =	22000	24300	28100	24798	13
Maximum =			30900	31600	29600
Median =				29500	
F-pseudosigma =				864	

MPV = 29200
F-pseudosigma = 1760
N = 34
Hu = 29600
Hl = 27226

Lab	Rating	Z-value	0	2	3	4	6
1	4	-0.06					29100
4	4	-0.15				28934	
5	3	0.51				30100	
8	3	-0.68				28000	
11	1	-1.82				26000	
16	4	0.06				29300	
18	3	-0.68				28000	
25	4	0.11				29400	
30.1	0	-2.39					25000
42	2	-1.12					27226
46	4	0.23				29600	
48	4	0.23					29600
59	0	-9.15					13100
69	4	-0.45			28400		
85	4	0.17				29500	
86	3	0.68				30400	
89	3	-0.63			28100		
100	4	0.21				29571	
105	3	-0.91					27600
127	4	0.06				29300	
134	3	0.80				30600	
141	0	-2.50				24798	
146	2	-1.25				27000	
212	4	0.00				29200	
215	4	0.45				30000	
235	3	0.68				30400	
237	4	0.17				29500	
241	3	0.97			30900		
246	3	0.55				30160	
247	2	-1.19				27100	
253	0	-2.78		24300			
254	4	0.34				29800	
283	2	1.36				31600	
284	0	-4.09	22000				

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

As (Arsenic) µg/L

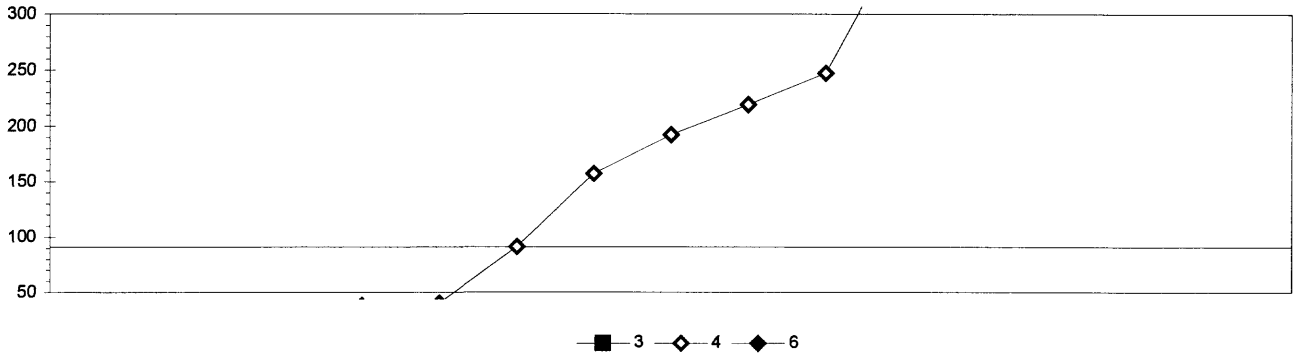


0. Other				6. ICP/MS			
3. AA: graphite furnace				11na. AA: hydride $NaBH_4$			
4. ICP							
		N =	1	10	7	9	2
		Minimum =	102	127	163	23	15
		Maximum =		198	884	196	215
		Median =		170	174	161	
		F-pseudosigma =		22	23	67	
Lab	Rating	Z-value	0	3	4	6	11na
4	2	1.18			203		
5	2	1.01		198			
8	0	-5.18					15
11	4	-0.13			164		
12	4	-0.30		159			
16	4	-0.07				166	
18	4	0.00			168		
25	0	-3.93			< 50		
30.1	3	0.74				190	
42	0	-4.50				35	
46	2	-1.11		135			
48	0	-4.89				23	
59	4	0.13		172			
69	3	0.78		191			
89	1	1.59					215
100	4	0.00		168			
105	3	0.94				196	
127	4	0.13		172			
134	3	0.71		189			
136	0	24.15			884		
141	4	0.20			174		
146	4	-0.17			163		
212	3	-0.61				150	
215	2	-1.38		127			
235	4	0.24				175	
241	4	-0.07		166			
246	3	0.81			192		
247	2	-1.18				133	
254	NR				< 1110		
283	4	-0.44				155	
284	0	-2.23	102				

MPV =	168
F-pseudosigma =	30
N =	29
Hu =	190
Hl =	150

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

B (Boron) µg/L



3. AA: graphite furnace
4. ICP
6. ICP/MS

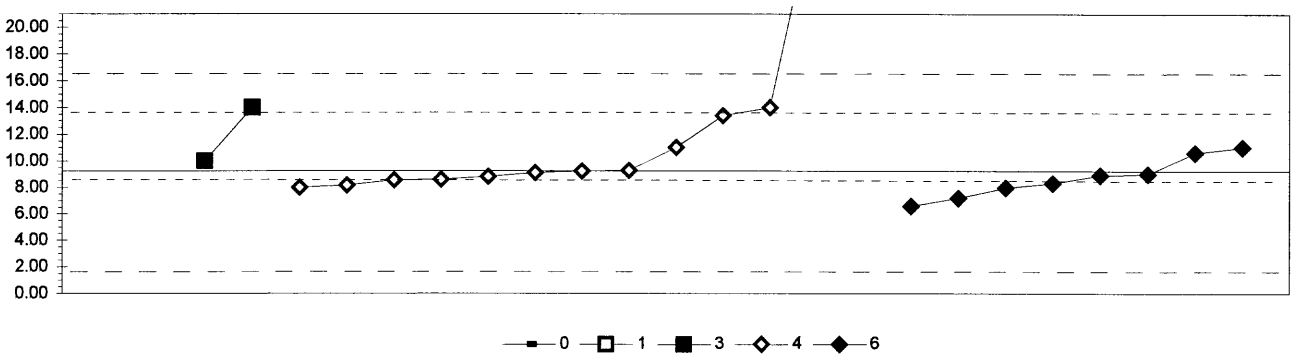
MPV = insufficient data

N = 16

		N =	0	13	3
		Minimum =	< 50	22	15
		Maximum =		510	28
		Median =		157	
		F-pseudosigma =		183	
Lab	Rating	Z-value	3	4	6
1	NR			< 40	
5	NR			< 10	
8	NR			< 20	
16	NR			157	
18	NR		< 50		
25	NR			< 23	
30.1	NR				23
42	NR				15
48	NR				28
85	NR			510	
100	NR			464	
127	NR			22	
134	NR			219	
136	NR			247	
141	NR			192	
212	NR			< 200	
215	NR			40	
235	NR			91	
237	NR			373	
246	NR			38	
247	NR			32	
254	NR			< 30	
283	NR			22	

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Ba (Barium) µg/L

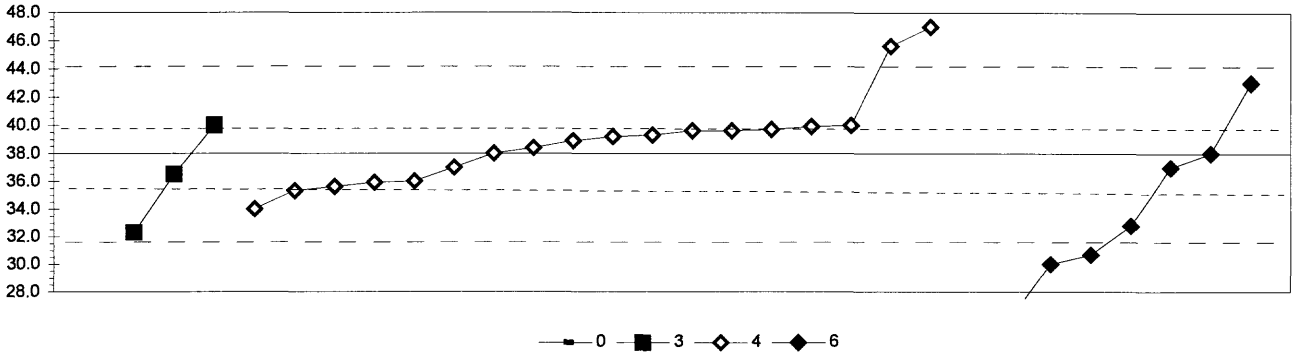


0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	1	2	13	8
		Minimum =	28.00	260.00	10.00	8.00	6.60
		Maximum =			14.00	136.60	11.00
		Median =				9.23	8.90
		F-pseudosigma =				3.56	1.52
Lab	Rating	Z-value	0	1	3	4	6
1	0	33.52				136.60	
5	NR					< 4	
8	NR					< 20	
16	4	0.36					10.60
18	4	-0.12				8.80	
25	0	-2.25				< 0.7	
30.1	4	0.46					11.00
42	4	-0.25					8.30
48	3	-0.70					6.60
59	4	-0.09					8.90
85	4	-0.33				8.00	
86	4	-0.18				8.55	
89	NR				< 50		
100	4	0.00				9.26	
105	4	-0.06					9.00
127	4	-0.28				8.17	
134	4	0.00				9.23	
136	2	1.09				13.40	
140	0	66.00		260.00			
141	NR					< 10	
146	NR					< 10	
149	4	0.20			10.00		
212	3	-0.54					7.20
215	0	5.46				30.00	
235	4	0.46				11.00	
237	2	1.25				14.00	
241	2	1.25			14.00		
246	4	-0.04				9.10	
247	4	-0.34					7.96
283	4	-0.17				8.60	
284	0	4.94	28.00				

MPV =	9.23
F-pseudosigma =	3.60
N =	25
Hu =	13.40
Hl =	8.60

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Be (Beryllium) µg/L

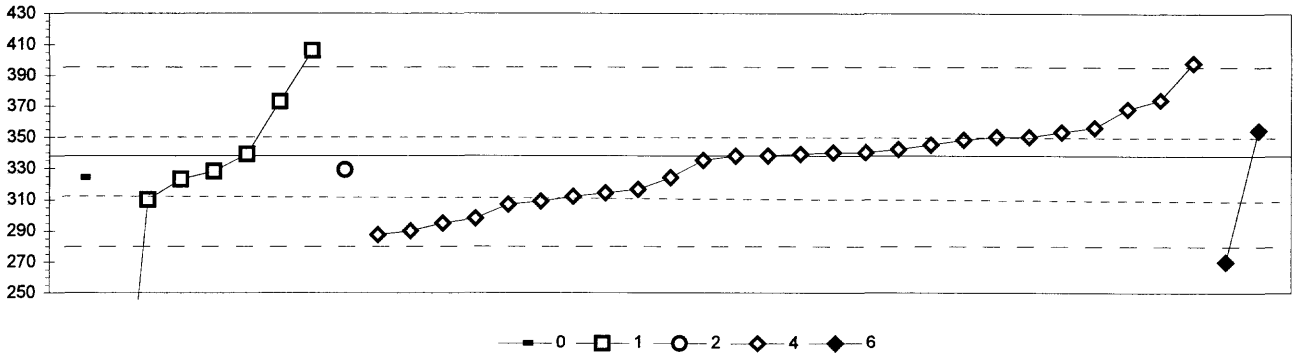


0. Other				6. ICP/MS		
3. AA: graphite furnace						
4. ICP						
		N =	1	3	18	8
		Minimum =	74.0	32.3	34.0	19.7
		Maximum =		40.0	47.0	43.0
		Median =			39.1	30.7
		F-pseudosigma =			2.7	5.5
Lab	Rating	Z-value	0	3	4	6
1	3	0.58			39.9	
4	3	-0.64			35.9	
5	4	0.28			38.9	
8	4	-0.31			37.0	
11	3	-0.83			35.3	
16	1	-1.59				32.8
18	3	0.61			40.0	
25	4	0.49			39.6	
30.1	1	1.53				43.0
42	0	-5.61				19.7
46	4	0.40			39.3	
48	0	-2.45				30.0
59	0	-2.24				30.7
69	4	-0.46		36.5		
85	4	0.00			38.0	
86	4	0.12			38.4	
89	1	-1.75		32.3		
100	0	-11.21			< 1	
105	4	0.00				38.0
127	2	-1.23			34.0	
134	4	0.37			39.2	
141	3	-0.74			35.6	
146	4	0.49			39.6	
212	0	-3.68				26.0
215	3	-0.61			36.0	
237	0	2.76			47.0	
241	3	0.61		40.0		
246	0	2.33			45.6	
247	4	-0.30				37.0
283	3	0.52			39.7	
284	0	11.04	74.0			

MPV =	38.0
F-pseudosigma =	3.3
N =	30
Hu =	39.7
Hl =	35.3

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Ca (Calcium) mg/L

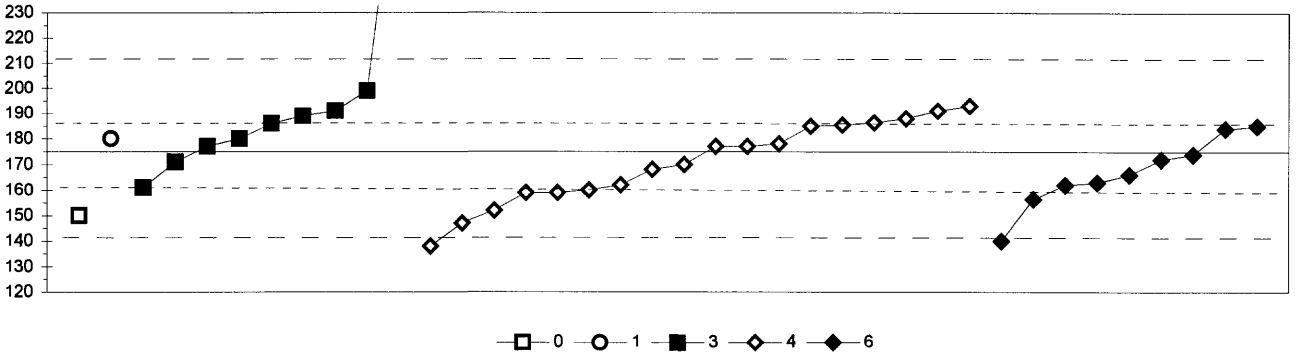


0. Other				4. ICP			
1. AA: direct, air				6. ICP/MS			
2. AA: direct, nitrous oxide							
		N =	1	7	1	26	2
		Minimum =	324	86	329	288	270
		Maximum =		406		398	354
		Median =		328		338	
		F-pseudosigma =		29		27	
Lab	Rating	Z-value	0	1	2	4	6
1	4	0.00				338	
4	4	0.44				350	
5	3	-0.91				312	
8	2	-1.09				307	
11	1	-1.69				290	
16	4	-0.10				335	
18	3	-0.75				317	
25	2	1.29				374	
30.1	0	-2.40					270
30.2	4	-0.31			329		
43	4	0.01				338	
46	4	0.15				342	
48	3	0.58					354
59	4	0.05		339			
69	3	-0.52		323			
85	4	-0.34		328			
86	3	0.54				353	
89	0	2.42		406			
100	4	0.26				345	
105	4	-0.49				324	
127	2	-1.41				298	
134	4	0.37				348	
140	3	-0.98		310			
141	1	-1.78				288	
146	2	-1.02				309	
149	0	-8.94		86			
212	4	0.05				339	
215	4	0.08				340	
235	0	2.14				398	
237	3	0.65				356	
241	2	1.25		373			
246	3	-0.83				314	
247	4	0.44				350	
254	4	0.08				340	
283	1	-1.52				295	
284	4	-0.49	324				
297	2	1.08				368	

MPV =	338
F-pseudosigma =	28
N =	37
Hu =	349
Hl =	311

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Cd (Cadmium) µg/L

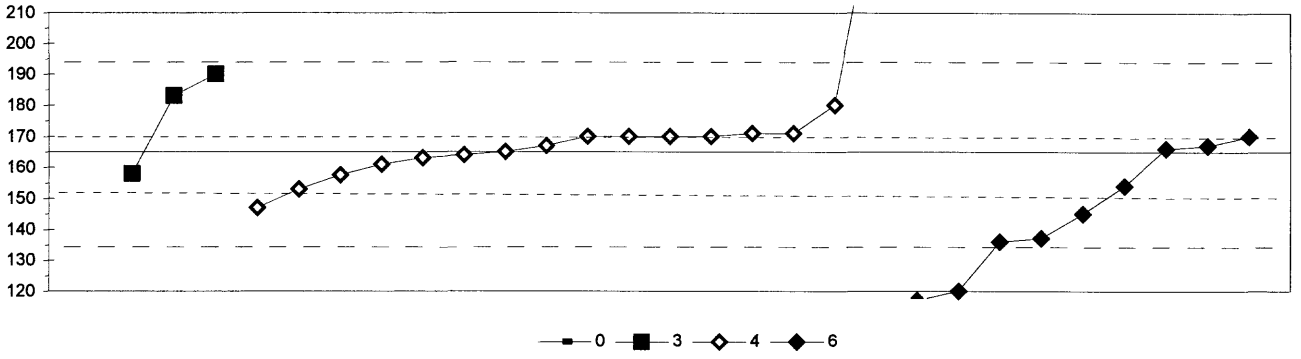


0. Other				4. ICP			
1. AA: direct, air				6. ICP/MS			
3. AA: graphite furnace							
		N =	1	1	9	18	9
		Minimum =	150	180	161	138	140
		Maximum =			300	193	185
		Median =			186	174	165
		F-pseudosigma =			10	20	15
Lab	Rating	Z-value	0	1	3	4	6
1	3	0.55				186	
4	3	0.69				188	
5	4	-0.25			171		
8	3	-0.91				159	
11	0	-2.06				138	
12	3	-0.80			161		
16	3	-0.74					162
18	3	-0.91				159	
25	3	0.53				185	
30.1	3	0.53					185
34	3	0.86			191		
42	2	-1.05					156
46	4	-0.41				168	
48	3	-0.69					163
59	4	-0.09					174
69	3	0.86			186		
86	3	0.86				191	
89	3	0.75			189		
100	4	0.14				178	
105	3	-0.52					166
127	3	-0.74				162	
134	4	0.09				177	
136	3	0.97				193	
140	4	0.25		180			
141	2	-1.29				152	
146	4	-0.30				170	
149	4	0.25			180		
212	1	-1.95					140
215	1	-1.57				147	
235	4	0.09			177		
237	4	0.09				177	
241	2	1.30			199		
246	3	0.60				186	
247	4	-0.19					172
253	0	6.86			300		
254	3	-0.85				160	
283	4	0.47					184
284	2	-1.40	150				

MPV =	175
F-pseudosigma =	18
N =	38
Hu =	186
Hl =	161

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Co (Cobalt) µg/L

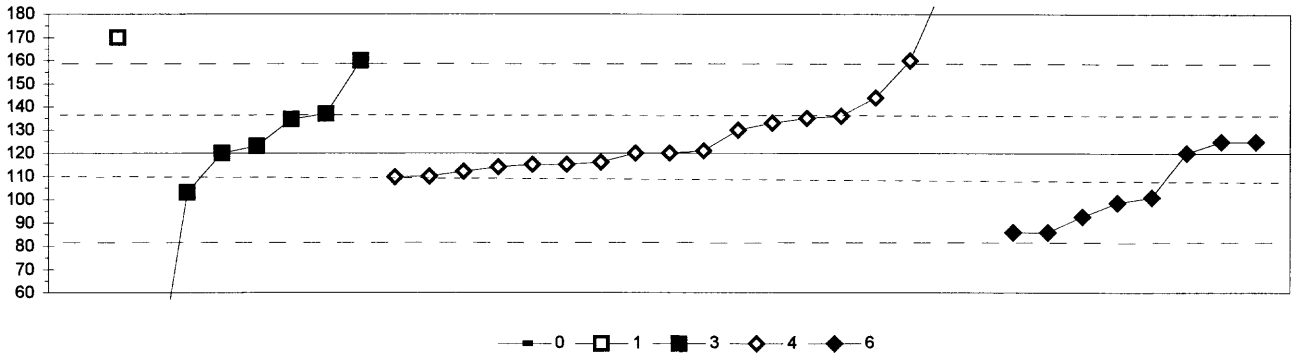


0. Other			6. ICP/MS			
3. AA: graphite furnace						
4. ICP						
		N =	1	3	16	8
		Minimum =	100	158	147	117
		Maximum =		190	249	170
		Median =			169	141
		F-pseudosigma =			6	24
Lab	Rating	Z-value	0	3	4	6
1	2	1.25		183		
4	2	1.05			180	
5	4	0.03			165	
8	4	0.44			171	
11	2	-1.18			147	
16	2	-1.32				145
18	4	0.17			167	
25	4	0.37			170	
30.1	4	0.37				170
42	1	-1.84				137
46	4	-0.10			163	
48	0	-3.20				117
85	4	0.37			170	
89	4	-0.44		158		
100	4	0.44			171	
105	4	0.17				167
127	4	-0.24			161	
134	1	1.72		190		
136	0	5.70			249	
141	3	-0.78			153	
146	4	-0.03			164	
212	0	-3.00				120
215	4	0.37			170	
235	1	-1.92				136
246	4	-0.47			158	
247	4	0.07				166
254	4	0.37			170	
283	3	-0.71				154
284	0	-4.35	100			

MPV =	165
F-pseudosigma =	13
N =	29
Hu =	170
Hl =	153

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Cr (Chromium) µg/L

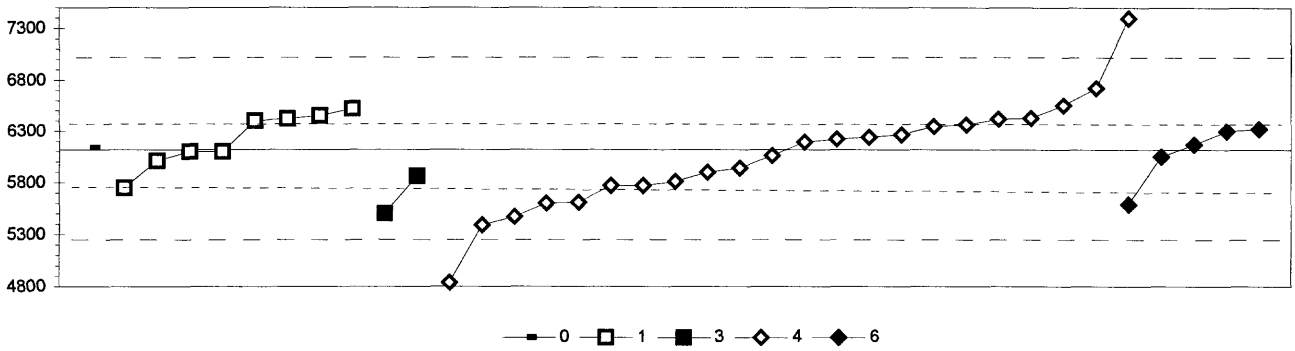


0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	1	7	18	8
		Minimum =	350	170	8	110	86
		Maximum =			160	1995	125
		Median =			123	121	99
		F-pseudosigma =			18	16	18
Lab	Rating	Z-value	0	1	3	4	6
1	3	0.80			135		
4	0	103.24				1995	
5	2	1.32				144	
8	4	0.00				120	
11	3	-0.55				110	
16	2	-1.05					101
18	4	-0.33				114	
25	4	-0.22				116	
30.1	4	0.28					125
34	3	-0.94			103		
42	2	-1.18					99
46	4	0.06				121	
48	1	-1.87					86
59	2	-1.50					93
69	4	0.00			120		
85	0	2.20				160	
89	3	0.94			137		
100	4	-0.28				115	
105	4	0.28					125
127	4	0.17			123		
134	4	0.00				120	
136	0	4.07				194	
140	0	2.75		170			
141	4	-0.28				115	
146	4	-0.44				112	
149	0	2.20			160		
212	1	-1.87					86
215	3	0.72				133	
237	3	0.88				136	
241	0	-6.14			8		
246	3	-0.57				110	
247	4	0.00					120
254	3	0.55				130	
283	3	0.83				135	
284	0	12.66	350				

MPV =	120
F-pseudosigma =	18
N =	35
Hu =	136
Hl =	111

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Cu (Copper) µg/L

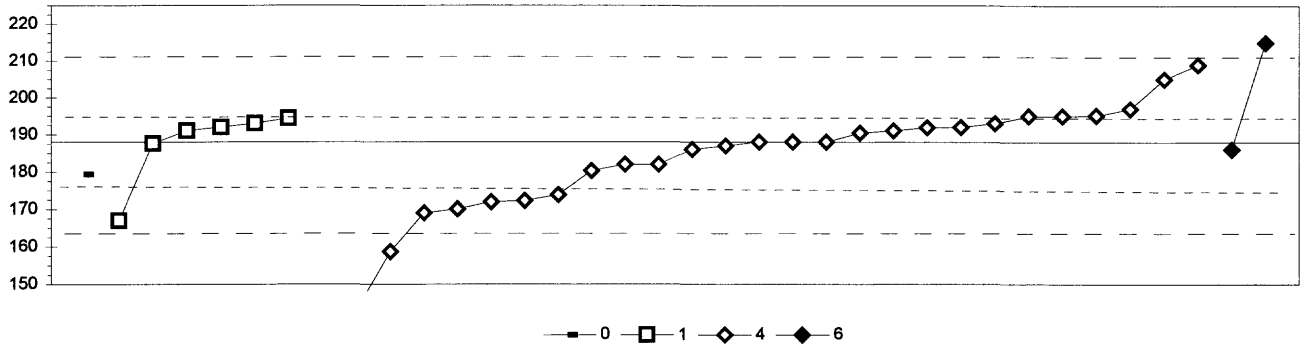


0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	8	2	22	5
		Minimum =	6140	5750	5500	4837	5592
		Maximum =		6520	5860	7397	6320
		Median =		6250		6192	
		F-pseudosigma =		282		437	
Lab	Rating	Z-value	0	1	3	4	6
1	4	0.46					6320
4	0	2.92				7397	
5	3	0.55				6360	
8	2	-1.19				5600	
11	2	-1.17				5610	
12	2	-1.42			5500		
16	4	0.16				6192	
18	4	-0.50				5900	
25	2	1.37				6720	
30.1	4	0.41					6300
42	2	-1.21					5592
46	4	-0.14				6060	
48	4	0.11					6170
59	4	-0.05		6100			
69	3	0.75		6450			
85	3	0.91		6520			
86	4	0.23				6220	
89	3	0.69		6420			
100	3	-0.80				5770	
105	4	-0.16					6050
127	1	-1.67				5390	
134	3	0.70				6425	
136	0	-2.93				4837	
140	4	-0.05		6100			
141	2	-1.49				5470	
146	4	-0.41				5940	
149	3	0.64		6400			
212	3	0.52				6346	
215	3	0.98				6550	
235	3	-0.59			5860		
237	3	0.68				6416	
241	4	-0.25		6010			
246	4	0.33				6264	
247	3	-0.71				5810	
253	3	-0.85		5750			
254	4	0.27				6240	
283	3	-0.80				5770	
284	4	0.05	6140				

MPV =	6120
F-pseudosigma =	437
N =	38
Hu =	6360
Hl =	5770

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Fe (Iron) mg/L

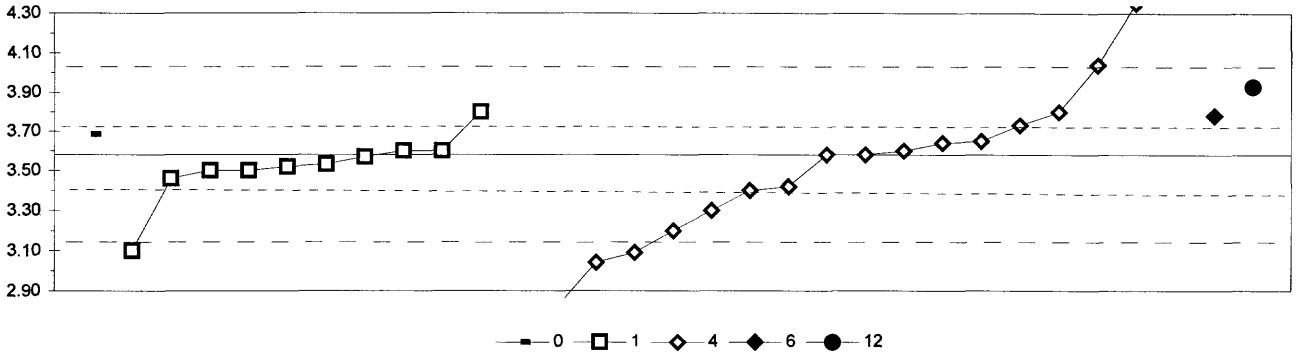


0. Other				6. ICP/MS		
1. AA: direct, air						
4. ICP						
		N =	1	6	27	2
		Minimum =	179	167	19	186
		Maximum =		194	209	215
		Median =			188	
		F-pseudosigma =			14	
Lab	Rating	Z-value	0	1	4	6
1	4	0.00			188	
4	2	-1.33			172	
5	4	-0.49			182	
8	1	-1.56			169	
11	0	-3.70			143	
16	2	-1.17			174	
18	3	-0.63			180	
25	0	-13.90			19	
30.1	4	-0.16				186
30.2	4	0.41		193		
43	4	0.41			193	
46	4	0.00			188	
48	0	2.22				215
59	4	-0.03		188		
69	4	0.33		192		
85	4	0.00			188	
86	3	0.57			195	
89	4	0.25		191		
100	4	-0.49			182	
105	2	-1.48			170	
127	4	0.33			192	
134	4	0.32			192	
140	1	-1.72		167		
141	0	-2.41			159	
146	3	0.74			197	
212	4	0.25			191	
215	4	-0.08			187	
235	1	1.72			209	
237	2	1.40			205	
241	3	0.53		194		
246	2	-1.30			172	
247	3	0.57			195	
254	4	0.20			190	
283	0	-15.65			0	
284	3	-0.71	179			
297	3	0.59			195	

MPV =	188
F-pseudosigma =	12
N =	36
Hu =	193
Hl =	176

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

K (Potassium) mg/L



0. Other
1. AA: direct, air
4. ICP
6. ICP/MS
12. Flame emission

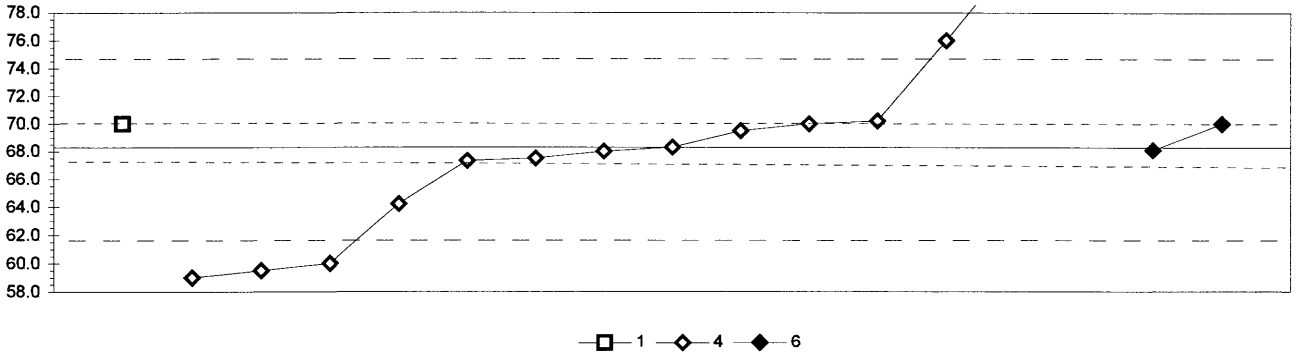
	0	1	4	6	12
N =	1	10	18	1	1
Minimum =	3.70	3.10	2.22	3.78	3.93
Maximum =		3.80	4.80		
Median =		3.53	3.58		
F-pseudosigma =		0.07	0.39		

MPV =	3.58
F-pseudosigma =	0.23
N =	31
Hu =	3.72
HI =	3.41

Lab	Rating	Z-value	0	1	4	6	12
1	3	-0.53		3.46			
4	0	5.39			4.80		
5	0	-6.01			2.22		
8	3	0.97			3.80		
11	0	-2.39			3.04		
16	4	0.09		3.60			
18	2	-1.24			3.30		
25	0	3.40			4.35		
43	1	-1.68			3.20		
46	4	0.09			3.60		
48	3	0.88				3.78	
59	3	0.97		3.80			
69	1	1.55					3.93
85	4	-0.04		3.57			
86	3	-0.80			3.40		
89	4	-0.27		3.52			
100	4	0.27			3.64		
105	4	0.00			3.58		
127	0	-3.36			2.82		
134	4	-0.21		3.53			
140	4	0.09		3.60			
141	0	-2.17			3.09		
146	4	0.00			3.58		
149	4	-0.35		3.50			
212	NR				< 10		
215	0	-11.22			< 1		
241	0	-2.12		3.10			
246	3	0.66			3.73		
247	1	2.03			4.04		
254	4	-0.35		3.50			
283	4	0.31			3.65		
284	3	0.53	3.70				
297	3	-0.71			3.42		

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Li (Lithium) µg/L

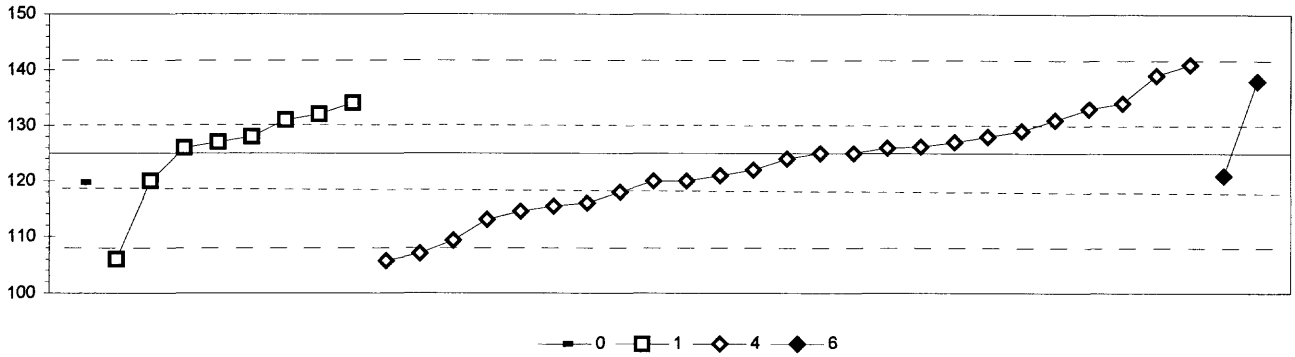


1. AA: direct, air					
4. ICP					
6. ICP/MS					
		N =	1	14	2
		Minimum =	70.0	59.0	68.1
		Maximum =		87.1	70.0
		Median =		68.2	
		F-pseudosigma =		4.4	
Lab	Rating	Z-value	1	4	6
1	0	5.53		87.1	
4	2	-1.21		64.2	
5	4	0.00		68.3	
8	0	-2.44		60.0	
11	4	0.35		69.5	
25	0	4.03		82.0	
30.1	4	0.50			70.0
69	4	0.50	70.0		
100	4	-0.09		68.0	
105	4	0.50		70.0	
127	0	-2.74		59.0	
134	4	-0.29		67.3	
141	0	-2.59		59.5	
237	0	2.26		76.0	
246	4	-0.24		67.5	
247	4	-0.06			68.1
283	3	0.56		70.2	

MPV =	68.3
F-pseudosigma =	2.0
Rating Criterion =	3.4 **
N =	17
Hu =	70.0
Hl =	67.3

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Mg (Magnesium) mg/L

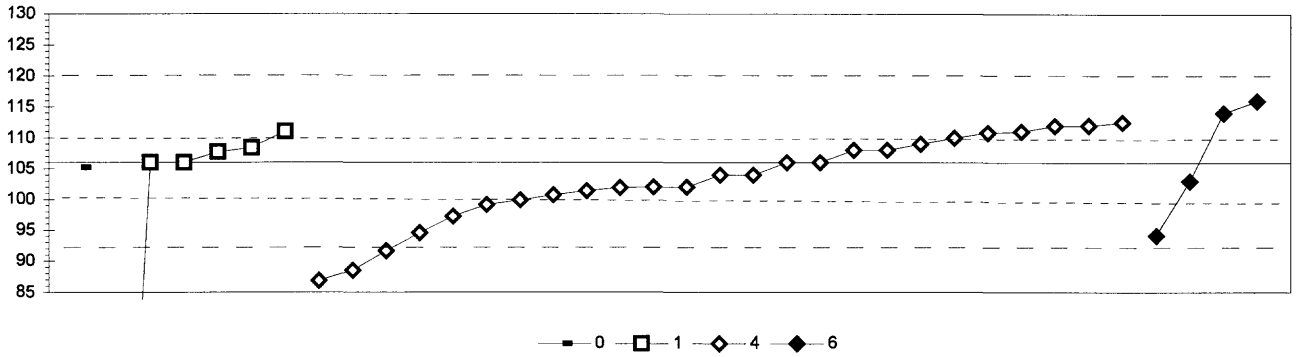


0. Other			6. ICP/MS			
1. AA: direct, air						
4. ICP						
		N =	1	8	25	2
		Minimum =	120	106	106	121
		Maximum =		134	141	138
		Median =		128	124	
		F-pseudosigma =		6	9	
Lab	Rating	Z-value	0	1	4	6
1	4	0.15			126	
4	4	-0.48			121	
5	3	-0.85			118	
8	3	-0.60			120	
11	2	-1.45			113	
16	4	0.24			127	
18	2	-1.27			115	
25	1	1.94			141	
30.1	4	-0.48				121
30.2	2	1.09		134		
43	4	0.00			125	
46	4	0.12			126	
48	1	1.57				138
59	3	0.73		131		
69	4	0.24		127		
85	4	0.12		126		
86	3	0.97			133	
89	3	0.85		132		
100	0	-2.18			107	
105	2	-1.16			115	
127	4	0.00			125	
134	4	-0.12			124	
140	3	-0.60		120		
141	1	-1.90			109	
146	3	-0.60			120	
149	0	-2.30		106		
212	3	0.73			131	
215	4	0.48			129	
237	2	-1.09			116	
241	4	0.36		128		
246	0	-2.34			106	
247	2	1.09			134	
254	4	0.36			128	
283	4	-0.36			122	
284	3	-0.64	120			
297	1	1.69			139	

MPV =	125
F-pseudosigma =	8
N =	36
Hu =	130
Hl =	119

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Mn (Manganese) mg/L



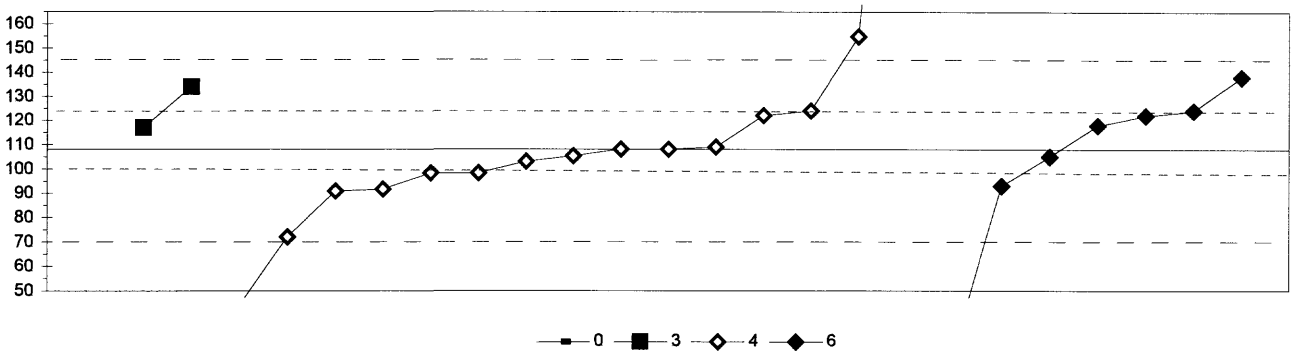
0. Other			6. ICP/MS			
1. AA: direct, air						
4. ICP						
		N =	1	6	25	4
		Minimum =	105	11	87	94
		Maximum =		111	113	116
		Median =			104	
		F-pseudosigma =			7	

MPV =	106
F-pseudosigma =	7
N =	36
Hu =	110
HI =	100

Lab	Rating	Z-value	0	1	4	6
1	4	-0.23			104	
4	0	-2.05			92	
5	3	-0.53			102	
8	3	-0.53			102	
11	3	-0.54			102	
16	3	-0.72			101	
18	3	-0.83			100	
25	3	-0.95			99	
30.1	4	-0.38				103
42	2	1.24				114
43	3	0.94			112	
46	4	0.50			109	
48	1	1.53				116
59	4	0.31		108		
69	3	0.79		111		
85	4	0.35			108	
86	3	0.65			110	
89	4	0.06		106		
100	3	-0.61			101	
105	1	-1.68				94
127	1	-1.63			95	
134	3	0.76			111	
140	4	0.06		106		
141	0	-2.75			87	
146	3	0.79			111	
149	0	-13.94		11		
212	4	0.06			106	
215	4	-0.23			104	
237	2	1.01			113	
241	4	0.41		108		
246	0	-2.51			88	
247	2	-1.23			97	
254	4	0.35			108	
283	4	0.06			106	
284	4	-0.06	105			
297	3	0.93			112	

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Mo (Molybdenum) µg/L

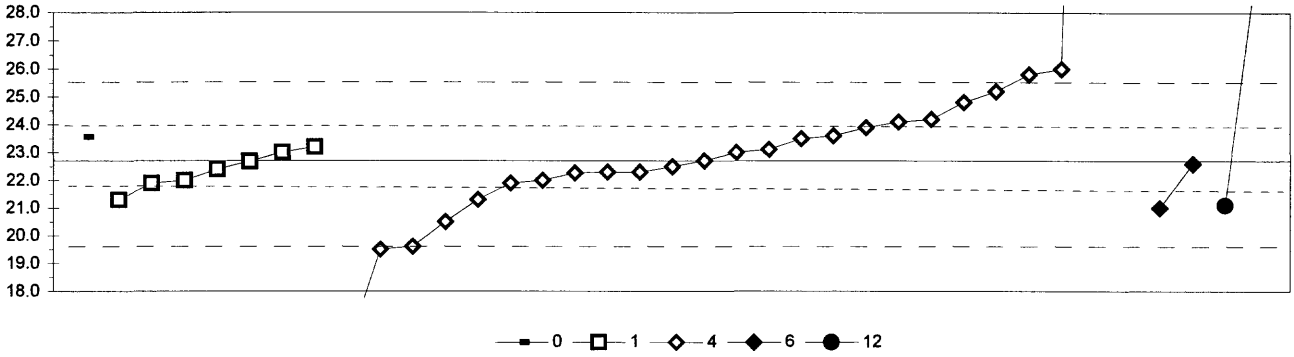


0. Other			6. ICP/MS			
3. AA: graphite furnace						
4. ICP						
		N =	1	2	15	7
		Minimum =	354	117	44	26
		Maximum =		134	339	138
		Median =			105	118
		F-pseudosigma =			15	18
Lab	Rating	Z-value	0	3	4	6
1	4	0.47		117		
4	3	-0.51			98	
5	4	0.05			109	
8	4	0.00			108	
11	3	-0.51			98	
16	3	0.73				122
18	0	2.46			155	
30.1	1	1.57				138
42	0	-4.33				26
46	3	0.84			124	
48	3	0.84				124
100	4	-0.26			103	
105	3	0.52				118
127	1	-1.89			72	
134	3	-0.90			91	
136	0	12.13			339	
141	3	-0.86			92	
146	4	0.00			108	
215	3	0.73			122	
237	0	-3.36			44	
241	2	1.36		134		
246	4	-0.15			105	
247	4	-0.16				105
283	3	-0.79				93
284	0	12.91	354			

MPV =	108
F-pseudosigma =	19
N =	25
Hu =	124
Hl =	98

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Na (Sodium) mg/L

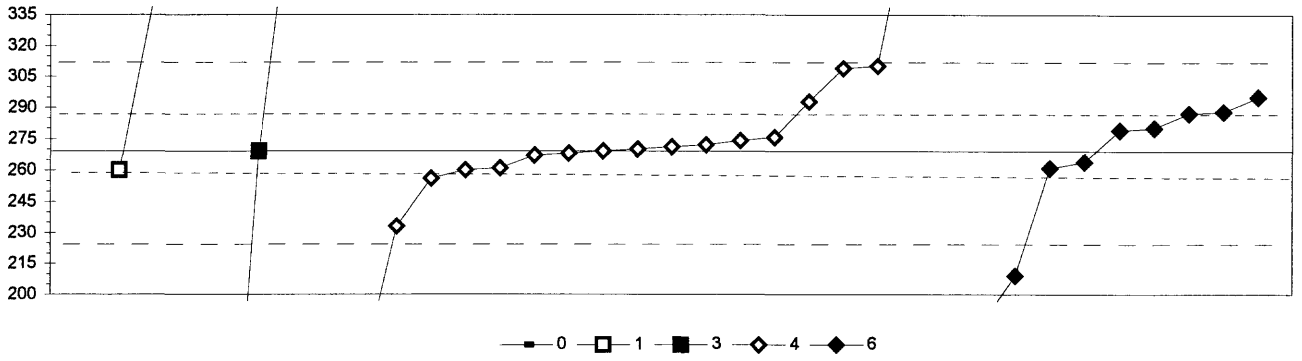


0. Other				6. ICP/MS			
1. AA: direct, air				12. Flame emission			
4. ICP							
		N =	1	7	25	2	2
		Minimum =	23.6	21.3	16.0	21.0	21.1
		Maximum =		23.2	200.0	22.6	30.0
		Median =		22.4	23.0		
		F-pseudosigma =		0.7	1.6		
Lab	Rating	Z-value	0	1	4	6	12
1	4	-0.12			22.5		
4	3	-0.93			21.3		
5	3	0.62			23.6		
8	2	-1.47			20.5		
11	3	-0.53			21.9		
12	0	119.60			200.0		
16	0	-4.51			16.0		
18	4	-0.46			22.0		
25	2	1.43			24.8		
30.1	2	-1.13				21.0	
30.2	0	4.94					30.0
43	0	-2.14			19.5		
46	4	0.01			22.7		
48	4	-0.05				22.6	
59	3	-0.93		21.3			
69	2	-1.07					21.1
85	3	-0.53		21.9			
86	3	0.96			24.1		
89	4	-0.19		22.4			
100	2	1.03			24.2		
105	3	0.55			23.5		
127	0	-2.08			19.6		
134	4	0.00		22.7			
140	4	0.35		23.2			
141	0	28.88			65.5		
146	3	0.82			23.9		
149	4	-0.46		22.0			
212	0	2.10			25.8		
215	4	0.22			23.0		
237	4	-0.26			22.3		
241	4	0.22		23.0			
246	4	-0.28			22.3		
247	4	-0.26			22.3		
254	4	0.28			23.1		
283	1	1.70			25.2		
284	3	0.59	23.6				
297	0	2.24			26.0		

MPV =	22.7
F-pseudosigma =	1.5
N =	37
Hu =	23.9
Hl =	21.9

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Ni (Nickel) µg/L

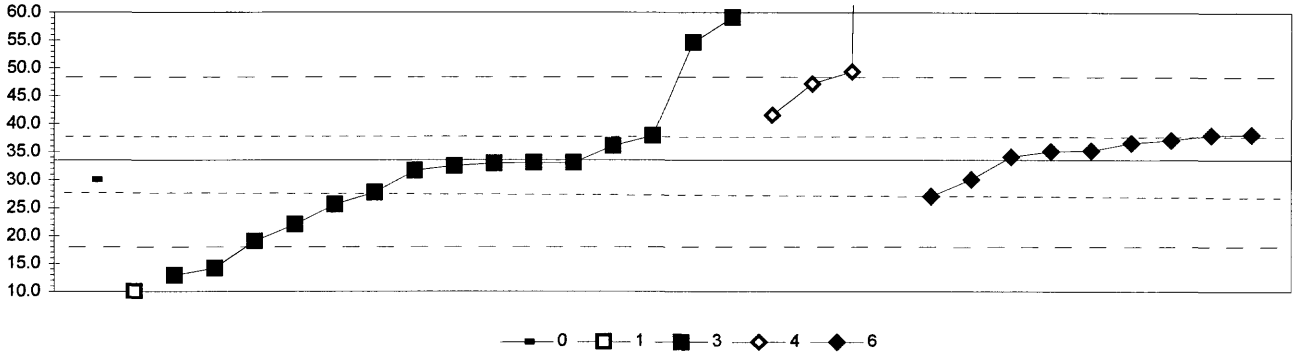


0. Other			4. ICP				
1. AA: direct, air			6. ICP/MS				
3. AA: graphite furnace							
		N =	1	3	3	18	10
		Minimum =	26	260	40	157	48
		Maximum =		360	400	392	295
		Median =				270	272
		F-pseudosigma =				11	58
Lab	Rating	Z-value	0	1	3	4	6
1	4	0.46					279
4	3	-0.60				256	
5	4	0.14				272	
8	0	-4.91				162	
11	1	-1.65				233	
16	4	-0.23					264
18	4	-0.05				268	
25	0	-10.00				< 49	
30.1	4	0.50					280
42	0	-10.15					48
46	4	0.00				269	
48	0	-3.85					185
59	3	0.86					288
69	0	3.44		344			
85	4	0.05				270	
89	4	0.00			269		
100	1	1.84				309	
105	3	0.83					287
127	4	-0.37				261	
134	4	0.23				274	
136	0	5.64				392	
140	4	-0.41		260			
141	0	-5.14				157	
146	4	0.09				271	
149	0	6.01			400		
212	2	1.09				293	
215	4	-0.09				267	
235	0	-2.75					209
237	1	1.88				310	
241	0	-10.50			40		
246	4	0.30				276	
247	2	1.19					295
253	0	4.18		360			
254	4	-0.41				260	
283	4	-0.37					261
284	0	-11.15	26				

MPV =	269
F-pseudosigma =	22
N =	35
Hu =	287
HI =	258

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Pb (Lead) µg/L



0. Other
1. AA: direct, air
3. AA: graphite furnace
4. ICP
6. ICP/MS

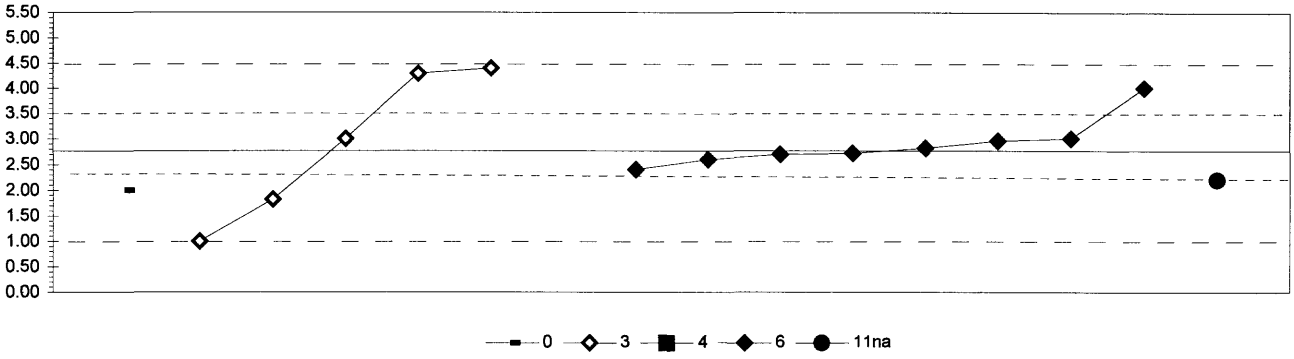
	0	1	3	4	6
N =	1	1	15	4	9
Minimum =	30.0	10.0	12.9	41.5	27.0
Maximum =			59.1	475.0	38.0
Median =			32.4		35.1
F-pseudosigma =			7.9		2.2

MPV =	33.5
F-pseudosigma =	7.6
N =	30
Hu =	37.9
HI =	27.7

Lab	Rating	Z-value	0	1	3	4	6
1	4	-0.25			31.6		
4	2	1.06				41.5	
5	4	-0.15			32.4		
8	NR					< 50	
12	1	-1.52			22.0		
16	4	0.46					37.0
18	4	0.33			36.0		
25	NR					< 71	
30.1	4	0.07					34.0
42	3	0.58					37.9
46	3	0.57			37.8		
48	4	0.20					35.0
59	4	0.21					35.1
69	2	-1.04			25.6		
89	0	-2.72			12.9		
100	4	-0.07			33.0		
105	3	-0.86					27.0
127	4	-0.08			32.9		
134	3	-0.77			27.7		
136	0	58.28				475.0	
140	0	-3.10		10.0			
141	1	1.80				47.1	
146	0	2.09				49.3	
212	4	-0.46					30.0
215	1	-1.91			19.0		
235	4	-0.07			33.0		
237	NR					< 25	
241	0	3.38			59.1		
246	NR					< 60	
247	4	0.40					36.5
253	0	-2.55			14.2		
254	NR					< 100	
283	3	0.59					38.0
284	4	-0.46	30.0				
297	0	2.79			54.6		

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Sb (Antimony) µg/L

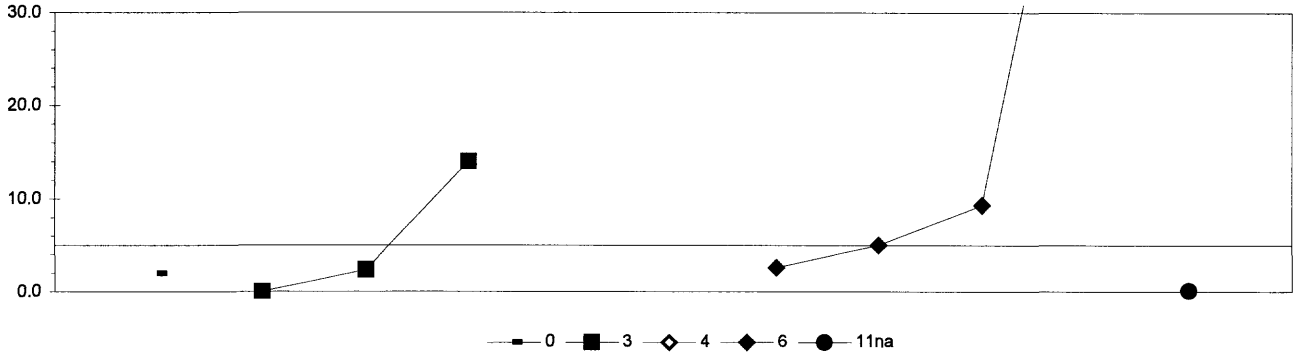


0. Other				6. ICP/MS			
3. AA: graphite furnace				11na. AA: hydride $NaBH_4$			
4. ICP							
		N =	1	5	1	8	1
		Minimum =	2.00	1.00	265.00	2.40	2.20
		Maximum =		4.40		4.00	
		Median =				2.77	
		F-pseudosigma =				0.24	
Lab	Rating	Z-value	0	3	4	6	11na
5	NR				< 20		
8	3	-0.64					2.20
16	2	1.38				4.00	
18	1	-1.99		1.00			
25	NR				< 51		
30.1	4	-0.08				2.70	
42	NR					< 3	
48	4	0.26				3.00	
59	4	-0.19				2.60	
69	NR			< 5			
89	NR			< 10			
100	4	0.26		3.00			
105	4	-0.06				2.72	
127	1	1.71		4.29			
134	2	-1.07		1.82			
141	0	294.79			265.00		
146	NR				< 50		
212	4	-0.42				2.40	
215	NR			< 7			
241	1	1.83		4.40			
246	NR				< 85		
247	4	0.21				2.96	
283	4	0.06				2.82	
284	3	-0.87	2.00				

MPV =	2.77
F-pseudosigma =	0.89
N =	16
Hu =	3.50
Hl =	2.30

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)–Continued*

Se (Selenium) µg/L



0. Other
3. AA: graphite furnace
4. ICP
6. ICP/MS
11na. AA: hydride $NaBH_4$

MPV = insufficient data

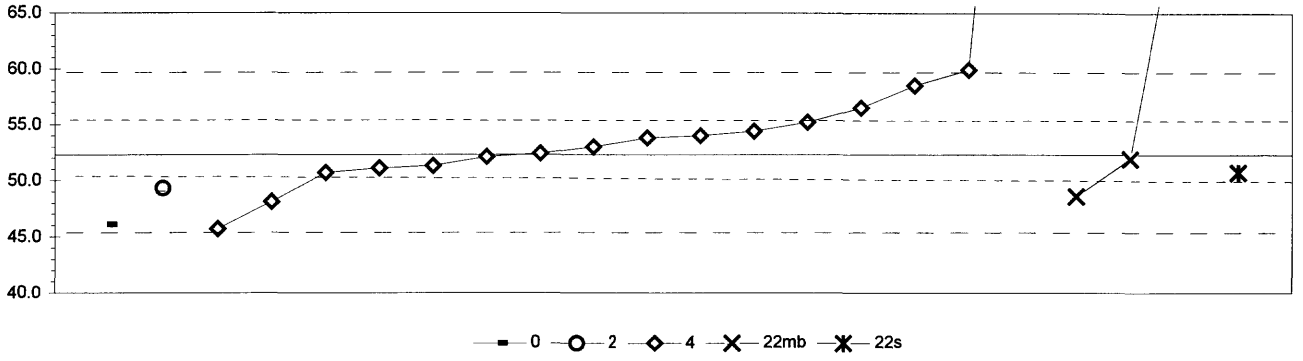
N = 11

	0	3	4	6	11na
N =	1	3	2	4	1
Minimum =	2.0	0.0	40.0	2.6	0.1
Maximum =		14.0	806.0	63.0	
Median =					
F-pseudosigma =					

Lab	Rating	Z-value	0	3	4	6	11na
1	NR						< 1
5	NR			< 2			
8	NR	-0.27					0.1
11	NR	1.90			40.0		
16	NR	3.15				63.0	
18	NR			< 1			
25	NR				< 129		
30.1	NR	0.00				5.0	
42	NR	-0.13				2.6	
48	NR					< 0.4	
59	NR	-0.27		0.0			
69	NR			< 5			
89	NR						< 2
100	NR	0.49		14.0			
105	NR					< 7	
127	NR			< 3			
134	NR	-0.14		2.4			
136	NR	43.54			806.0		
141	NR			< 2			
146	NR				< 10		
212	NR	0.23				9.3	
215	NR			< 7			
241	NR			< 5			
246	NR				< 80		
247	NR					< 5	
283	NR					< 5	
284	NR	-0.16	2.0				

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

SiO_2 (Silica) mg/L



0. Other
2. AA: direct, nitrous oxide
4. ICP

22mb. Color: molybdate blue
22s. Color: sulfonic acid

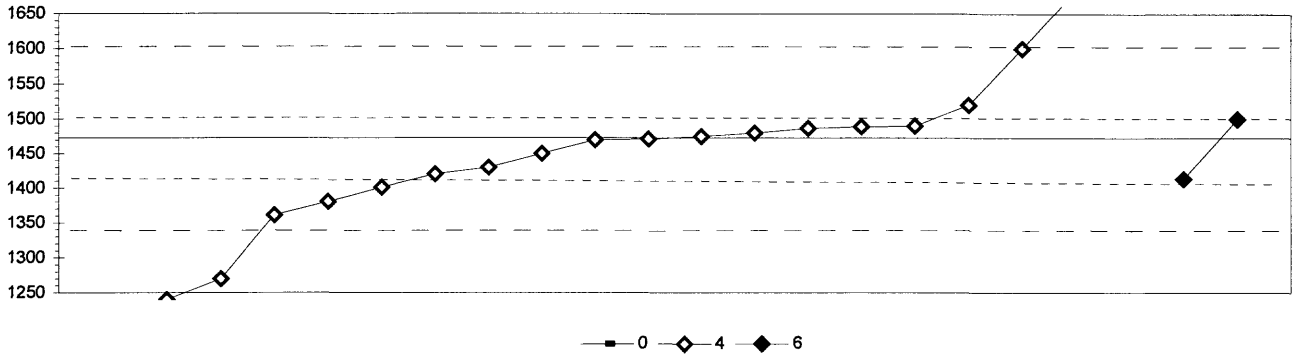
	0	2	4	22mb	22s
N =	1	1	16	3	1
Minimum =	46.1	49.3	45.7	48.6	50.7
Maximum =			109.0	77.7	
Median =			53.4		
F-pseudosigma =			3.4		

MPV =	52.3
F-pseudosigma =	3.3
N =	22
Hu =	55.2
HI =	50.7

Lab	Rating	Z-value	0	2	4	22mb	22s
1	4	-0.34			51.1		
4	4	-0.28			51.3		
5	4	0.04			52.4		
8	4	-0.10				51.9	
11	1	-1.96			45.7		
25	0	17.01			109.0		
43	4	-0.04			52.1		
89	4	-0.46					50.7
100	1	1.87			58.5		
105	3	0.64			54.4		
127	4	-0.46			50.7		
134	3	0.88			55.2		
140	2	-1.11				48.6	
212	3	0.52			54.0		
215	2	-1.24			48.1		
237	4	0.46			53.8		
241	3	-0.88		49.3			
246	2	1.27			56.5		
247	0	7.63				77.7	
254	4	0.22			53.0		
283	0	2.29			59.9		
284	1	-1.84	46.1				

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Sr (Strontium) µg/L

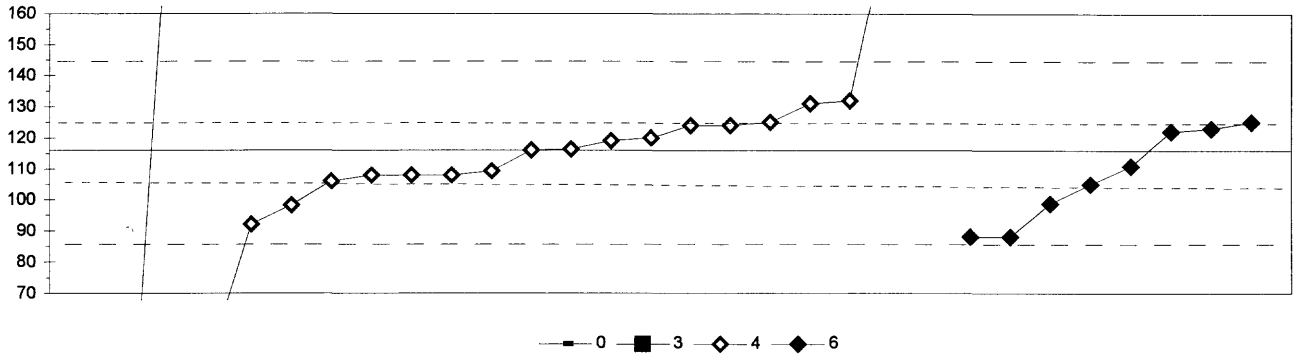


0. Other					
4. ICP					
6. ICP/MS					
		N =	1	19	2
		Minimum =	2596	1240	1413
		Maximum =		1870	1500
		Median =		1471	
		F-pseudosigma =		59	
Lab	Rating	Z-value	0	4	6
1	3	-0.93			1413
4	0	3.27		1684	
5	3	0.73		1520	
8	0	-3.15		1270	
11	4	-0.03		1471	
16	1	-1.74		1361	
18	2	-1.44		1380	
25	1	1.97		1600	
30.1	4	0.42			1500
85	4	0.11		1480	
86	4	-0.05		1470	
100	4	0.03		1475	
105	4	-0.36		1450	
127	0	-3.61		1240	
134	4	0.25		1489	
235	0	6.16		1870	
237	4	0.22		1487	
246	2	-1.12		1401	
247	3	-0.67		1430	
254	4	0.26		1490	
283	3	-0.82		1420	
284	0	17.41	2596		

MPV =	1473
F-pseudosigma =	64
N =	22
Hu =	1500
Hl =	1413

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

V (Vanadium) µg/L

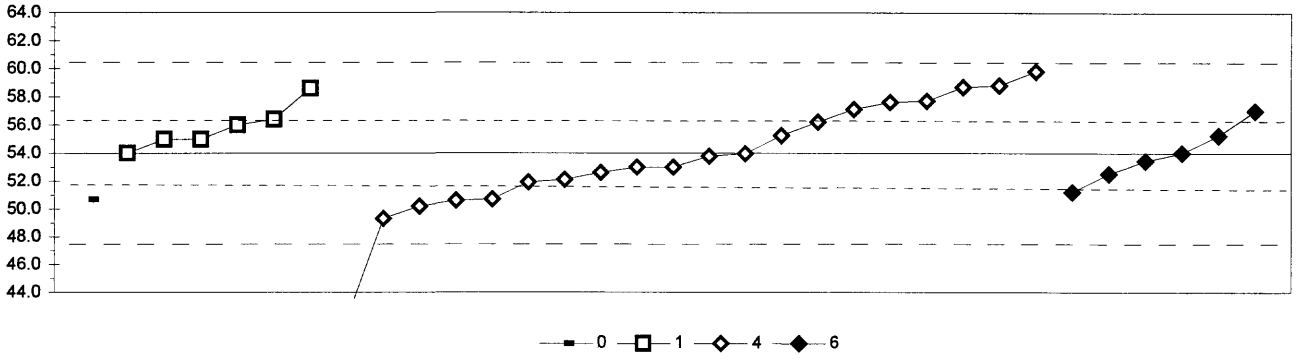


0. Other			6. ICP/MS			
3. AA: graphite furnace						
4. ICP						
		N =	1	2	19	8
		Minimum =	170	13	51	88
		Maximum =		207	330	125
		Median =			116	108
		F-pseudosigma =			12	22
Lab	Rating	Z-value	0	3	4	6
1	4	-0.46			109	
4	2	1.07			132	
5	3	-0.55			108	
8	3	-0.68			106	
11	3	-0.55			108	
16	3	-0.75				105
18	3	0.53			124	
25	0	-4.39			51	
30.1	4	0.39				122
42	2	-1.18				99
46	4	0.19			119	
48	1	-1.90				88
86	0	5.12			192	
89	0	6.13		207		
100	3	-0.55			108	
105	3	0.60				125
127	2	-1.22			98	
134	4	-0.01			116	
136	3	1.00			131	
141	3	0.53			124	
146	4	0.26			120	
212	1	-1.90				88
215	0	14.42			330	
235	4	-0.35				111
237	1	-1.63			92	
241	0	-6.94		13		
246	4	0.01			116	
247	4	0.46				123
283	3	0.60			125	
284	0	3.63	170			

MPV =	116
F-pseudosigma =	15
N =	30
Hu =	125
Hl =	105

Table 21. *Statistical summary of reported data for standard reference sample AMW-4 (acid mine water constituents)--Continued*

Zn (Zinc) mg/L



0. Other				6. ICP/MS		
1. AA: direct, air						
4. ICP						
		N =	1	6	20	6
		Minimum =	50700	54000	60	51200
		Maximum =		58600	58800	57000
		Median =			53000	
		F-pseudosigma =			4448	
Lab	Rating	Z-value	0	1	4	6
1	4	0.41				55.2
4	4	0.00			53.9	
5	3	-0.64			51.9	
8	2	-1.46			49.3	
11	0	-3.72			42.1	
16	4	-0.45				52.5
18	2	-1.02			50.7	
25	2	-1.05			50.6	
30.1	4	0.02				54.0
42	4	-0.16				53.4
46	2	1.18			57.7	
48	3	0.96				57.0
59	3	0.77		56.4		
69	4	0.33		55.0		
86	3	0.99			57.1	
89	4	0.02		54.0		
100	4	-0.42			52.6	
105	3	-0.86				51.2
127	4	-0.30			53.0	
134	4	0.41			55.2	
140	4	0.33		55.0		
141	1	1.91			59.8	
146	2	1.15			57.6	
212	4	-0.05			53.8	
215	4	-0.30			53.0	
237	2	1.49			58.7	
241	2	1.46		58.6		
246	2	-1.18			50.2	
247	3	-0.58			52.1	
253	3	0.65		56.0		
254	3	0.71			56.2	
283	1	1.52			58.8	
284	2	-1.02	50.7			

MPV =	54.0
F-pseudosigma =	3.2
N =	33
Hu =	56.2
Hl =	51.9

Table 22. *Statistical summary of reported data for standard reference sample Hg-25 (mercury)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0 Other/Not reported		
6 ICP/MS	=	inductively coupled plasma / mass spectrometry
8 AA: cold vapor	=	atomic absorption: cold vapor
9 Atomic fluorescence		

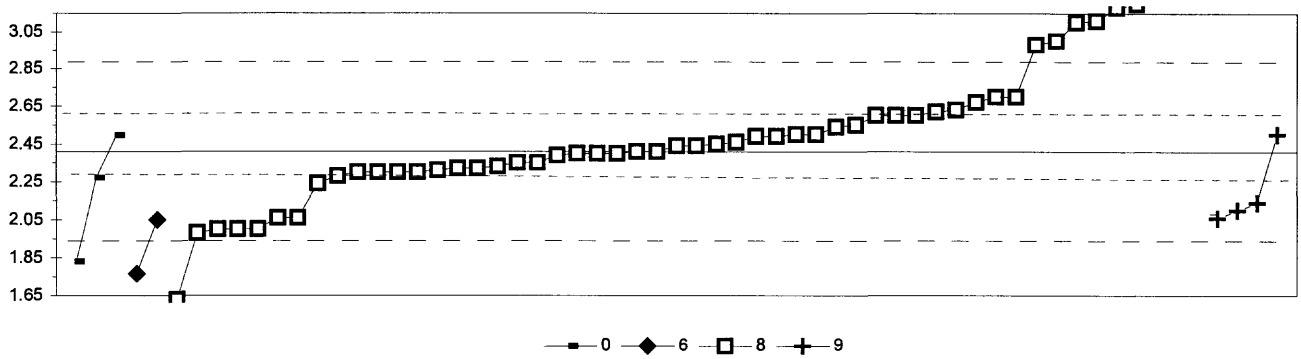
Abbreviations and symbols

N	=	number of analyses--(excluding less than values)
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hl	=	lower hinge value
µg/L	=	micrograms per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported or insufficient data
<	=	less than

Constituent		page
Hg	Mercury	190

Table 22. *Statistical summary of reported data for standard reference sample Hg-25 (mercury)--Continued*

Hg (Mercury) µg/L



0. Other
6. ICP/MS
8. AA: cold vapor
9. Atomic fluorescence

	0	6	8	9
N =	3	2	52	4
Minimum =	1.83	1.77	1.63	2.06
Maximum =	2.50	2.05	40.10	2.50
Median =			2.45	
F-pseudosigma =			0.24	

MPV = 2.41
F-pseudosigma = 0.24
N = 61
Hu = 2.60
HI = 2.28

Lab	Rating	Z-value	0	6	8	9
1	4	0.37			2.50	
3	4	-0.46			2.30	
8	1	-1.70			2.00	
10	2	1.20			2.70	
11	4	0.21			2.46	
12	0	4.52			3.50	
13	4	0.17			2.45	
15	4	0.12			2.44	
16	4	-0.25			2.35	
18	0	2.37			2.98	
26	4	0.33			2.49	
32	0	-2.41	1.83			
34.1	2	-1.45				2.06
34.2	2	1.08			2.67	
39	0	3.28			3.20	
46	0	2.45			3.00	
48	2	-1.29				2.10
51	1	-1.78			1.98	
59	1	-1.70			2.00	
68	2	-1.45			2.06	
69	4	0.00			2.41	
70	0	3.20			3.18	
76	0	-2.67		1.77		
86	3	-0.58	2.27			
87	4	-0.46			2.30	
89	3	-0.54			2.28	
96	3	0.91			2.63	
97	0	3.53			3.26	
100	0	2.91			3.11	
105	4	0.37			2.50	
107	3	0.79			2.60	
119	4	-0.25			2.35	
127	4	0.12			2.44	
134	3	0.58			2.55	
136	3	-0.71			2.24	
138	4	-0.08			2.39	
141	2	-1.45			2.06	
142	4	-0.37			2.32	
145	4	-0.42			2.31	
146	4	-0.04			2.40	
147	2	-1.12				2.14
149	3	0.79			2.60	
151	2	-1.49		2.05		
193	4	-0.46			2.30	
204	2	1.20			2.70	
212	3	0.79			2.60	
213	4	-0.46			2.30	
215	4	0.33			2.49	
217	4	-0.37			2.32	
220	4	-0.04			2.40	
221	4	0.00			2.41	
234	1	-1.70			2.00	
235	3	0.87			2.62	
247	4	-0.33			2.33	
255	0	156.44			40.10	
283	0	2.86			3.10	
284	0	-3.24			1.63	
292	4	-0.04			2.40	
297	3	0.54			2.54	
298	4	0.35	2.50			
304	4	0.37				2.50

Table 23. *Most probable values for constituents and properties in standard reference samples distributed in September 1997*

(MPV, most probable value; N, number of samples; µg/L, microgram per liter; mg/L, milligram per liter; µS/cm, microsiemens per centimeter at 25 degrees Celsius.)

T-151 (trace constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Ag	11.1 µg/L	1.0	68	Mg	17.5 mg/L	0.6	88
Al	insuff data		43	Mn	13.0 µg/L	1.1	82
As	1.01 µg/L	0.39	30	Mo	29.6 µg/L	1.9	53
B	36.3 µg/L	4.6	45	Na	55.0 mg/L	1.6	85
Ba	40.7 µg/L	1.7	73	Ni	10.0 µg/L	1.7	59
Be	25.6 µg/L	1.6	64	Pb	19.8 µg/L	2.3	76
Ca	37.9 mg/L	1.4	88	Sb	26.8 µg/L	2.0	50
Cd	26.8 µg/L	1.6	85	Se	1.80 µg/L	1.39	19
Co	insuff data		21	SiO_2	1.43 mg/L	0.10	51
Cr	30.1 µg/L	2.2	82	Sr	387 µg/L	16	49
Cu	33.0 µg/L	2.5	87	Tl	62.0 µg/L	6.3	46
Fe	10.0 µg/L	4.4	43	U	15.0 µg/L	0.6	11
K	1.95 mg/L	0.13	76	V	59.0 µg/L	4.3	59
Li	27.6 µg/L	2.1	33	Zn	6.57 µg/L	2.24	56

M-144 (major constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Ikalinity as $CaCO_3$	88.8 mg/L	3.7	91	Na	77.7 mg/L	2.8	91
B	46.1 µg/L	7.3	45	total P as P	0.030 mg/L	0.011	56
Ca	74.0 mg/L	3.2	95	pH	8.40	0.17	97
Cl	77.0 mg/L	3.2	98	SiO_2	7.43 mg/L	0.50	67
DSRD	546 mg/L	14	64	SO_4	210 mg/L	8	91
F	0.23 mg/L	0.04	69	Sp Cond	853 µS/cm	21	93
K	3.60 mg/L	0.26	82	Sr	673 µg/L	27	48
Mg	17.0 mg/L	0.6	95	V	insuff data		23

N-55 (nutrient constituents)

Analyte	MPV	F-pseudosigma	N
NH_3 as N	0.240 mg/L	0.024	69
NH_3+OrgN as N	0.300 mg/L	0.110	40
NO_3+NO_2 as N	0.443 mg/L	0.033	75
total P as P	0.602 mg/L	0.032	61
PO_4 as P	0.580 mg/L	0.026	66

N-56 (nutrient constituents)

Analyte	MPV	F-pseudosigma	N
NH_3 as N	0.498 mg/L	0.034	68
NH_3+OrgN as N	0.750 mg/L	0.097	44
NO_3+NO_2 as N	0.747 mg/L	0.064	76
total P as P	0.715 mg/L	0.035	60
PO_4 as P	0.658 mg/L	0.030	69

P-29 (low ionic strength constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Acidity	5.70 mg/L	3.85	17	Na	0.66 mg/L	0.06	46
Ca	1.84 mg/L	0.14	48	pH	6.85	0.21	52
Cl	0.20 mg/L	0.18	35	PO_4 as P	0.046 mg/L	0.012	34
F	0.056 mg/L	0.028	29	SO_4	1.10 mg/L	0.23	38
K	0.37 mg/L	0.04	35	Sp Cond	19.2 µS/cm	0.9	47
Mg	0.57 mg/L	0.02	48				

GWT-2 (ground-water trace constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Ag	34.1 µg/L	5.2	47	Li	19.2 µg/L	1.6	19
Al	50.0 µg/L	14.1	42	Mg	14.2 mg/L	0.3	64
As	1.30 µg/L	0.37	25	Mn	307 µg/L	17	62
B	242 µg/L	13	37	Mo	37.8 µg/L	3.5	38
Ba	167 µg/L	8	55	Na	115 mg/L	4	61
Be	9.00 µg/L	0.82	47	Ni	6.92 µg/L	2.08	37
Ca	72.6 mg/L	2.7	63	Pb	150 µg/L	8	60
Cd	13.0 µg/L	0.8	57	Sb	24.1 µg/L	3.3	38
Co	insuff data		19	Se	insuff data		25
Cr	27.6 µg/L	3.0	57	SiO_2	26.9 mg/L	1.6	38
Cu	28.4 µg/L	2.7	59	Sr	810 µg/L	27	33
Fe	0.049 mg/L	0.005	53	V	6.56 µg/L	3.90	33
K	4.60 mg/L	0.27	57	Zn	363 µg/L	16	54

GWM-2 (ground-water major constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Alkalinity	253 mg/L	9	52	Mg	14.0 mg/L	0.4	57
B	238 µg/L	14	35	Na	117 mg/L	5	56
Ca	68.4 mg/L	2.5	57	total P as P	0.20 mg/L	0.03	40
Cl	48.9 mg/L	2.0	56	SiO_2	26.7 units	1.8	38
DSRD	602 mg/L	14	37	SO_4	93.6 mg/L	4.0	57
F	1.18 mg/L	0.09	44	Sp Cond	934 µS/cm	26	52
K	4.46 mg/L	0.40	52				

AMW-4 (acid mine water constituents)

Analyte	MPV	F-pseudosigma	N	Analyte	MPV	F-pseudosigma	N
Ag	69.0 µg/L	11.3	31	Li	68.3 µg/L	2.0	17
Al	29200 µg/L	1760	34	Mg	125 mg/L	8	36
As	168 µg/L	30	29	Mn	106 mg/L	7	36
B	insuff data		16	Mo	108 µg/L	19	25
Ba	9.23 µg/L	3.60	25	Na	22.7 mg/L	1.5	37
Be	38.0 µg/L	3.3	30	Ni	269 µg/L	22	35
Ca	338 mg/L	28	37	Pb	33.5 µg/L	7.6	30
Cd	175 µg/L	18	38	Sb	2.77 µg/L	0.89	16
Co	165 µg/L	13	29	Se	insuff data		11
Cr	120 µg/L	18	35	SiO_2	52.3 mg/L	3.3	22
Cu	6120 µg/L	437	38	Sr	1473 mg/L	64	22
Fe	188 mg/L	12	36	V	116 µg/L	15	30
K	3.58 mg/L	0.23	31	Zn	54.0 µg/L	3.2	33

Hg-25 (mercury)

Analyte	MPV	F-pseudosigma	N
Hg	2.41 µg/L	0.24	61