REPORT ON THE U.S. GEOLOGICAL SURVEY'S EVALUATION PROGRAM FOR STANDARD REFERENCE SAMPLES DISTRIBUTED IN APRIL 1996: T-139 (TRACE CONSTITUENTS), T-141 (TRACE CONSTITUENTS), M-138 (MAJOR CONSTITUENTS),N-49 (NUTRIENT CONSTITUENTS), N-50 (NUTRIENT CONSTITUENTS),P-26 (LOW IONIC STRENGTH CONSTITUENTS) AND Hg-22 (MERCURY)

by Jerry W. Farrar and H. Keith Long

U.S. GEOLOGICAL SURVEY

Open-File Report 96-436

Golden, Colorado

1996

DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Gordon P. Eaton, Director

For additional information
write to:
William J. Shampine
U.S. Geological Survey
Water Resources Division, CR
Box 25046, Mail Stop 401
Denver Federal Center
Denver, CO 80225

Copies of this report can be
purchased from:
U.S. Geological Survey
Books and Open-File Reports
Federal Center, Bldg. 810
Box 25425
Denver, CO 80225

CONTENTS

FIGURE

TABLES

REPORT ON THE U.S. GEOLOGICAL SURVEY'S EVALUATION PROGRAM FOR STANDARD REFERENCE SAMPLES DISTRIBUTED IN APRIL 1996: T-139 (TRACE CONSTITUENTS), T-141 (TRACE CONSTITUENTS), M-138 (MAJOR CONSTITUENTS), N-49 (NUTRIENT CONSTITUENTS), N-50 (NUTRIENT CONSTITUENTS), P-26 (LOW IONIC STRENGTH CONSTITUENTS) AND Hg-22 (MERCURY)

By Jerry W. Farrar and H. Keith Long

ABSTRACT

This report presents the results of the U.S. Geological Survey's analytical evaluation program for 7 standard reference samples--T-139 (trace constituents), T-141 (trace constituents), M-138 (major constituents), N-49 (nutrient constituents), N-50 (nutrient constituents), P-26 (low ionic strength constituents), and Hg-22 (mercury)--that were distributed in April 1996 to 150 laboratories registered in the U.S. Geological Survey sponsored interlaboratory testing program. Analytical data that were received from 132 of the laboratories were evaluated with respect to overall laboratory performance and relative laboratory performance for each analyte in the seven 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 seven 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 evaluation program semiannually. This program provides a variety of reference materials 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. Occasionally, sediment samples are provided.

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 1962 determinations of six analytes in the major standard reference sample (SRS). Since that time, objectives of the program have been to accomplish the following:

(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) ascertain the accuracy and precision of analytical methods.

One hundred eighty-five USGS and non-USGS laboratories are registered in the program, which can currently provide eight standard reference sample types:

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 drainage constituents.
8. Sediment (bed material) for major and trace constituents.

When sufficient data are available, a most probable value is statistically determined for each analyte in the SRS.

Though this is not a laboratory certification program, participation in this continuing quality assurance program is mandatory for all laboratories providing water-analyses data for USGS data storage or use (publications). Federal, State, municipal, and university laboratories can participate even though they do not provide data to the USGS. Analyses of these SRS provides the means to alert participating laboratories of possible deficiencies in their analytical operations, and also provides reference materials for in-house quality control programs. Participating laboratories are identifed only by a confidential code number.

A library of SRS, from previous evaluations, are available on request. Participating laboratories can request previous SRS for further testing, continuing quality assurance, and quality control programs by contacting:

Chief Laboratory Section
U.S. Geological Survey
Branch of Technical Development and Quality Systems
Denver Federal Center
Box 25046 MS 401
Denver, CO 80225-0046

Purpose and Scope

This report summarizes the analytical results submitted by 132 (table 1) of the 150 laboratories that requested and were shipped SRS for the August 1996 evaluation. Not all SRS are requested, nor 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 April 29, 1996, are presented in this report:

T-139	Trace constituents
T-141	Trace constituents
M-138	Major constituents
N-49	Nutrient constituents
N-50	Nutrient constituents
P-26	Low ionic strength constituents (precipitation)
Hg-22	Mercury

The USGS requested that analytical results be returned by June 14, 1996 for evaluation and preparation of this report. Each participating laboratory is requested to perform those determinations routinely made on the respective SRS for USGS investigations and to indicate the analytical method used to determine the concentration of each analyte. When analytical-method information was provided, it has been included in the respective data table. The analytical data are presented in ways that allow participants to evaluate data distribution, scatter, outliers, central tendency, bias, skewness, and method relationships.

Table 1. *Laboratory participants in the analyses of standard reference samples distributed in April 1996*

State	City	Participating Laboratory
Alabama	Mobile	Alabama Dept of Environmental Management
Alaska	Soldotna	Alaska Dept of Fish and Game
Arizona	Yuma	Burns and Roe Services Corporation
Arkansas	Arkadelphia	University of Arkansas AWRD-Water Quality Lab
	Fayetteville	University of Arkansas
	Little Rock	Arkansas Department of Pollution Control and Ecology
California	Castiac	Castaic Chemical Laboratory, Department of Water Resources
	Davis	University of California - Davis
	Lakeside	Helix Water District
	Martinez	Central Contra Costa Sanitary District
	Oakland	East Bay Muncipal Utility District
	Perris	Eastern Municipal Water District
	Sacramento	Anlab
	Sacramento	US Bureau of Reclamation
	Sacramento	USGS WRD
	Santa Fe Springs	West Coast Analytical Service, Inc.
	West Sacramento	California Department of Water Resources
	West Sacramento	Quanterra
Colorado	Alamosa	Bureau of Reclamation
	Arvada	Quanterra
	Arvada	USGS National Water Quality Laboratory
	Aurora	Core Laboratories, Inc.
	Boulder	USGS (Schuster)
	Denver	USGS Colorado District Toxic Project
	Denver	Denver Water Department
	Denver	Metro Wastewater Reclamation
	Denver	USGS (Branch of Geochemistry)
	Fort Collins	City of Fort Collins - Water Quality
	Fort Collins	USDA Forest Service
	Golden	Kaiser - Hill Rocky Flats
	Loveland	Northern Colorado Water Conservation
	Northglenn	Northglen Water Treatment Plant
	Westminster	City of Westminster
Florida	Bradenton	Manatee County Environmental Management
	Brooksville	SW Florida Water Management District
	Ft. Lauderdale	Spectrum Laboratories, Inc.
	Ocala	USGS WRD QWSU
	Orlando	Post, Bucklye, Schuh, and Jernigan, Inc.
	Ormond Beach	Environmental Laboratory
	Palatka	St. John's River Management District
	Tallahassee	City of Tallahassee
	Tallahassee	Florida Department of Environmental Regulations
	Tallahassee	Savannah Laboratories
	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
	Atlanta	USGS WRD

Table 1. *Laboratory participants in the analyses of standard reference samples distributed in April 1996--Continued*

State	City	Participating Laboratory
Georgia	Decatur	Dekalb County Water Quality Laboratory
	Tifton	USDA - ARS
Hawaii	Honolulu	University of Hawaii - SOEST Analytical Services
Idaho	Boise	US Bureau of Reclamation
Illinois	Champaign	Hazardous Waste Research Center
	Champaign	Illinois Environmental Protection Agency
Iowa	Des Moines	University Hygienic Laboratory, Des Moines Branch
Kansas	Lawrence	Kansas Geological Survey
	Topeka	City of Topeka
	Topeka	Kansas Department of Health and Environment
	Wichita	City of Wichita
Kentucky	Frankfort	Division of Environmental Studies
	Lexington	Kentucky Geological Survey
	Louisville	Metropolitan Sewer District
Maine	Orono	Sawyer Environmental Center, University of Maine
	Orono	University of Maine
Maryland	Baltimore	Maryland Dept of Health and Mental Hygiene
	Baltimore	Maryland Department of Health and Mental Hygiene
Michigan	Ann Arbor	University of Michigan, Department of Geological Science
	Ann Arbor	University of Michigan
	Detroit	Detroit Water and Sewerage Department
Minnesota	Minneapolis	University of Minnesota, Department of Geology and Geophysics
	St. Paul	Metro Waste Control Commission
	St. Paul	University of Minnesota
Missouri	Columbia	University of Missouri
	Jefferson City	Missouri Department of Health
Montana	Helena	Dept of Health & Environmental Sciences
Nevada	Boulder City	US Bureau of Reclamation
	Las Vegas	City of Las Vegas
	Las Vegas	University of Nevada - Las Vegas
	Reno	Nevada State Health Laboratory
	Reno	Reno-Sparks Wastewater Treatment
	Reno	Desert Resarch Institute
	Sutcliffe	Pyramid Lake Fisheries
New Mexico	Albuquerque	City of Albuquerque
New York	Brewster	NYC DEP Brewster Lab
	Brockport	SUNY - Brockport
	Buffalo	Erie County Laboratory
	Grahamsville	New York City Department of Environmental Protection
	Hauppauge	Suffolk County Water Authority
	Hempstead	Nassau County Department of Health
	Milbrook	Institute of Ecosystem Studies
	North Babylon	Ecotest Laboratories
	Port Washington	Nytest Environmental, Inc.
	Rochester	Monroe County
	Shokan	New York City Department of Environmental Protection
	Syracuse	Onandaga County DDS
	Syracuse	SUNY-CESF
	Troy	USGS-WRD
	Valhalla	Department of Environmental Protection
	Wantagh	Cedar Creek Projects Laboratory

	Yorktown	New York City Department of Environmental Protection
North Carolina	Charlotte	Mecklenburg County

Table 1. *Laboratory participants in the analyses of standard reference samples distributed in April 1996--Continued*

State	City	Participating Laboratory
North Carolina	Durham	Duke University
	Greensboro	City of Greensboro
North Dakota	Bismarck	North Dakota State Health Department
	Bismarck	North Dakota State Water Commission
Ohio	Cincinnati	US EPA
	Cuyahoga Heights	Northeast Ohio Regional Sewer District
	Medina	Medina County Sanitary Engineering
	Wooster	The Ohio State University
Oklahoma	Norman	Oklahoma Geological Survey
	Oklahoma City	Oklahoma Department of Environmental Quality
Oregon	Corvallis	USDA - CCAL
	Tigard	Unified Sewerage Agency
Pennsylvania	Harrisburg	Pennsylvania Department of Environmental Resources
	Somerset	Geochemical Testing
Puerto Rico	San Juan	Department of Natural Resources
South Dakota	Brookings	Northern Great Plains Laboratory
	Brookings	SDSU - Water Quality Laboratory
Tennesse	Chattanooga	TVA Environmental Chemistry
	Jackson	Jackson Branch Laboratory
Texas	Austin	Lower Colorado River Authority
	Seguin	Guadalupe-Blanco River Authority
	Tyler	Analytical Testing Laboratories
Virginia	Culpepper	ESS Labs
	Manassas	Occoquan Watershed Monitoring Laboratory
	Richmond	Consolidated Laboratory Services
Washington	Richland	Battelle Pacific NW
	Seattle	Frontier Geoscience
	Seattle	Brooks-Rand, Ltd.
Wisconsin	Madison	University of Wisconsin, Department of Hygiene
	Madison	University of Wisconsin, Department of Geology and Geophysics
	Milwaukee	Milwaukee Metro Sewerage District

Preparation of Standard Reference Samples

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

Trace constituent sample T-139 was prepared using water collected from the Colorado River near Newcastle, Colorado. The water was pumped through 0.45, 0.2- and 0.1-µm filters, in series, into a 3500-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 ppm free chlorine. 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 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Trace constituent sample T-141 was prepared using water collected from the Clear Creek near Idaho Springs, Colorado. The water was pumped through 0.45, 0.2- and 0.1-μm filters, in series, into a 3500-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 ppm free chlorine. 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 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Major constituent sample M-138 was prepared using water collected from the confluence of the Fall River with the Clear Creek near Idaho Springs, Colorado. The water was pumped through 0.45, 0.2- and 0.1-μm filters, in series, into a 1300-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 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Nutrient sample N-49 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 600-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 250-mL polyethylene bottles used were new, amber, acid leached, and deionized-water rinsed.

Nutrient sample N-50 was prepared using D.I. 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 600-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 25-mL vials used were new, amber, acid leached, and deionized-water rinsed.

Sample P-26 was prepared in a 400-L polypropylene drum using snow collected near Echo Lake in Colorado. The collected snow was allowed to melt; then it 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 sterlizer. 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.

Sample Hg-22 was prepared using water collected from the Fall River near Idaho Springs, Colorado. The sample was prepared in a 190-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, v/v) and dichromate ion (0.05-percent, w/w) 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 analytes which are summarized in table 2. The number of analytes varied from 28 in T-139 and T-141 (trace constituents) to 1 in Hg-22 (mercury).

Table 2. *Analytes determined in standard reference samples distributed in April 1996*

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

Analyte or property		Units	T-139, T141	M-138	N-49, 50	P-26	Hg-22
Acidity	Acidity as $CaCO_3$	mg/L				X	
Alk	Alkalinity as $CaCO_3$	mg/L		X			
Ag	Silver	µg/L	X				
Al	Aluminum	µg/L	X				
As	Arsenic	µg/L	X				
B	Boron	µg/L	X	X			
Ba	Barium	µg/L	X				
Be	Beryllium	µg/L	X				
Ca	Calcium	mg/L	X	X		X	
Cd	Cadmium	µg/L	X				
Cl	Chloride	mg/L		X			
Co	Cobalt	µg/L	X				
Cr	Chromium, total	µg/L	X				
Cu	Copper	µg/L	X				
DSRD	Dissolved solids	mg/L		X			
F	Fluoride	mg/L		X		X	
Fe	Iron	µg/L	X				
Hg	Mercury	µg/L					X
K	Potassium	mg/L	X	X		X	
Li	Lithium	µg/L	X				
Mg	Magnesium	mg/L	X	X		X	
Mn	Manganese	µg/L	X				
Mo	Molybdenum	µg/L	X				
Na	Sodium	mg/L	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				
NO_3+NO_2 as N	Nitrate + Nitrite	mg/L			X		
Pb	Lead	µg/L	X				
pH		unit		X		X	
PO_4 as P	Orthophosphate	mg/L			X		
total P as P	Phosphorus	mg/L		X	X		
Sb	Antimony	µg/L	X				
Se	Selenium	µg/L	X				
SiO_2	Silica	mg/L	X	X			
SO_4	Sulfate	mg/L		X		X	
Sp Cond	Specific conductance	µS/cm		X		X	
Sr	Strontium	µg/L	X	X			
Tl	Thallium	µg/L	X				
U	Uranium	µg/L	X				
V	Vanadium	µg/L	X	X			
Zn	Zinc	µg/L	X				

Laboratories were requested to identify the method used for each analyte 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 use the references listed below to further define the methods.

1. American Public Health Association and others, 1992, Standard methods for the examination of water and wastewater 18th ed: Washington, D.C., American Public Health Association, 981p.

2. American Society for Testing and Materials, Annual book of ASTM standards: Philadelphia, v. 11.01, 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 (3d 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 interlaboratory performance comparisons, laboratory performance ratings, based on the analyses reported for each SRS, are included in tables 4 through 11 in this report. Averages of the analyte ratings and the number of analyte values reported for each SRS are given for each participating laboratory. 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 (Questionable)	1.51 to 2.00
0 (Poor).	Greater than 2.00

Overall laboratory performance ratings greater than 2.4 are considered satisfactory. Overall laboratory performance ratings between 2.0 and 2.39 are considered marginal; those less than 2.0 are considered poor.

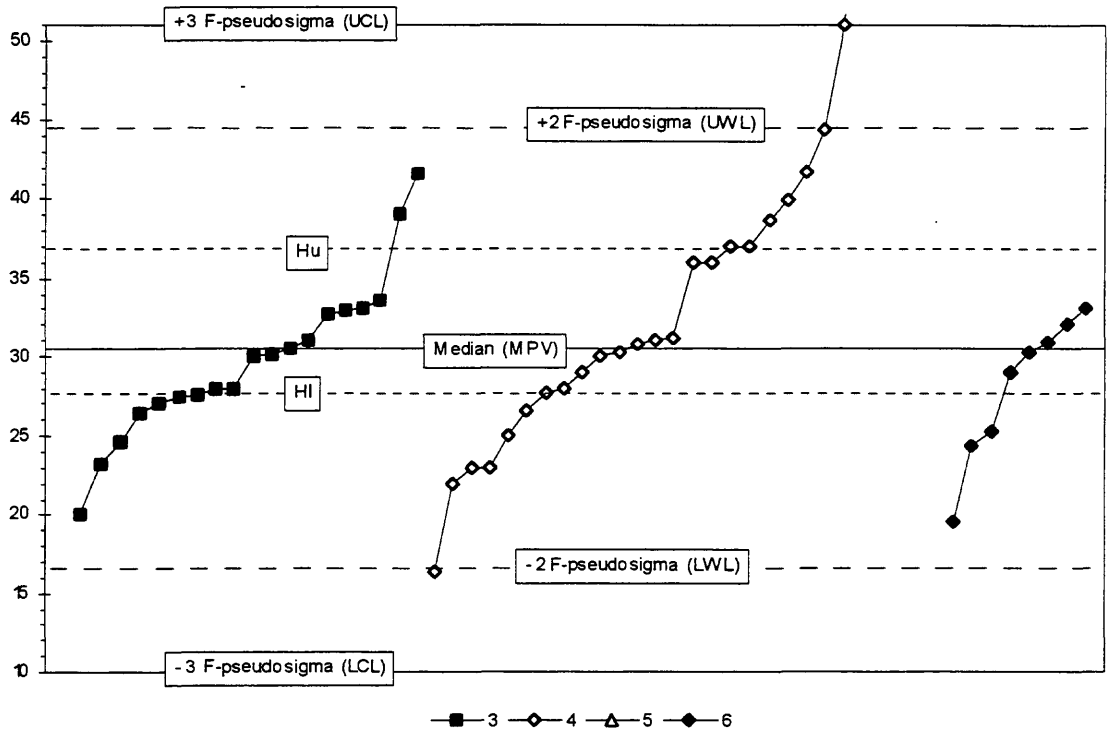
STATISTICAL PRESENTATION OF DATA

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 12 through 18. Tabulated data for each analyte include the laboratory code number, reported values, analytical method, most probable value (MPV), number of reported values - 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 determinations 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. Reported values of "less than" are used to establish the median, but are not considered in determining the data range. 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), the hinge spread (H-spr), is used to calculate the F-pseudosigma, the laboratory performance rating, the upper warning level (UWL) and 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.) The graphical plot is a box plot/control chart with reported values 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.



NOTE: vertical scale is the concentration value of the individual analyte in appropriate units (see table 2.) Methods shown are defined in Tables 3 and 11 through 17.

Figure 1. Statistical parameters shown on reported-data graphs

REFERENCE

Hoaglin, D.C., Mosteller, F., and Tukey, J.W., eds., 1983, Understanding Robust and Exploratory Data Analysis: John Wiley and Sons, Inc., 447p.

Table 4. *Overall laboratory performance ratings for standard reference water samples distributed in April 1996*

[Lab, laboratory number; OWR, overall weighted rating for all sample types; OLR, overall laboratory rating for reported values of a sample type; V/94, number of reported values of 94 total possible values from all sample types; V/28,V/28, V/16, V/5,V/5,V/11,V/1 are number of reported values possible for T-139,T-141, M-138, N-49,N-50, P-26 and Hg-22 respectively]

Standard reference sample =			T-139		T-141		M-138		N-49		N-50		P-26		Hg-22	
Lab	OWR	V/94	OLR	V/28	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/1
1	3.5	93	3.8	28	3.8	27	3.3	16	2.6	5	2.2	5	3.5	11	4	1
2	3.4	5											3.4	5		
3	2.3	80	2.3	25	2.0	25	2.6	16			2.2	5	2.4	8	3	1
4	2.8	17	2.9	7	3.0	8	1.5	2								
7	2.2	17					1.3	6	3.0	3	2.0	4	3.0	4		
9	2.9	16					2.6	11	3.4	5						
10	3.6	30	3.3	4	3.3	4	3.9	12	4.0	5	3.2	5				
11	3.1	68	3.1	20	3.2	22	2.6	15	3.2	5	3.4	5			4	1
12	1.9	32	2.5	8	2.2	9	1.6	11	0.7	3					2	1
13	2.2	49	2.4	12	2.0	15	2.1	13	2.3	4	3.0	4			3	1
15	2.5	70	2.3	19	1.7	20	3.0	14	3.3	4	3.6	5	2.9	7	4	1
16	2.9	60	3.1	26	2.9	26	2.1	7							2	1
18	3.1	62	3.2	17	2.6	19	3.1	15	3.8	5	3.6	5			4	1
19	2.5	17					1.6	9	3.5	4	3.8	4				
21	3.0	6			3.0	1			3.0	5						
22	3.0	2							3.0	1	3.0	1				
23	2.8	50	3.5	10	3.3	13	2.4	15	1.3	3	2.6	5	2.0	4		
24	2.8	63	3.0	25	2.5	24	3.1	13							0	1
25	1.4	58	0.6	10	0.9	16	1.4	15	1.6	5	2.2	5	3.1	7		
26	3.5	73	3.5	24	3.7	22	3.2	13	3.0	1	3.0	3	3.3	9	4	1
30.1	2.8	28	2.6	21			3.2	5			3.0	2				
30.2	2.8	4					2.0	2			3.5	2				
32	3.2	77	3.1	28	3.5	28	2.4	14	4.0	3	2.3	3			4	1
33	3.5	42	2.9	10	3.4	9	3.6	11	4.0	2	4.0	2	3.8	8		
34	4.0	5	4.0	2	4.0	2									4	1
35	4.0	1	4.0	1	NR	0										
36	2.1	59	2.1	17	2.2	17	2.4	12	2.8	4	1.3	4	1.0	4	0	1
38	3.4	27					3.4	9	3.0	5	4.0	5	3.4	8		
39	3.3	51	3.6	17			3.6	14	2.2	5	2.2	5	3.4	9	4	1
40	2.6	37	2.7	12	2.8	12	2.5	13								
43	3.4	22	4.0	5	3.2	6	3.3	11								
48	2.2	74	2.8	21	2.1	22	2.4	13	2.0	4	3.0	5	0.4	8	0	1
50	1.9	29	0.9	16			3.1	12							4	1
51	3.1	10					3.0	5			3.2	5				
53	1.8	4							1.5	2	2.0	2				
55	2.8	36	3.0	12			2.3	13	3.4	5	2.8	5			3	1
56	2.7	16					2.5	8	2.5	4	3.3	4				
57	2.3	23					2.7	13	2.6	5	0.8	5				
58	1.7	33	1.8	8	1.2	9	1.0	7			1.8	4	4.0	4	0	1
59	2.9	57	2.6	14	2.9	16	3.3	12	3.2	5	3.2	5	2.4	5		
60	2.6	43	2.9	12	3.0	12	2.3	6	2.5	4	1.8	4	1.8	4	3	1
61	2.3	76	2.5	22	2.7	23	0.8	12	3.4	5	2.4	5	2.0	8	0	1
63	2.3	34	2.2	20			2.4	14								
68	1.2	68	1.0	24	1.0	22	1.2	13	1.8	4	3.0	4			3	1
69	3.2	50	3.1	17	3.3	19	3.2	11	4.0	1	4.0	1			4	1
70	3.3	50	3.3	12	3.2	13	3.4	14	3.2	5	3.6	5			2	1
73	1.9	18	1.7	9	2.1	9										
75	3.3	55	3.7	21	3.3	22	3.4	9	0.0	1	0.0	1			3	1
76	3.0	26	2.9	8	3.0	9	3.0	7	4.0	1					4	1
80	2.4	39	2.8	13	2.4	14	1.8	12								
81	2.2	80	2.4	23	1.5	22	2.3	14	1.8	5	3.4	5	2.9	10	2	1
83	3.1	29	3.4	13			2.9	9	2.3	3	3.5	4				
84	2.8	13	2.3	4	3.3	4	2.3	3	3.0	1	4.0	1				
85	3.1	57	3.1	15	2.9	18	3.4	14	3.4	5	2.8	5				
86	2.8	67	3.2	21	2.9	20	1.9	11	1.3	3	2.3	3	3.3	8	4	1
87	2.2	56	2.4	15	2.2	17	1.8	13	2.4	5	2.4	5			0	1
88	1.3	6							0.0	3	2.7	3				
89	2.6	68	2.5	19	2.1	19	3.2	13	3.8	5			2.5	11	2	1
90	1.8	36	1.2	10	1.0	10	2.9	7	3.6	5	1.5	4				
91	3.3	9	NR	0	4.0	1			3.5	4	3.0	4				
92	2.9	21	2.0	1	4.0	1	2.5	8	3.7	3	3.3	3	2.6	5		
93	1.7	18	2.5	4			1.7	6	2.0	1	3.0	1	1.0	6		
96	3.2	35	3.3	11	3.1	11	3.0	7	3.4	5					4	1
97	3.0	71	2.9	22	3.0	24	3.0	14	3.2	5	3.6	5			2	1
100	2.5	75	2.2	20	2.7	20	2.7	15	1.8	5	2.4	5	2.8	9	1	1
104	3.6	11	4.0	1					3.8	5	3.4	5				
105	3.0	84	3.3	25	3.0	24	3.1	15	2.4	5	2.8	5	2.8	9	3	1
107	2.8	48	3.0	3	2.2	16	3.0	13	3.8	4	3.0	4	3.1	8		
108	1.3	29	0.8	12	1.3	12					3.0	4			2	1
109	2.5	35	2.3	12	2.3	12	2.8	11								

Table 4. *Overall laboratory performance ratings for standard reference water samples distributed in April 1996–Continued*

[Lab, laboratory number; OWR, overall weighted rating for all sample types; OLR, overall laboratory rating for reported values of a sample type; V/94, number of reported values of 94 total possible values from all sample types; V/28,V/28, V/16, V/5,V/5,V/11,V/1 are number of reported values possible for T-139,T-141, M-138, N-49,N-50, P-26 and Hg-22 respectively]

Standard reference sample =			T-139		T-141		M-138		N-49		N-50		P-26		Hg-22	
Lab	OWR	V/94	OLR	V/28	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/1
110	1.6	21	0.7	6	0.8	6			0.0	1			3.0	8		
111	3.1	18	4.0	1	4.0	1	2.8	6	2.0	3	3.3	3	3.5	4		
113	3.1	74	3.1	22	3.0	22	3.2	14	3.5	4	2.0	3	3.5	8	4	1
114	1.6	47	1.2	14	1.8	14	1.8	12	2.0	3	2.3	3			0	1
116	3.2	24	3.0	9	3.1	9	3.7	6								
118	3.1	36	3.8	8	3.3	11	3.0	6	2.4	5	2.4	5			4	1
119	3.2	77	3.0	22	3.0	22	3.5	14	2.6	5	3.6	5	3.3	8	4	1
121	3.1	45	3.2	18	2.8	18	3.8	9								
122	3.0	22					3.2	13	3.0	5	2.3	4				
128	2.3	68	2.6	24	2.5	23	1.5	11	2.3	4	2.0	5			1	1
129	1.8	39	1.3	7	1.6	8	2.1	14	2.4	5	1.8	5				
131	2.1	42	2.4	17	1.9	16	2.2	9								
133	2.9	38	3.2	11	2.5	12	2.8	4	3.6	5	2.2	5			4	1
134	3.7	89	4.0	26	3.8	27	3.5	15	2.6	5	3.8	5	3.8	10	4	1
138	3.6	88	3.7	26	3.8	26	3.1	15	3.2	5	3.6	5	3.4	10	3	1
140	2.5	63	2.6	15	2.8	15	2.8	13	2.2	5	2.4	5	1.8	10		
141	3.1	76	3.1	21	2.8	22	3.8	13	2.5	4	3.0	5	2.8	10	3	1
142	2.7	81	2.8	27	2.5	27	2.5	16	3.2	5	3.2	5			4	1
143	3.4	18					3.6	7	3.0	2	3.0	5	3.8	4		
144	2.6	11	2.6	5	2.8	5									2	1
145	2.6	76	2.6	21	2.5	20	2.6	14	2.8	5	3.0	5	2.2	10	4	1
146	2.8	58	2.6	16	3.0	18	2.9	12	3.3	4	2.5	4	2.3	3	4	1
149	2.8	58	2.8	21	2.9	20	2.9	12	2.0	4					4	1
153	1.7	29	1.6	10	1.0	10	2.6	9								
154	2.4	67	2.5	22	2.4	22	2.5	13	2.0	5	2.0	5				
155	2.9	19					3.1	9	3.4	5			2.2	5		
158	3.0	60	3.1	18	3.1	18	3.5	14	1.2	5	3.0	5				
180	3.0	58	3.0	15	3.0	14	3.1	13	2.8	5	3.8	5	2.3	6		
182	0.7	75	0.7	27	0.9	27	0.9	16	0.0	2	0.0	2			0	1
183	2.0	42	2.3	13	2.0	15	2.0	7	1.0	1	2.0	2	1.8	4		
190	2.8	70	2.9	18	2.8	18	2.8	14	3.6	5	2.6	5	2.7	10		
191	3.4	46	3.3	17	3.6	18	3.7	7	1.5	2	3.0	2				
196	3.3	48	3.3	20	3.3	20	4.0	3	3.5	2			3.7	3		
197	2.8	6							2.5	2	2.5	2	3.5	2		
198	2.6	23	2.5	11	2.5	11									3	1
203	2.8	48	2.6	14	3.1	15	2.7	6	3.5	4	3.0	4	2.3	4	2	1
209	2.5	18			2.0	5			3.7	3	2.3	3	2.4	7		
211	1.5	54	1.4	24	1.4	24			2.6	5					3	1
212	2.3	71	2.7	21	2.1	25	2.6	15	0.8	4	2.8	5			1	1
213	3.2	36	3.4	12	3.5	12	3.2	5	2.0	3	3.3	3			1	1
215	1.7	81	1.6	23	1.5	22	2.3	14	0.6	5	2.0	5	1.7	11	0	1
217	3.1	33	3.3	15			2.6	13	3.4	5						
219	2.1	58	2.1	24	1.9	22	2.3	11							4	1
220	2.4	45	2.6	11	3.1	12	1.8	11	1.0	5	3.2	5			0	1
221	3.1	60	3.4	18	3.2	18	2.7	7	2.6	5	2.2	5	2.7	6	4	1
224	2.1	69	1.8	19	1.4	18	2.8	12	1.8	5	2.4	5	3.0	10		
226	3.4	19					3.7	9	2.8	4			3.3	6		
227	2.6	41	2.9	11	2.7	11	3.8	5	2.0	5	1.2	5	2.8	4		
231	2.6	53	2.9	17	2.9	17	2.6	8	1.2	5	2.2	5			4	1
234	3.3	78	3.5	27	3.2	27	3.1	15	3.5	4	2.0	4			4	1
236	1.6	56	1.6	19	1.8	21	1.4	16								
238	2.8	5											2.8	5		
240	2.4	10							3.0	5	1.8	5				
241	2.6	79	2.7	23	2.8	23	2.4	14	2.3	4	1.8	5	2.7	9	4	1
243	2.6	12					2.3	4	3.3	3	3.0	3	1.5	2		
244	3.0	3					3.0	3								
245	2.3	12	2.5	6	1.6	5									4	1
247	3.3	88	3.7	26	3.7	26	3.3	15	3.2	5	2.2	5	2.2	10	3	1
248	0.0	4							0.0	4						
249	1.2	47	1.1	14	1.6	14	0.9	9	1.4	5	0.6	5				
252	2.4	51	2.1	15	2.1	16	2.1	7	3.5	4	3.5	4	2.8	4	4	1
253	1.8	20	0.8	5	1.0	5	3.2	5	2.2	5						

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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)		Ca (Calcium)	
			MPV =	2.26	µg/L	22.4	µg/L	5.55	µg/L	36	µg/L	44.0	µg/L	10.1	µg/L	50.3	mg/L
			F-pseudosigma =	0.68		4.6		0.97		9		3.6		1.2		2.1	
Lab	OLR	V/28		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.8	28		2.13	4	20.7	4	5.47	4	36	4	44.0	4	9.9	4	50.5	4
3	2.3	25		< 2	NR	75.1	0	< 4	NR	32	4	44.6	4	11.5	2	49.1	3
4	2.9	7				< 2000	NR					47.0	3	9.7	4	52.6	2
10	3.3	4															
11	3.1	20		2.00	4					38	4	46.0	3	10.0	4	52.7	2
12	2.5	8		3.40	1											50.0	4
13	2.4	12		< 10	NR	21.3	4	6.80	2			42.4	4	8.9	3	60.9	0
15	2.3	19		1.77	3	< 50	NR	5.32	4	47	2	49.6	1	10.9	3	55.6	0
16	3.1	26		2.21	4	14.5	1	6.33	3	145	0	43.8	4	9.3	3	50.6	4
18	3.2	17		< 5	NR	< 100	NR	5.40	4	< 50	NR	43.0	4	10.0	4	49.8	4
23	3.5	10		2.62	3			4.60	3							51.1	4
24	3.0	25		2.17	4			6.89	2	37	4	42.8	4	16.4	0	50.3	4
25	0.6	10		< 6	NR	< 19	NR	< 50	NR	< 23	NR	49.0	2	11.0	3	58.5	0
26	3.5	24		1.82	3	25.2	3	5.60	4	23	2	44.4	4	10.4	4	50.4	4
30	2.6	21		2.60	4	19.0	3	6.00	4			39.0	2	8.4	2	51.0	4
32	3.1	28		2.30	4	23.0	4	6.90	2	30	3	43.1	4	9.5	4	51.8	3
33	2.9	10				90.0	0					47.5	3			51.8	3
34	4.0	2						5.37	4								
35	4.0	1															
36	2.1	17		< 10	NR			4.92	3			90.1	0	22.2	0	52.6	2
39	3.6	17						5.58	4	38	4	44.4	4	10.0	4	50.8	4
40	2.7	12										42.7	4	9.8	4		
43	4.0	5														51.0	4
48	2.8	21		2.60	4	20.1	4	5.20	4	50	1	56.2	0	11.6	2	50.9	4
50	0.9	16		5.80	0	72.0	0	8.40	0			25.0	0				
55	3.0	12						4.40	2							50.4	4
58	1.8	8		8.50	0			11.10	0							47.5	2
59	2.6	14		< 10	NR	< 100	NR	< 10	NR			45.0	4	12.0	1	49.0	3
60	2.9	12		1.79	3			6.60	2	197	0						
61	2.5	22		2.00	4	< 22.9	NR	2.90	0	35	4	45.6	4	10.3	4	53.9	1
63	2.2	20		2.00	4	16.0	2	8.00	0	10	0	20.0	0	12.0	1	48.0	2
68	1.0	24		1.75	3	62.5	0	3.85	1	120	0	31.0	0	6.2	0	34.0	0
69	3.1	17		2.26	4	24.0	4	5.40	4			85.0	0	9.3	3	50.0	4
70	3.3	12		< 10	NR	< 100	NR	< 10	NR	< 50	NR	< 50	NR	9.9	4	52.2	3
73	1.7	9		3.80	0	10.9	0										
75	3.7	21		1.84	3			5.30	4	38	4	40.5	3	9.7	4	50.8	4
76	2.9	8						8.75	0			44.5	4	10.5	4		
80	2.8	13		3.21	2			7.07	1			< 60	NR				
81	2.4	23		2.00	4	9.0	0	5.00	3			36.0	0	21.0	0	48.4	3
83	3.4	13				< 25	NR					42.0	3	10.0	4	49.6	4
84	2.3	4														48.1	2
85	3.1	15		< 5	NR	< 100	NR	6.40	3	43	3	45.6	4	10.5	4	49.7	4
86	3.2	21		2.70	3	26.3	3	5.17	4	32	4	44.8	4	9.6	4	53.1	2
87	2.4	15		9.00	0			5.60	4			38.5	2			49.2	3
89	2.5	19		2.06	4	16.3	2	5.66	4			26.9	0	12.3	1	50.0	4
90	1.2	10										82.5	0				
91	NR	0															
92	2.0	1															
93	2.5	4														50.2	4
96	3.3	11		2.50	4			5.90	4			< 100	NR	10.0	4		
97	2.9	22		17.00	0	26.0	3	5.38	4			43.6	4	11.6	2	49.9	4
100	2.2	20		14.00	0	< 40	NR	5.30	4	< 50	NR	42.4	4	10.1	4	54.1	1
104	4.0	1															
105	3.3	25		1.87	3	23.1	4	4.86	3			42.7	4	9.9	4	53.2	2
107	3.0	3														50.1	4
108	0.8	12		1.40	2			8.80	0							53.0	2
109	2.3	12						4.80	3							48.1	2
110	0.7	6				11.1	0									33.9	0
111	4.0	1															
113	3.1	22		2.37	4	25.7	3	4.85	3			41.6	3	10.5	4	48.7	3

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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)		Ca (Calcium)	
			MPV = 2.26	µg/L	22.4	µg/L	5.55	µg/L	36	µg/L	44.0	µg/L	10.1	µg/L	50.3	mg/L
			F-pseudosigma = 0.68		4.6		0.97		9		3.6		1.2		2.1	
Lab	OLR	V/28	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114	1.2	14	5.00	0									10.0	4	43.0	0
116	3.0	9							31	3	42.0	3			48.0	2
118	3.8	8	2.50	4	< 2000	NR	6.30	3								
119	3.0	22	2.10	4	13.5	1	5.00	3	20	1	44.0	4	10.3	4	48.7	3
121	3.2	18			-				29	3	44.0	4			49.7	4
128	2.6	24	2.30	4	21.5	4	6.20	3	15	0	42.9	4	9.7	4	53.4	2
129	1.3	7							70	0					53.5	1
131	2.4	17			< 60	NR			1480	0	42.0	3			38.4	0
133	3.2	11	< 6	NR			5.80	4			44.1	4	11.0	3	49.6	4
134	4.0	26	2.44	4	22.0	4	5.32	4	35	4	43.0	4	10.0	4	51.0	4
138	3.7	26	2.33	4	21.2	4	5.70	4	41	3	42.0	3	9.7	4	50.0	4
140	2.6	15	6.00	0							70.0	0			50.5	4
141	3.1	21	1.93	4	< 100	NR	5.35	4	35	4	44.3	4	13.1	0	50.1	4
142	2.8	27	3.02	2			8.55	0	68	0	46.8	3	11.9	2	52.2	3
144	2.6	5					4.52	2								
145	2.6	21			< 13.4	NR	6.00	4	26	2	42.9	4	9.8	4	49.7	4
146	2.6	16	< 5	NR	< 100	NR	< 10	NR			42.5	4	10.5	4	48.1	2
149	2.8	21	1.90	3	20.0	3	5.00	3			40.0	2	10.0	4	49.8	4
153	1.6	10					5.50	4			57.4	0				
154	2.5	22	2.84	3	22.2	4	4.64	3			37.5	1	11.3	3	44.9	0
158	3.1	18			14.2	1			35	4	42.8	4	9.8	4	50.7	4
180	3.0	15	< 5.3	NR	< 40.6	NR	< 37.1	NR	36	4	41.9	3	9.4	3	48.9	3
182	0.7	27	1.90	3	50.1	0	7.07	1	387	0	50.3	1	12.6	1	63.3	0
183	2.3	13					6.90	2			57.0	0	12.1	1		
190	2.9	18	2.25	4	21.5	4	6.50	3							50.1	4
191	3.3	17			20.0	3	8.00	0			45.0	4			50.3	4
196	3.3	20	1.44	2	23.7	4	5.86	4			43.9	4	9.9	4		
198	2.5	11	2.33	4	21.9	4							11.0	3	54.6	0
203	2.6	14	2.33	4	20.1	4	7.90	0			50.0	1			51.1	4
211	1.4	24	3.30	1	162.0	0	5.10	4	< 40	NR	50.0	1	14.1	0	58.0	0
212	2.7	21	2.80	3	< 200	NR	5.60	4	36	4	44.0	4	10.0	4	51.6	3
213	3.4	12	2.16	4			5.86	4					10.4	4		
215	1.6	23	3.00	2	120.0	0	6.00	4	20	1	50.0	1	16.0	0	50.6	4
217	3.3	15	2.20	4			5.60	4			44.0	4	9.7	4	49.6	4
219	2.1	24	2.10	4	20.0	3			41	3	39.0	2	8.7	2	47.0	1
220	2.6	11					5.50	4							46.2	1
221	3.4	18	11.00	0	22.5	4	5.51	4							46.5	1
224	1.8	19		NR	< 3	0	4.90	3			6.9	0	11.4	2	52.1	3
227	2.9	11	2.02	4	23.5	4	4.80	3			37.8	1				
231	2.9	17	1.35	2			5.02	3			49.6	1			48.6	3
234	3.5	27	2.26	4	23.9	4	6.02	4	34	4	43.3	4	9.8	4	50.4	4
236	1.6	19	< 3	NR	63.7	0	< 35	NR	31	3	47.0	3	10.1	4	53.3	2
241	2.7	23	1.85	3	29.7	1	5.20	4			64.8	0	7.6	1	48.0	2
245	2.5	6		NR												
247	3.7	26	2.10	4	25.4	3	6.20	3	33	4	45.5	4	10.1	4	51.2	4
249	1.1	14	2.20	4	47.6	0	4.80	3								
252	2.1	15	3.20	2	< 5	0	6.10	3					12.0	1		
253	0.8	5														

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	7.50	µg/L	6.7	µg/L	7.75	µg/L	13.0	µg/L	7.5	µg/L	2.73	mg/L	18.7	µg/L
F-pseudosigma =	0.71		1.4		1.02		1.5		6.8		0.23		2.2	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	7.40	4	6.3	4	7.50	4	12.8	4	4.7	4	2.71	4	19.3	4
3	7.40	4	7.2	4	6.29	2	10.6	1	15.3	2	2.65	4	34.7	0
4	< 100	NR	< 100	NR	< 100	NR	< 30	NR	< 60	NR			< 100	NR
10	8.30	2			8.30	3	13.6	4						
11	7.30	4	7.0	4	7.00	3	14.0	3			2.86	3	30.6	0
12	7.80	4					13.0	4			2.00	0		
13	8.73	1	< 50	NR	8.84	2	< 20	NR	< 10	NR	2.94	3		
15	7.74	4	< 20	NR	6.44	2	15.4	1	< 30	NR	2.90	3		
16	7.51	4	7.2	4	8.98	2	13.9	3	0.0	NR	3.03	2	16.6	3
18	7.00	3	< 10	NR	9.00	2	14.0	3	< 50	NR	2.90	3		
23	7.96	3			7.25	4	14.8	2	< 500	NR	2.75	4		
24	7.80	4	7.1	4	9.20	2	14.1	3	5.5	4	2.45	2	30.6	0
25	< 6	NR	< 12	NR	< 8	NR	< 7	0	< 6	NR	< 1.21	0	81.0	0
26	7.57	4	6.7	4	8.60	3	12.8	4	7.1	4	2.66	4	20.0	3
30	6.80	3	6.6	4	6.20	1	10.0	1	< 500	NR			16.0	2
32	7.60	4	6.8	4	8.00	4	13.3	4	120.0	0	2.60	3	18.6	4
33									10.0	4	2.75	4		
34														
35									7.5	4				
36	6.33	1	< 10	NR	8.13	4	14.8	2	< 100	NR	2.29	1		
39	8.20	3			7.70	4	12.0	3					18.7	4
40			5.4	3			13.1	4	5.8	4	6.00	0	18.2	4
43									< 8	NR	2.80	4		
48	8.80	1	< 50	NR	8.20	4	12.5	4	< 30	NR	2.52	3		
50	7.50	4			15.20	0	17.6	0	2.5	3				
55	6.86	3			8.20	4	13.4	4			2.65	4		
58	3.90	0			8.10	4	12.3	4			2.20	0		
59	7.00	3			< 10	NR	14.0	3	100.0	0	2.50	3		
60	7.90	3			6.65	2	12.9	4						
61	7.60	4	5.6	3	8.90	2	13.6	4	< 10.8	NR	2.60	3		
63	4.10	0	5.9	3	7.10	3	13.0	4	< 10	NR	36.00	0		
68	10.40	0	< 5	NR	< 5	0	12.0	3	13.5	3	2.25	0	11.5	0
69	8.10	3			7.20	3	11.8	3			2.92	3	19.6	4
70	5.75	0	< 50	NR	< 10	NR	13.5	4	< 20	NR	2.66	4		
73	7.50	4			7.90	4	14.8	2			< 0.01	0		
75	7.97	3	7.9	3	8.26	4	12.5	4	6.2	4	2.56	3	19.5	4
76											2.87	3		
80	< 5	0	5.8	3	6.11	1	12.3	4	4.5	4				
81	7.00	3	5.0	2	8.00	4	12.0	3	5.0	4	3.07	1		
83	7.00	3			7.00	3	14.0	3	8.0	4	2.66	4		
84							10.6	1						
85	6.80	3	< 10	NR	< 10	NR	11.6	3	< 10	NR	2.59	3	18.1	4
86	7.38	4	7.5	3	7.48	4	14.2	3			2.82	4		
87	9.00	0			7.20	3	13.0	4	< 40	NR	2.66	4		
89	7.07	3	5.6	3	7.43	4	10.7	1	< 20	NR	2.76	4		
90	7.70	4			6.50	2	204.0	0	840.0	0				
91									< 20	NR				
92														
93											2.90	3		
96	7.70	4			8.80	2	10.6	1	< 50	NR				
97	7.50	4	5.9	3	6.38	2	10.6	1			2.59	3		
100	< 20	NR	22.0	0	10.00	0	15.5	1	18.0	2	2.66	4	23.0	1
104														
105	7.03	3	5.7	3	6.40	2	11.8	3	16.0	2	2.75	4	18.0	4
107														
108	4.15	0			6.00	1	15.0	2			7.10	0		
109									14.8	2	2.87	3	18.3	4
110											2.82	4		
111														
113	7.90	3			7.30	4	16.1	0	5.2	4	2.90	3		

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	7.50	µg/L	6.7	µg/L	7.75	µg/L	13.0	µg/L	7.5	µg/L	2.73	mg/L	18.7	µg/L
F-pseudosigma =	0.71		1.4		1.02		1.5		6.8		0.23		2.2	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114	8.00	3			12.00	0	13.0	4	25.0	0	3.60	0		
116									11.0	3				
118	7.50	4			8.00	4	12.2	3	< 100	NR				
119	8.00	3			6.50	2	14.0	3	3.0	3	2.80	4		
121	7.00	3	9.0	1	10.00	0	13.0	4	7.0	4	2.70	4		
128	8.70	1	8.3	2	7.60	4	12.3	4	<10	NR	1.95	0		
129							30.0	0	92.0	0	2.65	4		
131	6.70	2	9.3	1	7.50	4			14.9	2	2.75	4	21.5	2
133	4.48	0			5.97	1	12.9	4	4.5	4				
134	7.33	4	6.8	4	7.63	4	13.0	4	5.8	4	2.59	3	18.0	4
138	7.66	4	6.6	4	7.00	3	12.5	4	6.5	4	2.68	4		
140	7.50	4			8.00	4	16.1	0	9.0	4	2.28	1		
141	8.03	3	6.0	3	11.80	0	13.4	4	< 50	NR	2.74	4		
142	7.89	3	5.9	3	7.46	4	13.1	4	7.0	4	2.45	2	20.2	3
144							11.7	3						
145	6.40	1	4.9	2	7.60	4	8.4	0	5.2	4	2.45	2	13.9	0
146	7.60	4	6.5	4	8.26	4	10.5	1	< 25	NR	3.51	0		
149	9.00	0			7.00	3	< 5	0	< 10	NR	2.60	3	21.0	2
153	7.50	4			15.46	0	16.7	0						
154	8.46	2	7.9	3	7.20	3	11.7	3			4.74	0		
158	6.30	1	4.6	1	8.50	3	9.6	0			2.89	3		
180	6.50	2	5.9	3	8.70	3	13.4	4	5.2	4	3.40	0		
182	3.00	0	11.7	0	9.86	0	9.0	0	6.3	4	2.44	2	109.9	0
183	8.00	3			8.50	3	13.5	4						
190	10.00	0			7.81	4	12.7	4	27.3	0	2.73	4		
191	7.50	4	6.9	4	10.00	0	12.7	4	< 10	NR	2.63	4		
196	5.73	0	6.8	4	7.52	4	14.8	2						
198	7.66	4			7.80	4					3.00	2		
203	9.01	0			8.49	3	14.5	2	10.0	4	3.08	1		
211	7.90	3	12.0	0	4.87	0	11.6	3	44.0	0	2.52	3		
212	8.10	3	9.2	1	7.60	4	9.2	0	< 40	NR	2.80	4	19.0	4
213	6.94	3	7.0	4	7.20	3	13.8	3	6.1	4				
215	7.17	4	5.0	2	10.15	0	16.0	1	< 10	NR	3.80	0		
217	6.40	1												
219	7.00	3	5.2	2	6.20	1	11.0	2	1.5	3	2.50	3	16.0	2
220	6.89	3			7.40	4	13.0	4	12.0	3	2.20	0		
221	7.46	4	6.7	4	7.82	4	12.9	4	5.9	4	2.72	4		
224	5.10	0	7.9	3			13.9	3	9.0	4	2.73	4		
227	6.59	2			6.64	2	12.4	4						
231	7.73	4			8.31	3	12.1	3	8.8	4	2.65	4		
234	7.52	4	7.6	3	8.92	2	13.5	4	6.6	4	2.70	4	18.0	4
236	8.80	1	11.9	0	9.80	1	16.1	0	< 10	NR	3.11	1	15.6	2
241	6.80	3			7.15	3	11.2	2	9.1	4	2.70	4		
245	7.40	4			7.09	3	12.3	4						
247	7.90	3	6.7	4	8.50	3	12.1	3	< 5	NR	2.76	4	18.0	4
249	19.00	0			8.26	4	15.9	1	28.0	0	3.75	0		
252	7.58	4			9.20	2	12.0	3						
253	496	0			7.55	4	35.0	0						

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	10.00	mg/L	2.4	µg/L	14.9	µg/L	90.9	mg/L	13.1	µg/L	4.47	µg/L	9.39	µg/L
F-pseudosigma =	0.43		1.0		2.2		3.6		1.4		0.87		1.56	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	9.78	3	2.2	4	14.7	4	91.1	4	14.0	3	4.20	4	8.80	4
3	9.34	1	1.7	3	14.7	4	75.3	0	12.6	4	7.27	0	8.90	4
4	10.20	4	< 10	NR	< 500	NR	93.1	3	< 200	NR	< 400	NR		
10														
11	10.10	4	2.0	4	14.0	4	88.3	3	13.0	4			10.70	3
12	10.10	4					88.0	3						
13	9.95	4	< 5	NR	< 50	NR	109.0	0	< 20	NR	< 5	NR	7.40	2
15	10.60	2	< 5	NR	< 20	NR	95.2	2	13.8	4	3.06	1	9.83	4
16	10.21	4	2.3	4	15.9	4	90.5	4	15.4	1	4.91	4	9.37	4
18	9.70	3	< 15	NR	< 10	0	88.5	3	< 25	NR	3.80	3	8.80	4
23	10.20	4					90.8	4	< 20	NR	< 5	NR		
24	9.78	3	2.8	4	15.3	4	91.4	4	13.4	4	2.22	0	10.00	4
25	10.80	1	< 2	NR			101.0	0	< 49	NR	< 71	NR	< 51	NR
26	10.50	2	1.9	4	14.9	4	93.4	3	12.4	4	5.00	3	< 20	NR
30	10.30	3	1.8	3	18.0	2			10.5	1	3.00	1	11.00	2
32	10.70	1	2.4	4	15.0	4	101.0	0	13.4	4	4.40	4	9.30	4
33	10.20	4	10.0	0			90.5	4						
34														
35														
36	10.20	4	2.6	4			86.2	2	21.8	0	6.13	1	8.40	3
39	10.00	4			14.2	4	90.0	4	17.0	0	4.10	4		
40	10.50	2	1.2	2	19.1	1	101.0	0						
43	10.00	4	< 2	NR			90.0	4						
48	9.65	3	24.0	0	15.7	4	91.1	4	13.3	4	5.10	3	8.30	3
50			26.5	0	1.9	0			16.2	0	5.00	3		
55	10.40	3					85.0	1	13.3	4			12.90	0
58													9.60	4
59	9.60	3	< 10	NR			87.0	2	13.5	4	< 5	NR	10.50	3
60									12.1	3	4.20	4	8.05	3
61	10.50	2	2.3	4	6.9	0	93.8	3	12.2	3	2.80	1	7.10	2
63	9.60	3	< 10	NR	16.0	4	85.0	1	13.0	4	3.10	1	9.20	4
68	6.75	0	2.5	4	6.0	0	61.0	0	7.2	0	4.70	4	5.85	0
69	9.76	3					87.9	3	11.2	2	5.00	3	8.00	3
70	10.00	4	< 20	NR	< 50	NR	89.7	4	< 50	NR	5.05	3	10.40	3
73									10.9	1	4.90	4		
75	9.90	4	2.4	4	14.3	4	90.0	4	11.8	3	4.23	4		
76	10.20	4					89.1	4	12.4	4				
80			2.3	4	16.4	3			12.6	4	4.25	4		
81	8.82	0	< 1	NR	12.0	2	69.6	0	12.0	3	4.00	3	8.00	3
83	9.70	3	2.0	4			88.2	3	< 15	NR				
84			1.3	2							4.54	4		
85	10.30	3	< 10	NR	< 30	NR	88.5	3	< 10	0				
86	10.10	4	2.3	4			94.1	3	12.6	4	2.30	0		
87	9.52	2	< 5	NR	16.0	4	89.2	4	23.0	0	10.60	0		
89	10.90	0	< 5	NR			90.2	4	10.8	1	< 5	NR	7.38	2
90			71.0	0			88.9	3	16.1	0	3.00	1		
91			< 10	NR										
92														
93	10.42	3					38.5	0						
96			< 20	NR					12.8	4	4.40	4	7.80	3
97	9.83	4			14.3	4	91.5	4	10.6	1	4.84	4	9.65	4
100	10.90	0	< 5	NR	< 50	NR	91.2	4	< 15	NR	5.10	3	10.10	4
104														
105	9.98	4	2.1	4	16.5	3	91.9	4	11.5	2	4.57	4	9.00	4
107	10.00	4												
108					20.6	0			16.0	0	5.90	1		
109	9.83	4	4.7	0	14.3	4	85.6	2			2.80	1		
110	8.00	0					109.3	0						
111														
113	9.80	4	2.3	4			85.4	1	13.1	4	3.94	3	9.61	4

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (trace constituents) –Continued*

(MPV,most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Leb, 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	10.00	mg/L	2.4	µg/L	14.9	µg/L	90.9	mg/L	13.1	µg/L	4.47	µg/L	9.39	µg/L
F-pseudosigma =	0.43		1.0		2.2		3.6		1.4		0.87		1.56	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114	9.60	3	5.0	0			57.0	0	16.0	0	11.00	0		
116	10.00	4	4.0	1			92.6	4						
118			< 4	NR					13.4	4	4.40	4		
119	10.00	4	2.0	4	11.7	2	91.1	4	14.8	2	4.80	4	9.40	4
121	10.10	4	2.0	4			90.9	4	12.0	3	14.00	0		
128	8.62	0	2.3	4	8.4	0	93.3	3	14.1	3	4.30	4	10.10	4
129	10.90	0					90.0	4						
131	9.64	3	2.4	4	15.0	4	92.4	4	22.0	0	< 50	NR		
133	10.24	3							12.8	4	< 20	NR		
134	9.90	4	2.6	4	15.0	4	89.7	4	13.1	4	4.44	4		
138	9.91	4	2.4	4	15.2	4	92.0	4	12.9	4	4.30	4	10.10	4
140	9.60	3	2.4	4			91.0	4	14.0	3	4.00	3		
141	9.90	4	< 10	NR	12.9	3	91.9	4	7.7	0	5.10	3	11.30	2
142	9.74	3	2.0	4	19.2	1	92.5	4	13.1	4	4.30	4	11.20	2
144											1.20	0		
145	9.58	3	1.7	3	11.0	1	89.7	4	7.9	0	< 14.8	NR		
146	9.51	2	7.6	0	15.1	4	86.2	2	13.4	4	6.70	0	< 20	NR
149	10.30	3	5.0	0	13.0	3	90.0	4	13.0	4	4.00	3	8.00	3
153			26.9	0					14.9	2	6.16	1	12.00	1
154	9.39	2	1.9	4			31.8	0	12.6	4	3.49	2	9.88	4
158	9.79	4	2.3	4			89.6	4	12.2	3	4.90	4		
180	9.72	3	2.4	4	13.1	3	88.1	3	< 13.3	NR	< 27.2	NR	< 31.4	NR
182	12.01	0	1.0	2	24.5	0	103.6	0	79.1	0	60.32	0	4.43	0
183					15.9	4	95.8	2	13.3	4	6.00	1	9.50	4
190	9.85	4	1.6	3			91.1	4	9.7	0	5.05	3		
191	10.30	3	<10	NR			90.9	4	14.1	3	4.40	4		
196			2.4	4	14.9	4			12.8	4	4.75	4	10.40	3
198	11.00	0					107.0	0			4.14	4	8.15	3
203	9.86	4	<10	NR			86.6	2	< 20	NR	4.90	4		
211	9.25	1	4.0	1	10.1	0	96.5	1	13.1	4	3.60	3	11.00	2
212	10.60	2	< 10	NR	< 40	NR	95.9	2	< 40	NR	2.60	0	8.50	3
213									13.7	4	4.61	4		
215	10.30	3	4.0	1	21.0	0	93.0	3	13.2	4	6.72	0	5.00	0
217	9.80	4					87.6	3			4.60	4	11.00	2
219	8.90	0	1.8	3	9.8	0	84.0	1	11.0	2	< 10	NR	6.00	0
220	9.75	3	< 10	NR			95.0	2			6.20	1		
221	10.05	4	2.7	4	13.9	4	87.0	2	12.4	4	4.50	4		
224	10.11	4	5.3	0	3.6	0	92.1	4	13.1	4	2.70	1		
227			2.1	4							4.10	4		
231	10.00	4	2.2	4			99.8	0	11.1	2	5.60	2		
234	9.72	3	2.6	4	18.1	2	91.5	4	13.9	3	4.84	4	10.40	3
236	10.80	1	2.4	4	< 11	NR	94.2	3	16.3	0	< 20	NR	< 10	NR
241	9.60	3	2.6	4	17.0	3	92.0	4	13.0	4	5.60	2	10.30	3
245					13.3	3			7.7	0	2.73	1		
247	10.29	3	2.4	4	15.5	4	89.6	4	13.6	4	4.70	4	9.70	4
249			43.0	0			134.0	0	10.6	1	1.40	0		
252	10.60	2	< 20	NR	20.0	0	93.0	3	< 20	NR	3.60	3	8.50	3
253									40.0	0				

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 raported 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	4.83	µg/L	9.31	mg/L	401	µg/L	3.10	µg/L	5.00	µg/L	5.0	µg/L	11	µg/L
F-pseudosigma =	1.31		0.42		20		0.76		0.21		2.1		7	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	4.00	3	9.57	3	399	4	3.57	3	4.80	3	4.3	4	8	4
3	7.21	1	10.10	1	458	0	2.56	3			4.8	4	5	3
4			10.10	1	420	3					< 50	NR	< 250	NR
10													8	4
11			10.50	0	430	2					5.0	4		
12													60	0
13	< 5	NR	9.31	4			< 5	NR			< 50	NR	< 10	NR
15	3.90	3	11.80	0			1.58	1			< 10	NR	10	4
16	4.64	4			373	2	3.43	4	5.04	4	12.1	0	13	4
18	3.60	3			396	4	3.30	4			5.0	4	< 100	NR
23	4.39	4					< 5	NR					< 20	NR
24	4.00	3	9.65	3	394	4	1.00	0					9	4
25	< 129	NR	12.40	0	471	0					< 4	NR	< 4	NR
26	4.70	4	9.21	4							4.3	4	7	3
30	4.50	4							5.00	4	7.6	2	6	3
32	5.00	4	9.88	2	431	2	3.30	4	4.83	3	5.0	4	30	0
33			9.31	4	421	3								
34	4.83	4												
35														
36	3.77	3					2.38	3					5	3
39	5.30	4	9.40	4	401	4								
40					396	4								
43			9.50	4										
48	3.40	2					1.90	1			4.7	4	< 5	NR
50	8.40	0					3.00	4			8.9	1	219	0
55	5.00	4	9.05	3										
58														
59	8.40	0			400	4	< 5	NR					13	4
60	4.95	4					3.70	3					8	4
61	7.60	0	4.30	0			< 2.1	NR			2.9	3	7	3
63	< 5	NR	9.10	3			< 5	NR			6.0	4	< 10	NR
68	4.15	3			270	0					4.2	4	41	0
69							3.30	4						
70	< 10	NR	8.72	2	408	4	2.90	4			< 50	NR	< 20	NR
73													40	0
75	4.65	4									5.2	4		
76	11.40	0												
80	5.73	3			409	4							< 4	NR
81	6.00	3			418	3	3.00	4			3.0	3	13	4
83			8.73	2									10	4
84														
85	4.20	4			434	1					< 20	NR	11	4
86	4.98	4			404	4					8.2	2	23	1
87	< 2	NR	9.25	4									18	2
89	1.37	0	9.00	3			< 10	NR			5.3	4	7	3
90													3	2
91														
92			8.80	2										
93														
96	5.50	3											14	3
97	3.94	3	9.37	4	340	0	2.62	3					21	2
100	5.50	3	9.80	2	369	1	2.30	2			< 10	NR	6	3
104			9.46	4										
105	5.13	4	8.84	2	388	3					4.3	4	10	4
107			8.52	1										
108	0.30	0											24	1
109	3.83	3			350	0								
110			10.24	0										
111			9.43	4										
113	3.96	3	9.35	4	399	4	2.51	3					49	0

Table 5. *Laboratory performance ratings for standard reference water sample T-139 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	4.83	µg/L	9.31	mg/L	401	µg/L	3.10	µg/L	5.00	µg/L	5.0	µg/L	11	µg/L
F-pseudosigma =	1.31		0.42		20		0.76		0.21		2.1		7	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114													6	3
116			9.03	3	402	4							< 6	NR
118			9.43	4										
119	4.50	4	9.20	4			1.20	0					0	NR
121			9.50	4	412	3					4.0	4	13	4
128	6.60	2	9.80	2			3.20	4			5.5	4	38	0
129														
131			7.76	0	394	4							15	3
133	< 5	NR											12	4
134	5.45	4	9.24	4	406	4	3.31	4			4.7	4	10	4
138	5.20	4	9.01	3	393	4	3.17	4			4.5	4	24	1
140			8.79	2									15	3
141	4.28	4					3.65	3			5.8	4	12	4
142	8.03	0	10.20	0	400	4	2.99	4	4.92	4	4.6	4	10	4
144	4.90	4											12	4
145			9.56	3	384	3					3.1	3	11	4
146	< 10	NR					< 10	NR			4.6	4	15	3
149	4.00	3					3.00	4					9	4
153	4.65	4												
154	4.70	4			374	2	2.40	3			16.8	0	14	4
158			9.16	4							4.6	4	9	4
180	< 50.1	NR					< 32.1	NR			6.6	3	< 2.8	NR
182	7.11	1	5.50	0	448	0	130	0			31.4	0	5	3
183	7.20	1					4.50	1						
190	5.55	3	9.48	4	522	0							12	4
191	5.20	4			412	3	3.10	4					12	4
196	6.34	2			401	4	3.93	2	5.08	4	5.4	4	7	3
198														
203	< 5	NR											10	4
211	5.80	3	6.52	0	360	1	5.70	0			< 20	NR	16	3
212	6.50	2	9.80	2	390	3	< 5000	NR			4.2	4	74	0
213							0.60	0					9	4
215	7.00	1	8.63	1			1.00	0					10	4
217	5.20	4	9.10	3	400	4	3.10	4	5.40	1				
219	4.00	3	8.60	1	374	2					4.0	4	17	3
220	4.20	4											< 10	NR
221	3.76	3											10	4
224	22.70	0									12.9	0	28	0
227	0.06	0											10	4
231	4.06	3	9.04	3									11	4
234	5.18	4	9.00	3	406	4	1.20	0			5.0	4	7	3
236	< 100	NR	2.81	0	424	2					9.2	1	1	2
241	3.70	3	9.50	4			3.40	4			7.2	2	41	0
245														
247	4.90	4	9.39	4	414	3	3.50	3			5.2	4	10	4
249	6.30	2											38	0
252	3.50	2									61.0	0	10	4
253													30	0

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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)		Ca (Calcium)	
			MPV =	5.91	µg/L	75.4	µg/L	7.50	µg/L	29	µg/L	33.0	µg/L	8.60	µg/L	19.1	mg/L
			F-pseudosigma =	0.88		9.8		0.80		10		1.9		0.79		1.0	
Lab	OLR	V/28		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.8	27		6.00	4	69.0	3	7.50	4	30	4	32.3	4	8.40	4	19.0	4
3	2.0	25		2.73	0	82.2	3	6.22	1	38	3	31.6	3	9.10	3	18.1	3
4	3.0	8				< 2000	NR					34.0	3	7.60	2	19.6	3
10	3.3	4															
11	3.2	22		6.00	4	76.0	4			30	4	34.0	3	9.00	3	20.0	3
12	2.2	9		8.20	0			10.00	0							13.0	4
13	2.0	15		< 10	NR	75.0	4	8.80	1			32.2	4	8.29	4	23.1	0
15	1.7	20		3.20	0	99.2	0	7.22	4	44	2	37.6	0	9.12	3	21.0	1
16	2.9	26		5.91	4	61.0	2	7.84	4	144	0	32.9	4	7.47	2	19.7	3
18	2.6	19		8.00	0	< 100	NR	7.00	3	< 50	NR	32.0	3	9.00	3	18.7	4
21	3.0	1															
23	3.3	13		5.77	4			5.99	1							18.6	4
24	2.5	24		5.22	3			10.10	0	27	4	32.4	4	13.00	0	18.8	4
25	0.9	16		< 6	NR	< 19	0	< 50	NR	< 23	NR	36.7	1	8.40	4	22.4	0
26	3.7	22		5.33	3	75.4	4	7.50	4	19	3	32.9	4	8.00	3	19.4	4
32	3.5	28		5.80	4	78.0	4	7.50	4	22	3	32.4	4	8.50	4	19.8	3
33	3.4	9				100.0	0					34.8	3			19.0	4
34	4.0	2						7.46	4								
35	NR	0															
36	2.2	17		< 10	NR			6.75	3			63.5	0	16.00	0	19.0	4
40	2.8	12										33.4	4	8.70	4		
43	3.2	6														20.0	3
48	2.1	22		7.80	0	73.5	4	8.20	3	6	0	42.3	0	9.20	3	19.4	4
58	1.2	9		7.10	2			12.40	0							14.8	0
59	2.9	16		< 10	NR	100.0	0	< 10	NR			34.0	3	9.80	1	19.0	4
60	3.0	12		5.12	3			8.40	2	207	0						
61	2.7	23		6.40	3	< 22.9	0	7.70	4	21	3	33.7	4	8.40	4	20.0	3
68	1.0	22		5.25	3	84.5	3	3.95	0	78	0	23.0	0	5.35	0	13.5	0
69	3.3	19		5.76	4	75.0	4	7.80	4			53.0	0	8.15	3	18.6	4
70	3.2	13		< 10	NR	< 100	NR	< 10	NR	< 50	NR	< 50	NR	8.22	4	19.8	3
73	2.1	9		7.80	0	60.1	1										
75	3.3	22		5.08	3	65.1	2	7.69	4	26	4	30.6	2	8.02	3	19.1	4
76	3.0	9		5.27	3			9.40	0			33.8	4	8.63	4		
80	2.4	14		6.72	3			9.12	1			< 60	NR				
81	1.5	22		5.00	2	11.0	0	7.00	3			26.0	0	11.00	0	17.1	1
84	3.3	4														18.7	4
85	2.9	18		6.10	4	< 100	NR	6.90	3	31	4	34.6	3	8.50	4	19.9	3
86	2.9	20		4.38	1	81.1	3	6.83	3			33.7	4	7.73	2	19.2	4
87	2.2	17		8.00	0			7.50	4			26.9	0			19.2	4
89	2.1	19		6.52	3	88.0	2	7.58	4			< 50	NR	8.50	4	20.3	2
90	1.0	10										26.6	0				
91	4.0	1															
92	4.0	1															
96	3.1	11		6.30	4			8.40	2			< 100	NR	< 10	NR		
97	3.0	24		5.91	4	81.2	3	7.56	4			28.0	0	9.06	3	18.8	4
100	2.7	20		6.20	4	68.2	3	7.90	4	< 50	NR	32.0	3	8.70	4	20.6	1
105	3.0	24		5.43	3	77.0	4	6.83	3			31.3	3	8.10	3	20.0	3
107	2.2	16		5.00	2	63.0	2	6.00	1			39.0	0			17.2	1
108	1.3	12		2.60	0			10.40	0							32.0	0
109	2.3	12						5.90	1							18.5	3
110	0.8	6				26.4	0									13.0	0
111	4.0	1															
113	3.0	22		6.31	4	75.3	4	8.66	2			32.4	4	8.61	4	19.1	4
114	1.8	14		5.00	2									10.00	1	15.8	0
116	3.1	9								21	3	31.0	2			18.2	3
118	3.3	11		6.50	3	< 2000	NR	7.60	4								
119	3.0	22		5.80	4	57.0	1	7.00	3	24	3	33.0	4	8.39	4	18.9	4
121	2.8	18								23	3	33.0	4			18.6	4
128	2.5	23		6.30	4	76.6	4	7.80	4	9	1	34.4	3	7.90	3	20.4	2
129	1.6	8								45	1					18.0	2

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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)		Ca (Calcium)	
			MPV =	5.91	µg/L	75.4	µg/L	7.50	µg/L	29	µg/L	33.0	µg/L	8.60	µg/L	19.1	mg/L
			F-pseudosigma =	0.88		9.8		0.80		10		1.9		0.79		1.0	
Lab	OLR	V/28		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
131	1.9	16				< 60	NR			1540	0	34.0	3			15.2	0
133	2.5	12		< 6	NR			8.80	1			31.5	3	8.86	4	18.3	3
134	3.8	27		5.98	4	76.0	4	7.39	4	29	4	32.7	4	8.76	4	19.9	3
138	3.8	26		6.17	4	71.8	4	7.90	4	31	4	32.3	4	8.26	4	19.2	4
140	2.8	15		8.00	0							41.0	0			18.7	4
141	2.8	22		5.25	3	51.4	0	6.93	3	37	3	33.2	4	8.78	4	19.1	4
142	2.5	27		6.06	4			10.30	0	38	3	35.2	2	9.73	2	19.4	4
144	2.8	5						6.43	2								
145	2.5	20				45.3	0	< 5.9	NR	19	3	32.0	3	8.10	3	18.8	4
146	3.0	18		5.91	4	81.1	3	< 10	NR			32.3	4	8.80	4	18.4	3
149	2.9	20		5.40	3	60.0	1	8.00	3			30.0	1	8.00	3	19.0	4
153	1.0	10						7.56	4			40.6	0				
154	2.4	22		6.76	3	72.5	4	6.54	2			29.4	1	8.60	4	17.2	1
158	3.1	18				71.2	4			28	4	33.0	4	8.06	3	19.5	4
180	3.0	14						< 37.4	NR	31	4	31.9	3	7.70	2	18.4	3
182	0.9	27		6.25	4	96.1	0	8.15	3	178	0	36.4	1	10.70	0	23.6	0
183	2.0	15						8.60	2			21.0	0	11.30	0		
190	2.8	18		6.29	4	70.9	4	7.20	4							18.8	4
191	3.6	18				70.0	3	8.90	1			33.0	4			18.6	4
196	3.3	20		4.41	1	82.7	3	6.63	2			33.7	4	7.68	2		
198	2.5	11		6.05	4	59.6	1							9.22	3	21.1	1
203	3.1	15		5.71	4	78.0	4	7.20	4			40.7	0			20.3	2
209	2.0	5				69.3	3									19.6	3
211	1.4	24		7.30	1	233.0	0	7.30	4	< 40	NR	20.0	0	11.80	0	22.7	0
212	2.1	25		6.80	2	150.0	0	7.00	3	27	4	35.0	2	8.90	4	19.9	3
213	3.5	12		5.50	4			7.20	4					9.26	3		
215	1.5	22		7.70	1	193.0	0	7.70	4	122	0	40.0	0	14.00	0	19.8	3
219	1.9	22		5.50	4	70.0	3			32	4	30.0	1	7.20	1	18.0	2
220	3.1	12						7.20	4							17.1	1
221	3.2	18		9.00	0	75.4	4	7.58	4							21.0	1
224	1.4	18				56.0	1	8.70	2			< 5	0	10.60	0	19.8	3
227	2.7	11		5.24	3	75.4	4	6.52	2			33.9	4				
231	2.9	17		3.62	0			7.62	4			28.5	0			18.2	3
234	3.2	27		5.76	4	72.9	4	8.01	3	25	4	32.1	4	7.98	3	18.5	3
236	1.8	21		7.10	2	109.1	0	< 35	NR	26	4	34.5	3	8.10	3	19.8	3
241	2.8	23		4.85	2	92.0	1	7.10	4			34.6	3	7.20	1	17.6	2
245	1.6	5															
247	3.7	26		5.50	4	78.4	4	7.00	3	26	4	33.1	4	8.10	3	19.2	4
249	1.6	14		5.70	4	302.0	0	7.40	4								
252	2.1	16		6.40	3	< 5	0	6.90	3					11.00	0		
253	1.0	5															

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	8.20 µg/L		6.50 µg/L		15.4 µg/L		18.0 µg/L		4.3 µg/L		2.32 mg/L		21.4 µg/L	
F-pseudosigma =	0.52		0.95		1.6		1.6		6.3		0.19		2.0	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	8.00	4	6.10	4	14.0	3	18.5	4	< 3	NR	2.34	4	22.0	4
3	8.55	3	6.13	4	14.5	3	13.8	0	< 30	NR	2.25	4	30.3	0
4	< 100	NR	< 100	NR	< 100	NR	< 30	NR	< 60	NR			< 100	NR
10	8.50	3			15.9	4	19.0	3						
11	8.10	4	7.00	3	15.0	4	19.0	3			2.37	4		
12	8.10	4					19.0	3			2.00	1		
13	9.79	0	< 50	NR	17.7	2	< 20	NR	< 10	NR	2.76	0		
15	8.44	4	< 20	NR	12.4	1	22.0	0	< 30	NR	2.47	3		
16	8.04	4	6.70	4	14.5	3	18.1	4	0.0	NR	2.51	2	19.4	2
18	9.00	1	< 10	NR	16.0	4	19.0	3	< 50	NR	2.60	1		
21									10.0	3				
23	8.66	3			14.3	3	17.9	4	< 500	NR	2.36	4		
24	7.30	1	6.50	4	17.5	2	18.7	4	1.1	3	2.18	3	27.8	0
25	< 6	0	< 12	NR	< 8	0	18.0	4	< 6	NR	2.23	4	89.0	0
26	8.00	4	6.40	4	16.1	4	18.2	4	< 3	NR	2.30	4	21.4	4
32	8.40	4	6.70	4	15.0	4	18.8	4	50.0	0	2.30	4	20.9	4
33									0.0	NR	2.32	4		
34														
35									<10	NR				
36	7.41	1	< 10	NR	15.4	4	21.1	1	< 100	NR	1.95	1		
40							19.1	3	1.7	4	5.30	0	21.4	4
43									< 8	NR	2.40	4		
48	9.20	1	< 50	NR	17.2	2	17.8	4	< 30	NR	2.18	3		
58	3.00	0			16.2	4	15.4	1			1.90	0		
59	8.00	4			16.0	4	18.0	4	< 10	NR	2.20	3		
60	8.42	4			12.7	1	18.4	4						
61	8.30	4	6.20	4	16.5	3	19.2	3	10.9	2	1.90	0		
68	12.00	0	< 5	NR	< 5	0	15.0	1	13.5	2	2.45	3	12.0	0
69	8.54	3			15.1	4	16.8	3			2.44	3	23.2	3
70	2.80	0	< 50	NR	16.3	3	18.1	4	< 20	NR	2.24	4		
73	8.10	4			16.1	4	18.2	4	1.0	3				
75	9.18	1	8.42	1	15.4	4	18.5	4	7.0	4	2.22	3	22.5	3
76					15.9	4					2.37	4		
80	< 5	0	4.98	1	12.7	1	16.5	3	1.5	4				
81	7.00	0	5.00	1	15.0	4	17.0	3	< 3	NR	2.07	2		
84							16.1	2						
85	8.00	4	< 10	NR	19.3	0	15.8	2	< 10	NR	2.12	2	21.2	4
86	7.79	3	6.74	4	12.9	1	19.4	3			2.36	4		
87	9.00	1			13.8	3	17.0	3	< 40	NR	2.29	4		
89	8.01	4	4.83	1	< 5	0	17.1	3	< 20	NR	2.40	4		
90	7.90	3			13.0	2	240.0	0	560.0	0				
91									< 20	NR				
92														
96	8.60	3			17.0	3	15.8	2	< 50	NR				
97	8.08	4	6.02	3	14.8	4	15.8	2			2.24	4		
100	< 20	NR	< 15	NR	16.5	3	18.0	4	< 15	NR	2.44	3	29.0	0
105	7.90	3	5.80	3	13.4	2	16.1	2	< 10	NR	2.41	4	20.0	3
107					14.0	3	16.0	2	< 10	NR	2.24	4		
108	5.14	0			13.0	2	18.0	4			4.51	0		
109									7.0	4	2.33	4	20.7	4
110											2.42	3		
111														
113	8.60	3			15.0	4	20.8	1	4.5	4	2.09	2		
114	8.00	4			13.0	2	15.0	1	10.0	3	2.50	3		
116														
118	8.40	4			15.5	4	17.6	4	< 100	NR				
119	7.80	3			12.5	1	18.0	4	0.0	NR	2.40	4		
121	7.00	0	8.00	1	19.0	0	14.0	0	3.0	4	2.30	4		
128	10.10	0	7.20	3	13.6	2	17.6	4	< 10	NR	1.39	0		
129							30.0	0	80.0	0	2.10	2		

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	8.20	µg/L	6.50	µg/L	15.4	µg/L	18.0	µg/L	4.3	µg/L	2.32	mg/L	21.4	µg/L
F-pseudosigma =	0.52		0.95		1.6		1.6		6.3		0.19		2.0	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
131	7.90	3	8.60	0	17.3	2			6.3	4	2.32	4	23.7	2
133	4.82	0			14.1	3	18.9	3	3.1	4				
134	8.32	4	6.78	4	15.8	4	18.0	4	2.0	4	2.19	3	21.0	4
138	8.12	4	6.35	4	13.1	2	17.9	4	1.9	4	2.37	4		
140	8.60	3			16.0	4	18.6	4	5.0	4	2.00	1		
141	8.36	4	4.12	0	15.4	4	22.7	0	< 50	NR	2.35	4		
142	8.55	3	5.69	3	14.2	3	16.9	3	7.0	4	2.18	3	23.1	3
144							18.6	4						
145	7.90	3	5.30	2	15.2	4	14.4	0	2.0	4	2.09	2	17.6	1
146	8.20	4	6.41	4	16.7	3	16.6	3	< 25	NR	2.55	2		
149	9.00	1			16.0	4	5.0	0	< 10	NR	2.30	4	22.0	4
153	8.76	2			7.9	0	14.4	0						
154	9.24	1	7.50	2	16.0	4	17.6	4			3.43	0		
158	8.30	4	5.01	1	13.9	3	15.3	1			2.45	3		
180	8.00	4	6.60	4	16.3	3	18.9	3	< 3.6	NR	2.49	3		
182	5.13	0	5.47	2	17.4	2	13.2	0	2.6	4	2.35	4	76.8	0
183	9.30	0			15.4	4	17.8	4						
190	9.80	0			17.0	3	21.5	0	31.2	0	2.31	4		
191	8.30	4	6.90	4	16.1	4	18.3	4	< 10	NR	2.24	4		
196	7.02	0	6.50	4	15.0	4	19.3	3						
198	8.04	4			15.6	4					2.47	3		
203	9.04	1			16.3	3	18.7	4	< 10	NR	2.37	4		
209											2.84	0		
211	9.50	0	8.00	1	13.5	2	15.0	1	45.0	0	2.14	3		
212	11.00	0	8.00	1	14.0	3	17.0	3	29.0	0	2.50	3	22.0	4
213	8.40	4	6.53	4	14.4	3	18.2	4	2.5	4				
215	8.50	3	5.00	1	20.2	0	20.3	2	< 10	NR	4.20	0		
219	7.50	2	5.40	2	13.0	2	16.0	2			2.10	2	18.0	1
220	7.72	3			14.3	3	17.5	4	< 20	NR	2.60	1		
221	8.24	4	6.70	4	15.3	4	17.3	4	2.4	4	2.36	4		
224	6.50	0	8.30	1			19.9	2	6.7	4	2.22	3		
227	7.53	2			14.2	3	17.2	4						
231	8.35	4			16.2	4	18.2	4	4.2	4	2.29	4		
234	7.96	4	7.04	3	17.6	2	17.2	4	2.6	4	2.19	3	20.8	4
236	7.40	1	12.10	0	19.3	0	20.2	2	< 10	NR	2.49	3	15.2	0
241	7.50	2			14.6	4	18.5	4	3.2	4	2.10	2		
245	7.78	3			13.4	2	16.2	2						
247	8.80	2	6.50	4	15.3	4	17.9	4	< 5	NR	2.32	4	20.5	4
249	40.00	0			15.6	4	21.8	0	39.0	0	2.76	0		
252	8.11	4			17.0	3	18.0	4						
253	443.00	0			16.6	3	30.0	0						

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	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 =	5.48	mg/L	20.0	µg/L	2.1	µg/L	33.0	mg/L	17.0	µg/L	5.7	µg/L	3.5	µg/L
F-pseudosigma =	0.27		1.9		0.5		1.3		2.1		1.0		0.6	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	5.26	3	19.7	4	2.2	4	32.5	4	17.9	4	5.7	4	3.8	4
3	4.76	0	17.0	1	2.6	3	40.9	0	17.4	4	4.5	2	< 6	NR
4	5.70	3	21.0	3	< 500	NR	32.5	4	< 200	NR	< 400	NR		
10														
11	5.49	4	18.0	2	2.0	4	31.2	2	17.0	4	5.4	4	4.6	1
12	5.60	4					30.0	0						
13	5.65	3	19.9	4	< 50	NR	40.9	0	< 20	NR	< 5	NR	< 5	NR
15	5.81	2	21.4	3	< 20	NR	34.5	2	18.4	3	4.1	1	< 5	NR
16	5.63	3	19.5	4	2.1	4	33.3	4	18.1	3	6.4	3	3.5	4
18	5.30	3	21.0	3			33.0	4	< 25	NR	4.6	2	3.2	3
21														
23	5.56	4					33.0	4	< 20	NR	5.4	4		
24	5.29	3	19.2	4			32.1	3	18.6	3	4.0	1	0.9	0
25	5.88	2	< 2	0			37.2	0	< 49	NR	< 71	NR	< 51	NR
26	5.63	3	20.0	4	< 7	NR	32.0	3	16.0	4	6.4	3	< 20	NR
32	5.77	2	21.3	3	2.0	4	34.0	3	17.7	4	5.9	4	3.4	4
33	5.48	4	20.0	4			32.8	4						
34														
35														
36	6.26	0	21.2	3			32.5	4	17.1	4	7.3	2	3.2	3
40	5.80	2	21.5	3			34.9	2						
43	5.60	4	16.0	0			33.0	4						
48	5.20	2	3.3	0	2.8	2	30.9	1	18.1	3	7.2	2	3.1	3
58											5.3	4		
59	5.30	3	17.0	1			32.0	3	17.5	4	5.0	3	< 10	NR
60									17.6	4	5.7	4	3.3	4
61	5.70	3	19.2	4	< 5.4	NR	34.4	2	16.2	4	6.3	3	< 3.9	NR
68	3.55	0	14.0	0	< 5	NR	22.0	0	11.4	0	7.7	1	< 2	NR
69	5.22	3	20.0	4			31.8	3	15.6	3	5.8	4		
70	5.46	4	< 20	NR	< 50	NR	32.1	3	< 50	NR	6.3	4	< 5	NR
73									14.8	2	1.8	0		
75	5.33	3	20.7	4			33.6	4	17.4	4	5.6	4		
76	5.61	4					33.0	4						
80			21.4	3	2.0	4			16.1	4	4.0	1		
81	4.85	0	15.0	0	< 3	NR	29.6	0	16.0	4	6.0	4	3.0	3
84			18.7	3							5.6	4		
85	5.48	4	19.2	4	< 30	NR	31.4	2	16.1	4				
86	5.59	4	21.6	3			34.4	2	16.7	4	3.8	1		
87	5.16	2	20.0	4	2.7	2	31.1	2	26.0	0	10.9	0		
89	6.04	0	22.3	2			33.1	4	15.4	3	2.5	0	< 10	NR
90			313.0	0			29.9	0	15.0	3	4.5	2		
91			20.8	4										
92														
96			20.0	4					17.0	4	6.2	4	3.4	4
97	5.42	4	25.2	0	2.4	4	32.3	3	14.6	2	6.2	4	3.9	3
100	6.52	0	23.5	1	< 50	NR	32.8	4	< 15	NR	6.6	3	4.2	2
105	5.55	4	18.0	2	2.2	4	33.2	4	15.5	3	6.1	4	3.4	4
107	5.42	4	10.0	0			32.4	4	15.0	3	4.1	1		
108					2.3	4			21.0	1	7.9	0		
109	5.36	4	18.1	2	1.2	1	26.5	0			3.6	0		
110	4.33	0					35.1	1						
111														
113	5.40	4	21.4	3			29.1	0	17.6	4	5.8	4	5.3	0
114	5.20	2	25.0	0			26.7	0	16.0	4	12.0	0		
116	5.50	4	23.0	1			33.4	4						
118			20.7	4					19.9	2	5.7	4		
119	5.40	4	22.0	2	1.3	1	33.3	4	19.5	2	7.6	1	2.7	2
121	5.45	4	19.0	3			32.5	4	15.0	3				
128	4.68	0	17.8	2	< 10	NR	34.2	3	17.0	4	5.7	4	4.1	3
129	5.10	2	20.0	4			31.0	2						

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	5.48	mg/L	20.0	µg/L	2.1	µg/L	33.0	mg/L	17.0	µg/L	5.7	µg/L	3.5	µg/L
F-pseudosigma =	0.27		1.9		0.5		1.3		2.1		1.0		0.6	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
131	5.16	2	22.0	2	< 10	NR	38.5	0	26.0	0	< 50	NR		
133	5.49	4							19.2	2	< 20	NR		
134	5.50	4	21.6	3	1.9	4	32.4	4	17.3	4	5.8	4	3.4	4
138	5.48	4	20.9	4	2.1	4	33.8	3	16.9	4	6.0	4	3.8	4
140	5.10	2	20.0	4			33.5	4	18.0	4	5.0	3		
141	5.49	4	18.0	2	< 10	NR	33.8	3	13.6	1	6.8	2	4.0	3
142	5.20	2	20.0	4	4.9	0	34.1	3	16.5	4	5.7	4	4.3	2
144											4.7	3		
145	5.19	2	22.0	2	< 1.1	NR	31.8	3	13.8	1	< 14.8	NR		
146	5.18	2	23.4	1	< 5	NR	33.3	4	17.6	4	8.5	0	< 20	NR
149	5.70	3	22.0	2	< 2	NR	33.0	4	17.0	4	5.0	3	4.0	3
153			4.9	0					22.4	0	7.9	0	6.5	0
154	5.10	2	24.6	0			89.5	0	18.3	3	5.7	4	3.7	4
158	5.46	4	15.5	0			30.5	1	16.2	4	5.4	4		
180	5.27	3	20.7	4	< 5	NR	31.5	2	< 13.3	NR	< 27.2	NR	< 31.4	NR
182	7.09	0	21.9	3	30.4	0	36.5	0	36.7	0	131.1	0	0.9	0
183			16.2	1	1.6	2	31.8	3	18.6	3	8.2	0	3.9	3
190	5.39	4	21.0	3			33.1	4	15.5	3	6.1	4		
191	5.55	4	20.0	4			32.6	4	18.5	3	5.7	4		
196			21.8	3	2.1	4			17.0	4	6.0	4	3.6	4
198	5.95	1					34.2	3			5.7	4		
203	5.35	4	20.0	4			32.6	4	< 20	NR	5.6	4		
209	5.56	4					28.0	0						
211	5.34	3	19.0	3	3.1	1	34.6	2	17.2	4	5.5	4	5.0	0
212	5.90	1	15.0	0	< 40	NR	35.1	1	15.0	3	3.7	1	4.6	1
213									17.0	4	6.0	4		
215	5.70	3	20.0	4	2.0	4	34.9	2	19.7	2	9.7	0	< 5	NR
219	4.90	0	12.0	0			30.0	0	15.0	3	< 10	NR	2.3	1
220	5.52	4	21.0	3			32.6	4			6.5	3		
221	5.51	4	22.9	2	2.1	4	32.0	3	15.4	3	5.9	4		
224	5.98	1	23.5	1	< 5	NR	33.2	4	18.4	3	3.2	0		
227			20.0	4							4.7	3		
231	5.36	4	20.3	4			32.5	4	15.0	3	8.1	0		
234	5.28	3	21.1	3	3.4	0	32.4	4	19.3	2	6.4	3	3.5	4
236	5.77	2	21.5	3	< 11	NR	33.3	4	23.7	0	21.8	0	< 11	NR
241	5.20	2	17.0	1	2.1	4	33.0	4	16.9	4	6.9	2	2.9	2
245									8.9	0	4.0	1		
247	5.62	3	19.5	4	2.1	4	33.1	4	17.8	4	6.2	4	3.5	4
249			60.0	0			62.0	0	14.4	2	5.4	4		
252	5.80	2	31.0	0	4.2	0	33.0	4	< 20	NR	4.8	3	3.1	3
253									40.0	0				

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	8.4	µg/L	8.70	mg/L	157	µg/L	4.0	µg/L	3.85	µg/L	9.45	µg/L	218	µg/L
F-pseudosigma =	1.2		0.46		7		0.9		0.25		1.19		12	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	7.7	3	8.98	3	157	4	3.8	4	3.70	3	9.30	4	216	4
3	10.3	1	9.45	1	172	1	3.7	4			10.70	2	238	1
4			9.30	2	160	4					< 50	NR	< 250	NR
10													225	3
11			9.95	0	167	2					9.00	4	216	4
12													220	4
13	8.0	4	8.85	4			< 5	NR			5.86	0	246	0
15	6.5	1	10.80	0			4.0	4			< 10	NR	258	0
16	6.0	1			144	1	4.9	3	3.97	4	14.03	0	218	4
18	5.6	0			153	3	4.8	3			11.00	2	218	4
21														
23	7.3	3					5.2	2					212	3
24	5.7	0	9.06	3	152	3	4.2	4					219	4
25	< 129	NR	10.00	0	181	0					< 4	0	< 4	0
26	8.6	4	8.58	4							10.20	3	218	4
32	9.0	4	9.01	3	161	3	4.8	3	3.85	4	9.00	4	222	4
33			8.61	4	157	4								
34	8.5	4												
35														
36	7.6	3					2.9	2					208	3
40					157	4					10.30	3	249	0
43			8.90	4										
48	7.2	3					3.5	4			8.10	2	180	0
58													90	0
59	10.0	2			160	4	< 5	NR					225	3
60	8.4	4					4.7	3					225	3
61	9.3	3	4.00	0			2.9	2			8.50	3	206	2
68	8.9	4			105	0					9.30	4	160	0
69	7.8	4					4.9	2					218	4
70	< 10	NR	8.26	3	157	4	4.6	3			< 50	NR	225	3
73													241	1
75	8.5	4									9.83	4	227	3
76	13.2	0												
80	9.1	3			146	2							220	4
81	9.0	4			188	0	5.0	2			< 1	0	197	1
84														
85	8.1	4			168	2					< 20	NR	250	0
86	9.1	3			158	4					10.40	3	235	2
87	< 2	0	8.76	4									218	4
89	2.7	0	8.34	3			< 10	NR			7.63	1	182	0
90													5	0
91														
92			8.66	4										
96	9.8	2											204	2
97	7.7	3	8.68	4	134	0	4.8	3			9.90	4	213	4
100	7.3	3	9.07	3	143	1	3.7	4			< 10	NR	226	3
105	8.9	4	8.22	2	149	2					8.50	3	190	0
107	9.0	4	8.50	4									189	0
108	0.3	0											214	4
109	8.0	4			138	0								
110			9.44	1										
111			8.72	4										
113	7.7	3	8.37	3	153	3	3.4	3					231	2
114													211	3
116			8.41	3	155	4							219	4
118	9.8	2	8.78	4									238	1
119	8.4	4	9.00	3			3.9	4					218	4
121	8.6	4	8.70	4	155	4					7.00	0	215	4
128	10.3	1	9.25	2			4.3	4			8.80	3	237	1
129														

Table 6. *Laboratory performance ratings for standard reference water sample T-141 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Se (Selenium)		SiO2 (Silica)		Sr (Strontium)		Tl (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	8.4	µg/L	8.70	mg/L	157	µg/L	4.0	µg/L	3.85	µg/L	9.45	µg/L	218	µg/L
F-pseudosigma =	1.2		0.46		7		0.9		0.25		1.19		12	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
131			7.26	0	157	4							215	4
133	7.1	2											236	1
134	9.1	3	8.82	4	159	4	4.4	4			9.56	4	230	2
138	9.0	4	8.50	4	151	3	4.5	3			9.10	4	223	4
140			8.21	2									210	3
141	7.5	3					3.8	4			8.93	4	226	3
142	11.3	0	10.00	0	160	4	3.6	4	3.30	0	8.96	4	191	0
144	8.4	4											194	1
145			8.88	4	147	2					7.70	2	222	4
146	10.6	1					< 10	NR			9.66	4	216	4
149	8.0	4					4.0	4					228	3
153	8.4	4												
154	7.9	4			146	2	3.6	4			12.60	0	216	4
158			8.61	4							8.62	3	214	4
180	< 50.1	NR					< 32.1	NR			11.70	1	211	3
182	13.5	0	5.28	0	182	0	222.4	0			20.23	0	247	0
183	7.2	3					5.6	1					213	4
190	7.3	3	8.77	4	190	0							201	2
191	8.7	4			158	4	2.5	1					213	4
196	8.0	4			156	4	3.8	4	4.03	3	9.62	4	223	4
198													246	0
203	5.9	1											210	3
209														
211	8.6	4	6.24	0	140	0	1.9	0			< 20	NR	260	0
212	9.7	2	9.20	2	160	4	< 5000	NR			10.00	4	230	2
213							1.3	0					220	4
215	15.0	0	8.39	3			0.7	0					235	2
219	9.0	4	8.20	2	150	3					7.80	2	200	1
220	7.9	4											210	3
221	7.5	3											204	2
224	27.7	0									18.00	0	190	0
227	0.0	0											241	1
231	6.5	1	8.57	4									205	2
234	9.2	3	8.35	3	155	4	2.3	1			9.28	4	218	4
236	< 100	NR	2.59	0	161	3					14.60	0	221	4
241	8.2	4	8.60	4			3.7	4			9.50	4	251	0
245														
247	6.8	2	8.75	4	153	3	4.8	3			9.40	4	219	4
249	22.0	0											218	4
252	7.3	3									66.00	0	196	1
253													230	2

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents)*

(MPV,most probable value; mg/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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Alkalinity		B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD	
			MPV =	41.1 mg/L		10 µg/L		13.3 mg/L		33.4 mg/L		151 mg/L	
			F-pseudosigma =	1.9		24		0.6		2.6		10	
Lab	OLR	V/16		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.3	16		42.5	3	5	4	12.6	2	33.1	4	150	4
3	2.6	16		41.6	4	1	4	12.2	1	35.0	3	150	4
4	1.5	2								30.9	3		
7	1.3	6		47.7	0					30.5	2		
9	2.6	11		38.0	1			13.0	3	34.0	4	142	3
10	3.9	12		40.0	3	< 50	NR	13.6	4	34.0	4	150	4
11	2.6	15		43.2	2			14.5	1	35.4	3	140	2
12	1.6	11		48.0	0			13.0	3	42.0	0	144	3
13	2.1	13		39.9	3			15.7	0	32.2	4	122	0
15	3.0	14		44.0	1	< 20	NR	14.2	2	33.0	4	150	4
16	2.1	7				132	0	13.9	3				
18	3.1	15		40.6	4	< 50	NR	13.2	4	34.8	3	155	4
19	1.6	9		42.0	4			12.2	1	30.0	2	146	4
23	2.4	15		41.6	4			14.1	2	31.5	3	151	4
24	3.1	13		42.1	3			13.2	4	33.4	4		
25	1.4	15		44.0	1	< 23	NR	16.1	0	32.4	4	190	0
26	3.2	13		33.9	0	< 20	NR	14.0	2	33.4	4	146	4
30 . 1	3.2	5						13.0	3	34.6	4		
30 . 2	2.0	2								37.2	2		
32	2.4	14		44.0	1			14.1	2	34.7	4	160	3
33	3.6	11		39.8	3			13.3	4	33.4	4		
36	2.4	12		44.0	1			13.1	4	34.0	4	193	0
38	3.4	9		42.5	3			13.7	3				
39	3.6	14		40.0	3			13.5	4	34.0	4	170	1
40	2.5	13		41.1	4			12.8	3	37.7	1	143	3
43	3.3	11		41.0	4			14.0	2	30.0	2	156	4
48	2.4	13		95.0	0	30	3	13.7	3	32.0	3	156	4
50	3.1	12		40.0	3	< 10	NR	12.7	3	34.5	4	137	2
51	3.0	5		40.0	3					35.8	3		
55	2.3	13		36.0	0			13.4	4	35.2	3	156	4
56	2.5	8		43.4	2			14.0	2				
57	2.7	13		40.0	3	< 0.1	NR	13.0	3	31.0	3	150	4
58	1.0	7		37.0	0			11.5	0	36.4	2		
59	3.3	12		38.2	1			13.0	3	34.7	4	152	4
60	2.3	6		42.1	3	150	0			32.3	4		
61	0.8	12		38.8	2			14.8	0	25.9	0		
63	2.4	14		39.0	2	< 10	NR	13.0	3	32.0	3	180	0
68	1.2	13		55.5	0	93	0	9.8	0	33.6	4		
69	3.2	11		42.3	3			13.3	4	35.4	3	172	1
70	3.4	14		40.0	3	< 50	NR	14.1	2	38.0	1	154	4
75	3.4	9				8	4	13.3	4	35.1	3	153	4
76	3.0	7		37.5	1					32.7	4		
80	1.8	12		34.4	0			14.0	2	23.0	0	160	3
81	2.3	14		40.2	4			12.3	1	31.3	3	15	0
83	2.9	9		40.5	4			13.1	4				
84	2.3	3		50.0	0								
85	3.4	14		41.5	4	< 20	NR	13.8	3	33.8	4	143	3
86	1.9	11						13.3	4	27.0	0		
87	1.8	13		41.0	4			13.8	3	36.0	2	128	0
89	3.2	13		41.8	4			13.4	4	37.8	1	150	4
90	2.9	7		39.0	2			13.2	4			140	2
92	2.5	8		39.4	3					33.9	4	114	0
93	1.7	6						13.5	4				
96	3.0	7		42.3	3					35.3	3	160	3
97	3.0	14		40.9	4			13.3	4	36.3	2	157	3
100	2.7	15		41.5	4	< 50	NR	14.3	2	32.4	4	156	4
105	3.1	15		43.0	2			14.2	2	31.7	3	164	2
107	3.0	13		40.5	4			10.5	0	30.8	2		
109	2.8	11		44.8	1			13.2	4	23.0	0	148	4
111	2.8	6		41.6	4					37.7	1		

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents)*

(MPV,most probable value; mg/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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

			Analyte =	Alkalinity		B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD	
			MPV =	41.1 mg/L		10 µg/L		13.3 mg/L		33.4 mg/L		151 mg/L	
			F-pseudosigma =	1.9		24		0.6		2.6		10	
Lab	OLR	V/16		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
113	3.2	14		41.5	4			13.6	4	31.7	3	159	3
114	1.8	12		44.8	1			10.4	0	31.1	3	173	0
116	3.7	6		40.1	4			12.7	3				
118	3.0	6		38.3	2							147	4
119	3.5	14		42.0	4	10	4	13.1	4	31.0	3	142	3
121	3.8	9				8	4	13.1	4	30.6	2		
122	3.2	13		43.2	2			13.6	4	31.3	3	154	4
128	1.5	11		41.9	4	< 10	NR	14.4	1	30.9	3		
129	2.1	14		46.0	0	47	1	16.0	0	35.0	3	158	3
131	2.2	9				1750	0	10.8	0				
133	2.8	4		43.0	2			12.9	3				
134	3.5	15		42.0	3	6	4	14.2	2	34.5	4	157	3
138	3.1	15		43.0	2			13.5	4	33.4	4	140	2
140	2.8	13						12.9	3	34.0	4	127	0
141	3.8	13		41.0	4	12	4	13.5	4	32.5	4	146	4
142	2.5	16		43.0	2	6	4	13.0	3	31.6	3	167	1
143	3.6	7		40.0	3					34.3	4	163	2
145	2.6	14		39.0	2	4	4	13.4	4	38.8	0		
146	2.9	12		42.2	3			13.1	4	34.5	4	153	4
149	2.9	12		38.0	1			13.4	4	34.3	4	143	3
153	2.6	9						13.7	4	29.2	1		
154	2.5	13		40.0	3			11.7	0	34.5	4	134	1
155	3.1	9		39.5	3			13.4	4			151	4
158	3.5	14		42.0	4	9	4	13.5	4	33.2	4	154	4
180	3.1	13		42.5	3	15	4	13.2	4	34.5	4		
182	0.9	16		30.0	0	161	0	16.7	0	40.0	0	150	4
183	2.0	7		38.0	1					35.8	3		
190	2.8	14		41.0	4			12.7	3	29.0	1	184	0
191	3.7	7						13.2	4	33.1	4		
196	4.0	3								32.9	4		
203	2.7	6		36.3	0					30.7	2		
212	2.6	15		41.0	4	7	4	13.8	3	34.4	4	163	2
213	3.2	5		42.0	4					31.3	3		
215	2.3	14		41.0	4	20	4	13.8	3	51.0	0	152	4
217	2.6	13		42.1	3			12.9	3	37.1	2	146	4
219	2.3	11				12	4	13.0	3	33.0	4		
220	1.8	11		41.3	4			11.6	0	28.6	1		
221	2.7	7						14.5	1	31.6	3		
224	2.8	12		37.0	0			13.9	3	33.0	4	148	4
226	3.7	9		40.4	4			13.9	3	32.1	4		
227	3.8	5								33.2	4		
231	2.6	8		40.0	3			12.5	2	41.0	0		
234	3.1	15		44.6	1	10	4	13.2	4	30.6	2	140	2
236	1.4	16		37.5	1	10	4	14.2	2	37.3	1	162	2
241	2.4	14		41.0	4			12.4	2	34.0	4	134	1
243	2.3	4											
244	3.0	3		44.0	1								
247	3.3	15		40.1	4	5	4	13.6	4	35.5	3	156	4
249	0.9	9		35.0	0			15.6	0	40.9	0		
252	2.1	7		42.0	4					32.9	4		
253	3.2	5										147	4

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents) –Continued*

(MPV, most probable value; mg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; O'.R, 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.720 mg/L		1.82 mg/L		3.70 mg/L		31.6 mg/L		0.240 mg/L	
F-pseudosigma =	0.052		0.12		0.16		1.8		0.017	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	0.770	3	1.82	4	3.62	4	31.4	4	0.223	3
3	0.820	1	1.76	3	3.19	0	39.0	0	0.240	4
4										
7	0.830	0							0.260	2
9	0.720	4	2.00	1	3.70	4	33.0	3		
10	0.720	4	1.80	4	3.70	4	31.7	4		
11	0.695	4	1.92	3	3.82	3	30.9	4	0.240	4
12			2.00	1	3.80	3	28.0	1	0.670	0
13	0.700	4	2.24	0	3.85	3	38.4	0	0.204	0
15	0.699	4	1.87	4	3.83	3	32.2	4	0.230	3
16			1.86	4	3.82	3	32.2	4		
18	0.730	4	2.00	1	3.70	4	32.7	3	0.228	3
19					3.24	0	27.2	0		
23	0.670	3	1.80	4	3.65	4	29.7	2	0.304	0
24	0.780	2	1.72	3	3.60	3	31.0	4		
25	0.720	4	< 1.21	0	4.05	0	36.2	0	< 0.121	0
26	0.830	0	1.84	4	3.81	3	30.9	4		
30 . 1					4.00	1				
30 . 2										
32	0.756	3	1.90	3	4.12	0	35.0	1		
33			1.80	4	3.75	4	31.1	4		
36	0.660	2	1.54	0	4.15	0	30.0	3	0.237	4
38			1.83	4	3.70	4	29.4	2	0.254	3
39	0.740	4			3.67	4	31.4	4	0.251	3
40	0.700	4	4.40	0	3.68	4	31.2	4		
43			1.90	3	3.80	3	32.0	4		
48	0.190	0	1.72	3	3.58	3	29.6	2	0.240	4
50	0.700	4	1.80	4	3.90	2	31.4	4		
51										
55	1.060	0	1.65	2	4.03	1	31.0	4	0.238	4
56			1.76	3	3.85	3	31.0	4		
57	0.760	3	2.50	0	3.60	3	29.0	2	0.250	3
58	0.720	4	1.60	1						
59			1.80	4	3.70	4	30.0	3	0.250	3
60									0.253	3
61	0.950	0	1.72	3	4.04	0	35.3	0	0.250	3
63	0.710	4	37.00	0	3.60	3	30.0	3	0.230	3
68			2.55	0	2.70	0	22.0	0	0.285	0
69	0.710	4	1.90	3	3.56	3	31.0	4		
70	0.740	4	1.81	4	3.74	4	31.4	4	0.233	4
75			1.76	3	3.67	4	30.3	3		
76			1.86	4	3.80	3	32.1	4		
80	0.670	3	1.00	0	3.00	0	31.0	4		
81	0.722	4	1.79	4	3.36	0	28.2	1	0.228	3
83			1.87	4	3.58	3	30.8	4	0.271	1
84										
85	0.720	4	1.68	2	3.71	4	30.7	4	0.230	3
86			2.03	1	3.82	3	33.1	3	0.277	0
87			1.69	2	3.46	2	30.9	4	0.258	2
89	0.743	4	1.83	4	3.90	2	32.2	4	0.243	4
90							28.1	1		
92									0.220	2
93	1.230	0	2.01	1	3.82	3	23.9	0		
96	0.775	2								
97	0.738	4	1.74	3	3.59	3	31.8	4	0.152	0
100	0.770	3	1.74	3	4.16	0	33.0	3	0.227	3
105	0.700	4	1.90	3	3.79	3	32.1	4	0.210	1
107	0.700	4	1.79	4	3.74	4	31.4	4	0.246	4
109	0.720	4	1.87	4	3.50	2	25.8	0		
111									0.228	3

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents) --Continued*

(MPV,most probable value; mg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; Lab, laboratory number; O`.R, 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.720 mg/L		1.82 mg/L		3.70 mg/L		31.6 mg/L		0.240 mg/L	
F-pseudosigma =	0.052		0.12		0.16		1.8		0.017	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
113	0.759	3	1.66	2	3.71	4	28.5	1	0.226	3
114	0.710	4	1.50	0	3.50	2	26.1	0	0.222	2
116					3.77	4	32.9	3		
118									0.240	4
119	0.700	4	1.80	4	3.70	4	32.9	3	0.240	4
121			1.84	4	3.69	4	31.6	4		
122	0.711	4	1.96	2	3.64	4	30.3	3	0.260	2
128	0.590	0	0.88	0	3.19	0	33.5	2		
129	0.837	0	1.80	4	3.80	3	29.0	2	0.215	2
131			1.84	4	3.54	3	30.2	3	0.260	2
133					3.83	3			0.250	3
134	0.720	4	1.73	3	3.77	4	31.8	4	0.220	2
138	0.783	2	1.88	3	3.73	4	32.4	4	0.243	4
140	0.718	4	1.63	1	3.60	3	32.0	4	0.220	2
141	0.739	4	1.87	4	3.74	4	32.8	3	0.250	3
142	0.770	3	1.69	2	3.29	0	33.8	2	0.238	4
143									0.235	4
145	1.040	0	1.76	3	3.60	3	30.8	4	0.250	3
146	0.732	4	2.00	1	3.60	3	32.4	4		
149	0.680	3	1.80	4	3.80	3	33.0	3	0.231	3
153	0.830	0	1.66	2	3.70	4	32.6	3	0.220	2
154	0.710	4	2.70	0	3.54	3	31.7	4	0.210	1
155					3.70	4			0.227	3
158	0.730	4	1.90	3	3.69	4	29.6	2	0.249	3
180	0.650	2	1.58	1	3.63	4	31.0	4	0.248	4
182	0.600	0	1.91	3	4.74	0	37.4	0	0.245	4
183	0.770	3					30.8	4		
190	0.749	3	1.85	4	3.65	4	32.3	4	0.209	1
191			1.87	4	3.82	3	32.2	4		
196	0.698	4								
203										
212	0.690	3	1.90	3	4.00	1	34.3	1	0.180	0
213									0.210	1
215	0.690	3	3.50	0	3.90	2	33.5	2	0.250	3
217	0.600	0			3.60	3	29.8	3	0.230	3
219			1.70	2	3.30	0	29.0	2	0.270	1
220			1.70	2	3.60	3	31.5	4	0.241	4
221			1.82	4	3.76	4	31.8	4		
224	0.830	0	1.79	4	3.88	2	32.6	3	0.240	4
226			1.81	4	3.71	4	32.0	4	0.247	4
227									0.243	4
231			1.83	4	3.63	4	35.4	0		
234	0.690	3	1.90	3	3.72	4	31.7	4	0.257	3
236	0.690	3	2.24	0	4.00	1	32.9	3	0.186	0
241	0.788	2	1.60	1	3.50	2	33.0	3	0.242	4
243									0.210	1
244										
247	0.810	1	1.86	4	3.85	3	32.8	3	0.218	2
249					2.50	0			0.270	1
252					4.10	0	31.6	4		
253	0.760	3								

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents) —Continued*

verall

(MPV,most probable value; mg/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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	7.81		8.94 mg/L		28.0 mg/L		263 µS/cm		106 µg/L		16.5 µg/L	
F-pseudosigma =	0.19		0.45		1.3		8		6		1.5	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	7.83	4	8.90	4	27.0	3	263	4	109	3	19.7	0
3	7.73	4	9.60	2	28.8	3	263	4	105	4	13.8	1
4					22.3	0						
7	8.11	1			27.1	3						
9		-	8.00	0	27.0	3			103	3		
10	7.77	4	9.00	4	28.3	4	263	4				
11	7.45	1	10.10	0	26.3	2	262	4	114	2	16.0	4
12	7.70	3			24.0	0	265	4				
13	7.92	3	9.40	2	27.7	4	266	4			< 50	NR
15	7.82	4	11.10	0	27.2	3	265	4			18.0	2
16									96	1	24.2	0
18	7.81	4	9.71	1	28.0	4	243	0	105	4	17.0	4
19	7.94	3			24.2	0	288	0				
23	8.02	2	2.22	0	28.6	4	227	0	127	0	17.1	4
24	7.75	4	9.31	3	27.0	3	260	4	127	0	15.3	3
25	7.86	4	10.10	0	27.8	4	263	4	123	0	21.0	0
26	7.84	4	9.02	4	27.7	4	265	4			17.2	4
30 . 1	7.80	4			28.6	4						
30 . 2					29.8	2						
32	8.00	2	9.37	3	28.6	4	256	3	110	3	15.0	2
33	7.70	3	8.79	4	28.2	4	254	2	107	4		
36	7.88	4			29.0	3	263	4				
38	7.90	4	9.11	4			266	4				
39	7.90	4	8.80	4	29.0	3	260	4	104	4	16.8	4
40	7.89	4	7.90	0	25.8	1	269	3	97	1		
43	7.60	2	9.10	4	28.0	4	261	4				
48	7.60	2			26.0	2	251	2				
50	7.40	0	9.30	3	28.5	4	265	4			< 200	NR
51	7.63	3			29.2	3	257	3				
55	7.43	1	9.05	4	26.4	2	276	1				
56	8.20	1			29.5	2	270	3				
57	7.90	4	8.80	4	32.0	0	270	3				
58					19.7	0					< 0.1	0
59	7.75	4	9.26	3	28.1	4	269	3				
60	7.71	4					227	0				
61	7.43	1	4.18	0	25.9	1	241	0				
63	8.33	0	9.10	4	28.0	4	272	2			15.5	3
68	7.90	4	9.02	4			268	3	73	0	20.0	0
69	7.83	4			28.8	3					15.5	3
70	7.82	4	8.62	3	29.0	3	258	3	106	4		
75					28.1	4	272	2			< 50	NR
76	8.00	2			27.2	3						
80	7.70	3	8.00	0	30.0	2	262	4				
81	7.90	4	8.94	4	26.0	2	275	2	93	0		
83			8.47	2	28.2	4					7.0	0
84	7.99	3					265	4				
85	7.92	3	9.10	4	28.2	4	266	4	114	2		
86	7.67	3			31.4	0	268	3	106	4	21.5	0
87	7.33	0	8.40	2	25.0	0	187	0			17.5	3
89	7.85	4	8.55	3	31.9	0	256	3				
90	7.90	4					267	4			17.4	3
92	7.65	3	8.78	4	24.6	0	261	4				
93	7.61	2										
96	7.78	4			27.6	4	274	2				
97	7.79	4	8.83	4	28.5	4	269	3	92	0		
100	7.91	3	9.55	2	275.0	0	253	2	105	4	16.5	4
105	7.87	4	8.50	3	27.9	4	267	4	107	4	17.4	3
107	7.78	4	6.96	0	26.6	2	259	4			15.3	3
109	7.86	4			28.4	4	264	4				
111			9.03	4	28.3	4	250	1				

Table 7. *Laboratory performance ratings for standard reference water sample M-138 (major constituents) --Continued*

verall

(MPV,most probable value; mg/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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	7.81		8.94 mg/L		28.0 mg/L		263 µS/cm		106 µg/L		19.5 µg/L	
F-pseudosigma =	0.19		0.45		1.3		8		6		1.5	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
113	7.78	4	9.16	4	26.0	2	262	4	106	4		
114	7.57	2			27.8	4	259	4				
116			8.81	4					105	4		
118	7.90	4	9.24	3			250	1				
119	7.92	3	9.00	4	26.0	2	257	3				
121			9.00	4	27.6	4			106	4		
122	7.68	3			27.3	3	261	4			16.0	4
128	8.01	2	9.44	2	23.5	0	273	2				
129	7.46	1			27.0	3	255	3			16.0	4
131			7.78	0	28.1	4			107	4		
133												
134	7.91	3	8.96	4	27.8	4	266	4	106	4		
138	7.94	3	8.59	3	28.1	4	250	1	101	3	16.6	4
140	7.52	2	8.52	3	30.0	2	262	4			15.9	4
141	7.74	4			27.0	3	264	4				
142	7.97	3	10.40	0	26.1	2	267	4	104	4	15.4	3
143	7.83	4					264	4			16.9	4
145	7.80	4	9.15	4	29.7	2	276	1	99	2		
146	7.56	2			30.0	2	247	1			17.7	3
149					28.9	3	240	0			16.1	4
153					27.9	4	268	3				
154	7.85	4			29.3	3	263	4	98	2		
155	7.42	1	8.67	3			262	4			18.6	2
158	7.46	1	8.84	4	27.7	4	266	4				
180	7.85	4			26.0	2	248	1			15.4	3
182	7.52	2	5.57	0	33.5	0	242	0	122	0	13.6	1
183	7.59	2			25.5	1					9.7	0
190	7.80	4	8.98	4	29.9	2	262	4	115	1		
191					27.6	4			103	3		
196					27.5	4						
203	7.58	2	9.00	4	28.2	4	260	4				
212	7.90	4	9.50	2	28.6	4	278	1	110	3		
213	7.85	4									16.0	4
215	7.16	0	7.13	0	29.0	3	262	4				
217	7.90	4	8.40	2	28.1	4	278	1	100	2		
219			8.23	1	28.0	4			98	2	15.0	2
220	7.60	2			36.4	0	240	0			13.0	0
221	7.50	1			26.5	2						
224	7.66	3			27.9	4	270	3				
226			8.80	4	26.1	2						
227	7.84	4			27.1	3	265	4				
231			8.85	4	28.3	4						
234	7.80	4	8.65	3	26.0	2	267	4	108	4		
236	7.70	3	2.69	0	22.9	0	297	0	110	3	19.7	0
241	7.71	4	8.70	3	23.0	0	260	4			21.6	0
243	7.48	1					255	3			16.1	4
244	7.81	4					262	4				
247	7.89	4	9.22	3	28.2	4	270	3	107	4		
249	7.41	1			30.0	2	280	0			17.0	4
252	7.95	3			34.0	0	244	0				
253	7.91	3			29.3	3	268	3				

Table 8. *Laboratory performance ratings for standard reference water sample N-49 (nutrients)*

(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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.155 mg/L		0.33 mg/L		0.182 mg/L		0.167 mg/L		0.152 mg/L	
			F-pseudosigma =	0.024		0.12		0.022		0.013		0.015	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	2.6	5		0.178	3	0.38	4	0.214	2	0.214	0	0.153	4
7	3.0	3		0.160	4			0.200	3	0.150	2		
9	3.4	5		0.170	3	0.33	4	0.199	3	0.174	3	0.155	4
10	4.0	5		0.160	4	0.30	4	0.180	4	0.165	4	0.152	4
11	3.2	5		0.140	3	0.37	4	0.160	3	0.180	3	0.140	3
12	0.7	3						0.210	2	0.290	0	0.190	0
13	2.3	4		0.148	4			0.190	4	0.141	1	0.120	0
15	3.3	4		0.124	2	< 0.5	NR	0.178	4	0.178	3	0.159	4
18	3.8	5		0.148	4	0.24	3	0.178	4	0.166	4	0.152	4
19	3.5	4		0.160	4			0.210	2	0.170	4	0.150	4
21	3.0	5		0.141	3	0.28	4	0.220	1	0.174	3	0.151	4
22	3.0	1								0.178	3		
23	1.3	3		0.769	0					0.166	4	0.049	0
25	1.6	5		0.210	0	0.54	1	0.193	3	<0.121	0	0.149	4
26	3.0	1		0.131	3								
32	4.0	3		0.165	4			0.190	4			0.151	4
33	4.0	2		0.150	4							0.150	4
36	2.8	4		0.140	3			0.144	1	0.161	4	0.143	3
38	3.0	5		0.286	0	0.30	4	0.177	4	0.176	3	0.146	4
39	2.2	5		0.120	2	0.12	1	0.148	1	0.170	4	0.160	3
48	2.0	4		0.120	2	0.21	3	0.240	0	0.160	3		
53	1.5	2						0.194	3			0.121	0
55	3.4	5		0.152	4	0.28	4	0.191	4	0.174	3	0.167	2
56	2.5	4				0.47	2	0.150	2	0.160	3	0.160	3
57	2.6	5		0.150	4	1.05	0	0.160	3	0.170	4	0.170	2
59	3.2	5		0.170	3	0.30	4	0.170	3	0.160	3	0.140	3
60	2.5	4		0.172	3	0.05	0			0.179	3	0.148	4
61	3.4	5		0.164	4	0.31	4	0.195	3	0.160	3	0.160	3
68	1.8	4		0.200	1	0.50	2	0.200	3	0.190	1		
69	4.0	1						0.180	4				
70	3.2	5		0.145	4	0.22	3	0.160	3	0.158	3	0.139	3
75	0.0	1						0.242	0				
76	4.0	1		0.147	4								
81	1.8	5		0.116	1	0.43	3	0.196	3	0.128	0	0.132	2
83	2.3	3		0.480	0					0.167	4	0.163	3
84	3.0	1						0.167	3				
85	3.4	5		0.160	4	0.34	4	0.160	3	0.160	3	0.160	3
86	1.3	3		0.143	4			0.273	0	0.199	0		
87	2.4	5		0.110	1	0.24	3	0.180	4	0.238	0	0.159	4
88	0.0	3		0.260	0			0.420	0			0.211	0
89	3.8	5		0.155	4	0.33	4	0.163	3	0.165	4	0.152	4
90	3.6	5		0.143	4	0.26	3	0.178	4	0.177	3	0.158	4
91	3.5	4		0.150	4	0.31	4	0.170	3	0.160	3		
92	3.7	3						0.189	4	0.160	3	0.156	4
93	2.0	1		0.180	2								
96	3.4	5		0.131	3	0.35	4	0.169	3	0.158	3	0.157	4
97	3.2	5		0.144	4	0.31	4	0.183	4	0.154	3	0.129	1
100	1.8	5		0.114	1	0.75	0	0.262	0	0.163	4	0.151	4
104	3.8	5		0.158	4	0.26	3	0.182	4	0.168	4	0.156	4
105	2.4	5		0.150	4	0.34	4	0.194	3	0.140	1	0.190	0
107	3.8	4		0.144	4			0.175	4	0.172	4	0.166	3
110	0.0	1		0.269	0								
111	2.0	3		0.015	0					0.154	3	0.140	3
113	3.5	4		0.141	3	< 0.5	NR	0.169	3	0.168	4	0.146	4
114	2.0	3		0.170	3			0.240	0	0.175	3		
118	2.4	5		0.190	2	0.25	3	0.180	4	0.100	0	0.140	3
119	2.6	5		0.200	1	0.42	3	0.180	4	0.160	3	0.130	2
122	3.0	5		0.146	4	0.49	2	0.157	2	0.164	4	0.139	3
128	2.3	4		0.085	0	< 0.3	NR	0.187	4	0.161	4	0.126	1
129	2.4	5		0.144	4	0.60	0	0.188	4	0.151	2	0.137	2

Table 8. *Laboratory performance ratings for standard reference water sample N-49 (nutrients)—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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.155 mg/L		0.33 mg/L		0.182 mg/L		0.167 mg/L		0.152 mg/L	
			F-pseudosigma =	0.024		0.12		0.022		0.013		0.015	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
133	3.6	5		0.160	4	0.28	4	0.210	2	0.170	4	0.150	4
134	2.6	5		0.170	3	0.32	4	0.180	4	0.150	2	0.100	0
138	3.2	5		0.116	1	0.39	3	0.182	4	0.170	4	0.146	4
140	2.2	5		0.120	2	0.22	3	0.137	1	0.150	2	0.140	3
141	2.5	4		0.128	2	< 1	NR	0.158	2	0.165	4	0.170	2
142	3.2	5		0.127	2	0.29	4	0.211	2	0.166	4	0.150	4
143	3.0	2								0.187	2	0.158	4
145	2.8	5		0.180	2	0.27	4	0.140	1	0.170	4	0.140	3
146	3.3	4		0.137	3			0.175	4	0.159	3	0.163	3
149	2.0	4		0.200	1			0.180	4	0.160	3	0.120	0
154	2.0	5		0.126	2	0.13	1	0.170	3	0.144	1	0.142	3
155	3.4	5		0.140	3	0.29	4	0.151	2	0.162	4	0.150	4
158	1.2	5		0.180	2	0.74	0	0.208	2	0.188	1	0.127	1
180	2.8	5		0.146	4	0.28	4	0.189	4	0.189	1	0.128	1
182	0.0	2								0.505	0	1.540	0
183	1.0	1		0.200	1								
190	3.6	5		0.157	4	0.39	3	0.195	3	0.171	4	0.155	4
191	1.5	2						0.170	3			0.190	0
196	3.5	2						0.182	4			0.165	3
197	2.5	2		0.203	1			0.174	4				
203	3.5	4		0.173	3			0.183	4	0.160	3	0.153	4
209	3.7	3		0.167	4	0.24	3	0.173	4				
211	2.6	5		0.171	3	0.45	2	0.174	4	0.193	1	0.162	3
212	0.8	4		0.120	2	< 0.5	NR	0.140	1	0.130	0	0.110	0
213	2.0	3		0.180	2					0.200	0	0.150	4
215	0.6	5		0.130	2	0.55	1	0.100	0	0.640	0	0.500	0
217	3.4	5		0.140	3	0.44	3	0.180	4	0.170	4	0.160	3
220	1.0	5		0.195	1	0.68	0	0.402	0	0.210	0	0.151	4
221	2.6	5		0.160	4	0.28	4	0.249	0	0.183	2	0.142	3
224	1.8	5		0.190	2	0.77	0	0.840	0	0.170	4	0.160	3
226	2.8	4		0.151	4	0.40	3	0.259	0	0.165	4		
227	2.0	5		0.210	0	0.46	2	0.232	0	0.171	4	0.154	4
231	1.2	5		0.100	0	0.19	2	0.140	1	0.080	0	0.140	3
234	3.5	4		0.155	4			0.176	4	0.187	2	0.156	4
240	3.0	5		0.106	1	0.42	3	0.181	4	0.166	4	0.165	3
241	2.3	4		0.155	4	< 0.5	NR	0.065	0	0.183	2	0.162	3
243	3.3	3		0.156	4			0.170	3	0.160	3		
247	3.2	5		0.122	2	0.37	4	0.189	4	0.149	2	0.159	4
248	0.0	4		0.908	0			0.571	0	0.701	0	0.668	0
249	1.4	5		0.180	2	0.33	4	0.370	0	0.210	0	0.180	1
252	3.5	4		0.171	3			0.187	4	0.158	3	0.156	4
253	2.2	5		0.164	4	0.53	1	0.199	3	0.342	0	0.160	3

Table 9. *-Laboratory performance ratings for standard reference water sample N-50 (nutrients)*

(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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.82 mg/L		1.39 mg/L		0.810 mg/L		0.903 mg/L		0.73 mg/L	
			F-pseudosigma =	0.19		0.12		0.048		0.039		0.14	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	2.2	5		1.04	2	1.43	4	0.852	3	1.034	0	0.92	2
3	2.2	5		1.02	2	1.23	2	0.950	0	0.922	4	0.87	3
7	2.0	4		0.93	3			0.780	3	0.990	0	0.88	2
10	3.2	5		1.05	2	1.36	4	0.830	4	0.898	4	0.90	2
11	3.4	5		0.92	3	1.45	4	0.780	3	0.900	4	0.81	3
13	3.0	4		0.71	3			0.810	4	0.823	1	0.70	4
15	3.6	5		0.71	3	1.33	3	0.822	4	0.902	4	0.68	4
18	3.6	5		0.78	4	1.30	3	0.769	3	0.903	4	0.72	4
19	3.8	4		0.74	4			0.840	3	0.900	4	0.66	4
22	3.0	1								0.923	3		
23	2.6	5		0.75	4	1.51	3	0.580	0	0.860	2	0.67	4
25	2.2	5		0.25	0	1.50	3	0.579	0	0.908	4	0.67	4
26	3.0	3		0.99	3			0.788	4			0.87	2
30.1	3.0	2						0.785	3			0.82	3
30.2	3.5	2						0.817	4			0.83	3
32	2.3	3		1.22	0			0.838	3			0.70	4
33	4.0	2		0.77	4							0.73	4
36	1.3	4		1.12	1			0.913	0	0.748	0	0.70	4
38	4.0	5		0.78	4	1.35	4	0.798	4	0.915	4	0.66	4
39	2.2	5		1.30	0	1.30	3	0.798	4	0.950	2	0.88	2
48	3.0	5		0.71	3	1.40	4	0.800	4	0.800	0	0.80	4
51	3.2	5		0.77	4	1.30	3	0.780	3	0.864	3	0.65	3
53	2.0	2						0.595	0			0.69	4
55	2.8	5		0.73	4	1.30	3	0.850	3	0.937	3	0.95	1
56	3.3	4				1.44	4	0.840	3	0.910	4	0.93	2
57	0.8	5		1.12	1	1.92	0	0.900	1	1.000	0	0.90	2
58	1.8	4		0.67	3	2.46	0			1.060	0	0.74	4
59	3.2	5		0.78	4	1.40	4	0.810	4	1.000	0	0.68	4
60	1.8	4		1.08	2	0.56	0			0.930	3	0.88	2
61	2.4	5		1.03	2	2.04	0	0.790	4	0.930	3	0.87	3
68	3.0	4		1.10	2	1.46	3	0.840	3	0.908	4		
69	4.0	1						0.810	4				
70	3.6	5		0.75	4	1.37	4	0.782	3	0.886	4	0.63	3
75	0.0	1						0.996	0				
81	3.4	5		0.78	4	1.57	2	0.777	3	0.916	4	0.69	4
83	3.5	4		0.91	4			0.740	2	0.916	4	0.80	4
84	4.0	1						0.786	4				
85	2.8	5		1.04	2	1.46	3	0.800	4	0.880	3	0.89	2
86	2.3	3		0.84	4			1.090	0	0.941	3		
87	2.4	5		0.71	3	1.18	1	0.810	4	1.040	0	0.70	4
88	2.7	3		0.79	4			1.300	0			0.71	4
90	1.5	4		0.80	4	0.91	0	0.740	2	1.010	0		
91	3.0	4		0.72	3	1.41	4	0.720	1	0.900	4		
92	3.3	3						0.863	2	0.894	4	0.69	4
93	3.0	1		0.95	3								
97	3.6	5		0.75	4	1.42	4	0.835	3	0.903	4	0.84	3
100	2.4	5		0.79	4	2.43	0	1.200	0	0.922	4	0.71	4
104	3.4	5		1.00	3	1.40	4	0.822	4	0.910	4	0.88	2
105	2.8	5		0.75	4	1.42	4	0.782	3	0.850	2	0.96	1
107	3.0	4		0.77	4			0.832	4	0.908	4	1.70	0
108	3.0	4		0.71	3	1.23	2	0.780	3			0.77	4
111	3.3	3		0.82	4					0.877	3	0.84	3
113	2.0	3				1.14	0			0.893	4	0.88	2
114	2.3	3		0.82	4			1.120	0	0.868	3		
118	2.4	5		0.73	4	1.26	2	0.790	4	0.990	0	0.58	2
119	3.6	5		0.97	3	1.35	4	0.780	3	0.900	4	0.69	4
122	2.3	4		0.86	4	1.34	4	0.719	1			0.36	0
128	2.0	5		0.66	3	0.90	0	0.704	0	0.869	3	0.70	4
129	1.8	5		0.49	1	0.90	0	0.835	3	0.829	1	0.67	4
133	2.2	5		0.93	3	1.18	1	1.000	0	0.930	3	0.71	4

Table 9. *-Laboratory performance ratings for standard reference water sample N-50 (nutrients)*

(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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	0.82 mg/L		1.39 mg/L		0.810 mg/L		0.903 mg/L		0.73 mg/L	
			F-pseudosigma =	0.19		0.12		0.048		0.039		0.14	
Lab	OLR	V/5		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
134	3.8	5		0.79	4	1.40	4	0.850	3	0.910	4	0.70	4
138	3.6	5		0.73	4	1.39	4	0.770	3	0.877	3	0.69	4
140	2.4	5		0.86	4	1.12	0	0.650	0	0.910	4	0.69	4
141	3.0	5		0.95	3	1.40	4	0.829	4	0.935	3	1.00	1
142	3.2	5		0.74	4	1.46	3	0.892	1	0.905	4	0.69	4
143	3.0	5		0.75	4	1.20	1	0.876	2	0.884	4	0.67	4
145	3.0	5		0.80	4	1.31	3	0.730	1	0.940	3	0.68	4
146	2.5	4		0.78	4			0.800	4	0.979	1	0.51	1
154	2.0	5		0.71	3	1.60	1	0.740	2	0.838	1	0.62	3
158	3.0	5		0.79	4	1.71	0	0.840	3	0.915	4	0.70	4
180	3.8	5		0.74	4	1.42	4	0.816	4	0.881	3	0.71	4
182	0.0	2								0.178	0	0.40	0
183	2.0	2		0.94	3							1.02	1
190	2.8	5		0.89	4	1.48	3	1.030	0	0.856	2	0.80	4
191	3.0	2						0.790	4	0.860	2		
197	2.5	2		1.21	1			0.818	4				
203	3.0	4		0.92	3			0.898	1	0.900	4	0.75	4
209	2.3	3		1.23	0	1.30	3	0.826	4				
212	2.8	5		0.72	3	1.30	3	0.750	2	0.860	2	0.71	4
213	3.3	3		0.75	4					0.880	3	0.65	3
215	2.0	5		1.02	2	1.41	4	0.460	0	0.950	2	0.91	2
220	3.2	5		1.05	2	1.40	4	0.812	4	0.900	4	0.87	2
221	2.2	5		0.82	4	1.12	0	0.972	0	0.920	4	0.87	3
224	2.4	5		1.04	2	2.60	0	0.840	3	0.880	3	0.73	4
227	1.2	5		1.64	0	2.99	0	0.970	0	0.910	4	0.88	2
231	2.2	5		0.86	4	1.14	0	0.750	2	0.870	3	0.90	2
234	2.0	4		1.02	2			0.779	3	0.833	1	0.90	2
240	1.8	5		1.14	1	4.13	0	0.820	4	0.950	2	0.92	2
241	1.8	5		0.98	3	1.08	0	0.518	0	0.951	2	0.77	4
243	3.0	3		0.77	4			0.790	4	0.840	1		
247	2.2	5		0.99	3	1.37	4	0.900	1	0.843	1	0.90	2
249	0.6	5		1.48	0	1.65	0	1.920	0	0.940	3	1.04	0
252	3.5	4		0.74	4			0.774	3	0.882	3	0.73	4

Table 10. *-Laboratory performance ratings for standard reference water sample P-26 (low ionic strength)*

(MPV,most probable value; mg/L, milligrams per liter;µS/cm, microsiemens per centimeter; 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	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 =	4.0 mg/L		0.450 mg/L		7.79 mg/L		0.040 mg/L		0.146 mg/L		0.060 mg/L	
			F-pseudosigma =	2.8		0.037		0.50		0.016		0.033		0.012	
Lab	OLR	V/11		RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	3.5	11		1.0	2	0.461	4	7.93	4	0.045	4	0.145	4	0.056	4
2	3.4	5				0.483	4					0.164	3	0.066	3
3	2.4	8		2.0	3	0.416	4	8.29	3	< 0.1	NR	0.180	2	0.086	0
7	3.0	4		7.8	2			7.53	3	< 0.5	NR				NR
15	2.9	7		3.8	4	0.499	2	7.39	3	< 0.1	NR	< 0.5	NR	< 0.1	NR
23	2.0	4				< 2	NR	7.66	4	< 0.5	NR	< 0.2	NR	< 0.5	NR
25	3.1	7				< 0.03	0	7.80	4	0.040	4	< 1.21	NR	< 0.03	NR
26	3.3	9				0.420	4	7.95	4	0.040	4	0.140	4	0.060	4
33	3.8	8				0.440	4	7.75	4			0.140	4	0.050	3
36	1.0	4				<0.5	NR	7.40	3	< 0.05	NR	<0.5	NR	< 0.5	NR
38	3.4	8		0.6	2	0.450	4					0.150	4	0.060	4
39	3.4	9		7.0	2	0.454	4	7.90	4	0.030	3			0.063	4
48	0.4	8				0.330	0	7.00	1	0.870	0	0.240	0	0.030	0
58	4.0	4				0.480	4	7.94	4			0.140	4		NR
59	2.4	5						8.10	3						NR
60	1.8	4						9.18	0						
61	2.0	8		3.0	4	0.530	0	4.15	0	< 0.1	NR	0.440	0	0.075	2
81	2.9	10		2.2	3	0.419	4	7.80	4	0.032	4	0.095	1	< 0.005	0
86	3.3	8				0.434	4	7.60	4			0.202	1	0.056	4
89	2.5	11		5.8	3	0.400	2	8.80	0	0.039	4	0.155	4	0.054	3
92	2.6	5		4.0	4			8.31	2						
93	1.0	6				0.590	0			0.020	2	0.310	0	0.160	0
100	2.8	9				0.490	2	7.62	4	0.049	3	< 1	NR	0.070	3
105	2.8	9		7.8	2	0.506	1	7.88	4	< 0.2	NR	< 0.5	NR	0.060	4
107	3.1	8				0.420	4	7.80	4	< 0.1	NR	0.070	0	0.040	1
110	3.0	8				0.280	0	7.46	3	0.027	3	0.160	4	0.050	3
111	3.5	4						8.01	4						
113	3.5	8				0.450	4	7.09	2	0.041	4	0.120	3	0.060	4
119	3.3	8				0.430	4	8.30	2	0.040	4			0.080	1
134	3.8	10				0.454	4	8.00	4	0.030	3	0.140	4	0.055	4
138	3.4	10				0.450	4	7.70	4	0.028	3	0.200	1	0.060	4
140	1.8	10				0.400	2	6.48	0	0.018	2	0.142	4	0.062	4
141	2.8	10		3.9	4	0.407	2	7.75	4	0.069	1	0.176	3	0.030	0
143	3.8	4						8.11	3						
145	2.2	10				0.440	4	9.10	0	0.110	0	0.080	1	0.030	0
146	2.3	3		< 10	NR			7.84	4	< 0.2	NR				
155	2.2	5				0.432	4							0.015	0
180	2.3	6				0.692	0	7.95	4	< 0.1	NR	< 1.26	NR	0.087	0
183	1.8	4						6.15	0	0.054	3				
190	2.7	10				0.420	4	6.53	0	0.029	3	0.150	4	0.050	3
196	3.7	3						7.77	4	0.049	3				
197	3.5	2						7.43	3						
203	2.3	4						7.70	4						
209	2.4	7				0.471	4	8.18	3			0.100	2	0.092	0
215	1.7	11		5.0	4	0.220	0	7.00	1	0.023	2	2.200	0	0.060	4
221	2.7	6				0.410	2	7.83	4			0.136	4	0.053	3
224	3.0	10		4.0	4	0.450	4	7.83	4	0.140	0	0.140	4	0.060	4
226	3.3	6				0.456	4	7.76	4			0.147	4	0.048	2
227	2.8	4						7.50	3						
238	2.8	5				0.460	4					0.120	3	0.050	3
241	2.7	9				0.470	4	7.00	1	0.053	3	0.100	2	0.060	4
243	1.5	2													
247	2.2	10		22.0	0	0.443	4	7.58	4	< 0.05	NR	0.272	0	0.079	1
252	2.8	4						8.36	2					< 0.5	NR

Table 10. *-Laboratory performance ratings for standard reference water sample P-26 (low ionic strength) --Continued*

(MPV,most probable value; mg/L, milligrams per liter;µS/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rat 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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	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 =	4.40 mg/L		4.70		0.006 mg/L		0.67 mg/L		36.1 µS/cm	
F-pseudosigma =	0.24		0.12		0.004		0.29		2.0	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
1	4.49	4	4.64	3	0.004	4	0.63	4	38.3	2
2			4.68	4					34.3	3
3	5.33	0	4.76	3	< 0.01	NR	< 0.1	NR	36.4	4
7			4.59	3	< 0.16	NR	0.72	4		
15	4.55	3	4.34	0	< 0.02	NR	0.77	4	36.3	4
23	3.77	0	4.72	4	< 0.01	NR	< 2.5	NR	30.5	0
25	4.54	3	4.71	4	0.009	3	< 5	NR	37.0	4
26	4.04	2	4.67	4			0.62	4	31.8	0
33	4.27	3	4.72	4	0.000	NR	0.58	4	36.2	4
36	3.91	1	5.08	0	<0.025	NR	< 5	NR	< 5	0
38	4.13	2	4.70	4	0.005	4			34.3	3
39	4.18	3	4.80	3	0.005	4			36.0	4
48	4.10	2	5.00	0	< 0.005	NR	< 1	NR	23.3	0
58			4.67	4						
59			4.59	3	0.010	3	2.00	0	37.8	3
60			4.67	4	0.011	2			32.4	1
61	4.36	4	4.56	2	< 0.04	NR	< 3	NR	35.4	4
81	4.40	4	4.80	3	0.006	4	< 5	NR	38.8	2
86	4.47	4	4.53	2			0.77	4	37.4	3
89	4.44	4	4.82	2	0.015	1	1.13	1	35.9	4
92			4.88	1	0.004	4	0.35	2		
93	6.00	0	4.70	4						
100	4.54	3	4.70	4	0.015	1	0.61	4	33.0	1
105	4.41	4	4.90	1	0.004	4	1.09	2	34.8	3
107	4.30	4	4.68	4	0.005	4			36.5	4
110	4.28	4	4.78	3			0.68	4		
111					0.003	3	0.59	4	34.2	3
113	4.20	3	4.67	4	< 0.004	NR	< 1	NR	36.3	4
119	4.31	4	4.78	3	0.000	NR	0.65	4	37.0	4
134	4.50	4	4.70	4	0.004	4	0.80	4	37.5	3
138	4.37	4	4.79	3	0.003	3	0.60	4	35.2	4
140	4.16	3	5.42	0	0.010	3	4.00	0	29.2	0
141	4.56	3	4.70	4	< 0.05	NR	0.67	4	37.8	3
143			4.70	4	0.006	4			36.0	4
145	4.16	3	4.80	3	0.010	3	0.56	4	37.0	4
146			4.35	0	< 0.05	NR	< 5	NR	37.1	3
155			3.85	0	0.005	4			34.8	3
180	4.29	4	4.61	3	< 0.01	NR	< 2.5	NR	35.0	3
183	4.40	4					1.30	0		
190	4.55	3	4.76	3	0.010	3	1.23	1	34.5	3
196					< 0.1	NR	0.62	4		
197							0.61	4		
203			4.49	1	0.062	0	< 2.5	NR	36.1	4
209	3.83	0	4.72	4			0.67	4		
215	5.00	0	4.56	2	0.100	0	1.00	2	36.1	4
221	4.54	3	4.06	0						
224	4.50	4	5.80	0	< 0.001	NR	0.67	4	34.0	2
226	4.42	4					1.00	2		
227			4.50	1	0.008	4	0.00	NR	37.7	3
238	0.50	0					0.60	4		
241	4.40	4	4.70	4	0.011	2			30.0	0
243			5.15	0					38.0	3
247	5.07	0	4.72	4	0.003	3	0.53	4	39.0	2
252	4.20	3					1.00	2	36.2	4

Table 11. *-Laboratory performance ratings for standard reference water sample Hg-22 (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 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	O (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Hg (Mercury)
MPV = 1.24 µ g/L
F-pseudosigma = 0.13

Lab	V/1	RV	Rating
1	1	1.27	4
3	1	1.13	3
11	1	1.20	4
12	1	1.40	2
13	1	1.14	3
15	1	1.24	4
16	1	1.10	2
18	1	1.24	4
24	1	1.90	0
26	1	1.28	4
32	1	1.21	4
34	1	1.23	4
36	1	1.58	0
39	1	1.26	4
48	1	0.87	0
50	1	1.24	4
55	1	1.17	3
58	1	2.39	0
60	1	1.13	3
61	1	0.68	0
68	1	1.35	3
69	1	1.24	4
70	1	1.10	2
75	1	1.15	3
76	1	1.23	4
81	1	1.10	2
86	1	1.21	4
87	1	1.55	0
89	1	1.10	2
96	1	1.30	4
97	1	1.38	2
100	1	1.03	1
105	1	1.36	3
108	1	1.42	2
113	1	1.25	4
114	1	3.00	0
118	1	1.30	4
119	1	1.20	4
128	1	1.50	1
133	1	1.29	4
134	1	1.21	4
138	1	1.17	3
141	1	1.33	3
142	1	1.25	4
144	1	1.41	2
145	1	1.28	4
146	1	1.22	4
149	1	1.20	4
182	1	2.29	0
198	1	1.17	3
203	1	1.42	2
211	1	1.37	3
212	1	1.00	1
213	1	1.50	1
215	1	2.60	0
219	1	1.23	4
220	1	2.00	0
221	1	1.22	4
231	1	1.29	4
234	1	1.22	4
241	1	1.21	4
245	1	1.21	4
247	1	1.15	3
252	1	1.26	4

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

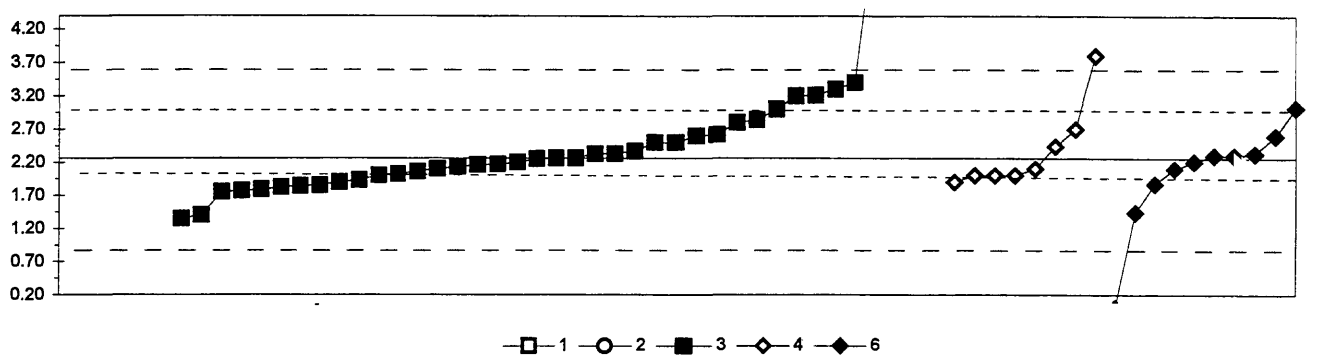
0. Other/Not reported		
1. AA: direct, air	=	atomic absorption: direct,air
2. AA: direct, N_2O	=	atomic absorption: direct,nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma/mass 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 samples
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
<	=	less than

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Ag (Silver) µg/L



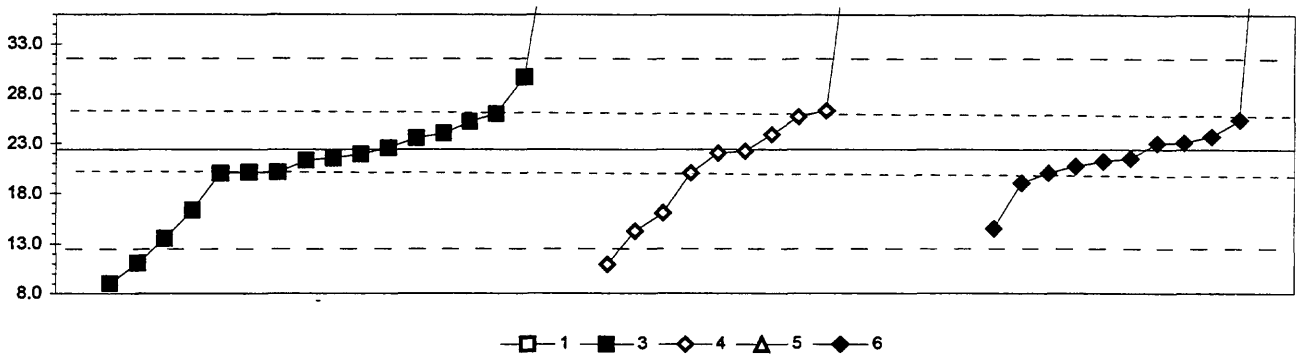
1. AA: direct air			4. ICP				
2. AA: direct nitrous oxide			6. ICP/MS				
3. AA: graphite furnace							
		N =	4	0	39	8	10
		Minimum =	5.00		1.35	1.90	0.00
		Maximum =	14.00		17.00	3.80	3.02
		Median =			2.26	2.05	2.26
		F-pseudosigma =			0.67	0.42	0.34
Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.19			2.13		
3	NR					< 2	
11	4	-0.38				2.00	
12	1	1.67			3.40		
13	NR					< 10	
15	3	-0.72			1.77		
16	4	-0.07					2.21
18	NR					< 5	
23	3	0.53			2.62		
24	4	-0.13			2.17		
25	NR					< 6	
26	3	-0.65			1.82		
30	4	0.50					2.60
32	4	0.06					2.30
36	NR			< 10			
48	4	0.50			2.60		
50	0	5.19			5.80		
58	0	9.15			8.50		
59	NR						< 10
60	3	-0.69			1.79		
61	4	-0.38				2.00	
63	4	-0.38			2.00		
68	3	-0.75			1.75		
69	4	0.00			2.26		
70	NR				< 10		
73	0	2.26				3.80	
75	3	-0.62			1.84		
80	2	1.39			3.21		
81	4	-0.38				2.00	
85	NR		< 5				
86	3	0.65				2.70	
87	0	9.88	9.00				
89	4	-0.29			2.06		
96	4	0.35			2.50		
97	0	21.61			17.00		
100	0	17.21	14.00				
105	3	-0.57					1.87
108	2	-1.26			1.40		
113	4	0.16			2.37		
114	0	4.02	5.00				
118	4	0.35			2.50		
119	4	-0.23			2.10		
128	4	0.06					2.30
133	NR					< 6	
134	4	0.26				2.44	
138	4	0.10					2.33
140	0	5.48	6.00				
141	4	-0.48			1.93		
142	2	1.11					3.02
146	NR					< 5	

MPV =	2.26
F-pseudosigma =	0.68
N =	61
Hu =	2.92
Hl =	2.00

Lab	Rating	Z-value	1	2	3	4	6
149	3	-0.53			1.90		
154	3	0.85			2.84		
180	NR					< 5.3	
182	3	-0.53				1.90	
190	4	-0.01			2.25		
196	2	-1.20					1.44
198	4	0.10			2.33		
203	4	0.10			2.33		
211	1	1.52			3.30		
212	3	0.79			2.80		
213	4	-0.15			2.16		
215	2	1.09			3.00		
217	0	-3.31					0.00
219	4	-0.23				2.10	
221	0	12.82			11.00		
227	4	-0.35			2.02		
231	2	-1.33			1.35		
234	4	0.00			2.26		
236	NR					< 3	
241	3	-0.60			1.85		
247	4	-0.23					2.10
249	4	-0.09			2.20		
252	2	1.38			3.20		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Al (Aluminum) µg/L



1. AA: direct air
3. AA: graphite furnace
4. ICP
5. DCP
6. ICP/MS

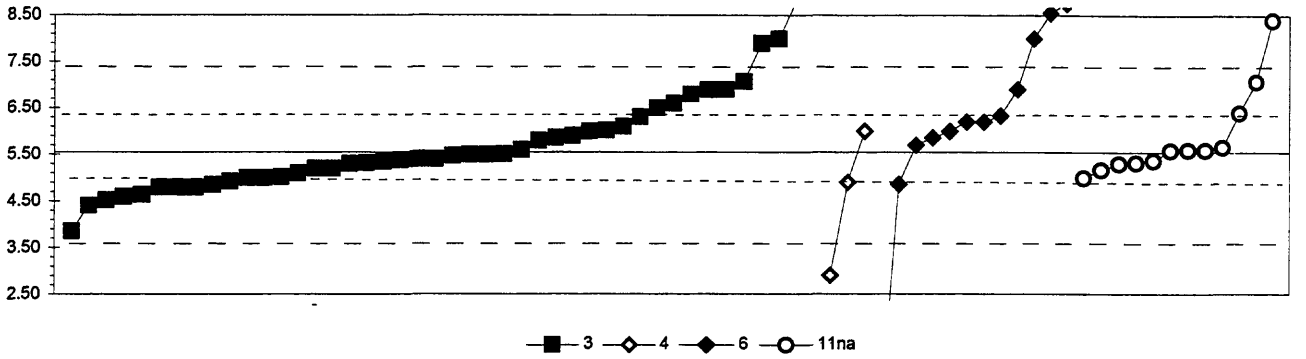
	1	3	4	5	6
N =	1	18	13	1	11
Minimum =	162.0	9.0	10.9	90.0	14.5
Maximum =		72.0	120.0		62.5
Median =		21.7	23.9		21.5
F-pseudosigma =		3.9	22.3		2.3

MPV = 22.4
F-pseudosigma = 4.6
N = 44
Hu = 26.2
Hl = 20.0

Lab	Rating	Z-value	1	3	4	5	6
1	4	-0.36					20.7
3	0	11.57			75.1		
4	NR				< 2000		
13	4	-0.23		21.3			
15	NR				< 50		
16	1	-1.73					14.5
18	NR				< 100		
25	NR				< 19		
26	3	0.63		25.2			
30	3	-0.73					19.0
32	4	0.14					23.0
33	0	14.84				90.0	
48	4	-0.49		20.1			
50	0	10.89		72.0			
59	NR				< 100		
61	NR				< 22.9		
63	2	-1.39			16.0		
68	0	8.81					62.5
69	4	0.36		24.0			
70	NR				< 100		
73	0	-2.51			10.9		
81	0	-2.93		9.0			
83	NR				< 25		
85	NR				< 100		
86	3	0.87			26.3		
89	2	-1.33		16.3			
97	3	0.80		26.0			
100	NR				< 40		
105	4	0.16					23.1
110	0	-2.48		11.1			
113	3	0.73			25.7		
118	NR		< 2000				
119	1	-1.94		13.5			
128	4	-0.19					21.5
131	NR				< 60		
134	4	-0.08			22.0		
138	4	-0.25					21.2
141	NR				< 100		
145	NR				< 13.4		
146	NR				< 100		
149	3	-0.52		20.0			
154	4	-0.03			22.2		
158	1	-1.79			14.2		
180	NR				< 40.6		
182	0	6.08			50.1		
190	4	-0.19		21.5			
191	3	-0.52					20.0
196	4	0.30					23.7
198	4	-0.10		21.9			
203	4	-0.49		20.1			
211	0	30.63	162.0				
212	NR				< 200		
215	0	21.42			120.0		
219	3	-0.52			20.0		
221	4	0.03		22.5			
224	0				< 3		
227	4	0.25		23.5			
234	4	0.34			23.9		
236	0	9.07			63.7		
241	1	1.61		29.7			
247	3	0.67					25.4
249	0	5.54		47.6			
252	0		< 5				

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

As (Arsenic) µg/L



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

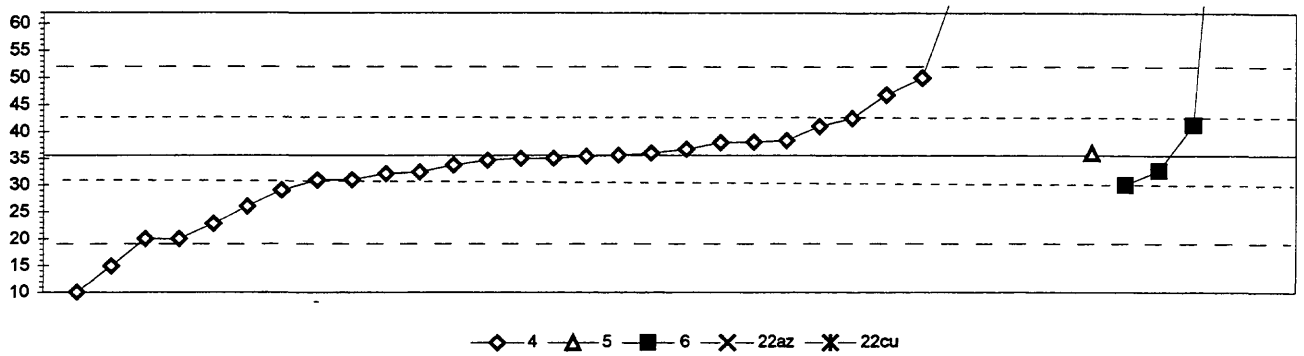
	3	4	6	11na	
N =	44	3	12	12	8
Minimum =	3.85	2.90	0.01	5.00	
Maximum =	11.10	6.00	8.75	8.40	
Median =	5.40		6.20	5.59	
F-pseudosigma =	0.89		1.24	0.53	

MPV = 5.55
F-pseudosigma = 0.97
N = 71
Hu = 6.33
Hl = 5.02

Lab	Rating	Z-value	3	4	6	11na
1	4	-0.08	5.47			
3	NR			< 4		
13	2	1.29	6.80			
15	4	-0.23	5.32			
16	3	0.81			6.33	
18	4	-0.15	5.40			
23	3	-0.97	4.60			
24	2	1.39	6.89			
25	NR			< 50		
26	4	0.06				5.60
30	4	0.47			6.00	
32	2	1.40			6.90	
34	4	-0.18				5.37
36	3	-0.64	4.92			
39	4	0.04				5.58
48	4	-0.36	5.20			
50	0	2.94				8.40
55	2	-1.18	4.40			
58	0	5.72	11.10			
59	NR				< 10	
60	2	1.09	6.60			
61	0	-2.72		2.90		
63	0	2.53	8.00			
68	1	-1.75	3.85			
69	4	-0.15	5.40			
70	NR		< 10			
75	4	-0.25				5.30
76	0	3.30			8.75	
80	1	1.57	7.07			
81	3	-0.56	5.00			
85	3	0.88				6.40
86	4	-0.39				5.17
87	4	0.06				5.60
89	4	0.12				5.66
96	4	0.37	5.90			
97	4	-0.17	5.38			
100	4	-0.25	5.30			
105	3	-0.71			4.86	
108	0	3.35	8.80			
109	3	-0.77	4.80			
113	3	-0.72	4.85			
118	3	0.78	6.30			
119	3	-0.56				5.00
128	3	0.67			6.20	
133	4	0.26	5.80			
134	4	-0.23				5.32
138	4	0.16			5.70	
141	4	-0.20	5.35			
142	0	3.09			8.55	
144	2	-1.06	4.52			
145	4	0.47		6.00		
146	NR			< 10		
149	3	-0.56	5.00			
153	4	-0.05	5.50			
154	3	-0.93	4.64			
180	NR			< 37.1		
182	1	1.57				7.07
183	2	1.40	6.90			
190	3	0.98	6.50			
191	0	2.53			8.00	
196	4	0.32			5.86	
203	0	2.43	7.90			
211	4	-0.46	5.10			
212	4	0.06	5.60			
213	4	0.32	5.86			
215	4	0.47	6.00			
217	0	-5.70			0.01	
220	4	-0.05	5.50			
221	4	-0.04	5.51			
224	3	-0.66		4.90		
227	3	-0.77	4.80			
231	3	-0.54	5.02			
234	4	0.49	6.02			
236	NR			< 35		
241	4	-0.36	5.20			
247	3	0.67			6.20	
249	3	-0.77	4.80			
252	3	0.57	6.10			

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

B (Boron) µg/L



4. ICP
5. DCP
6. ICP/MS

22az. Color: azomethine
22cu. Color: curcumin

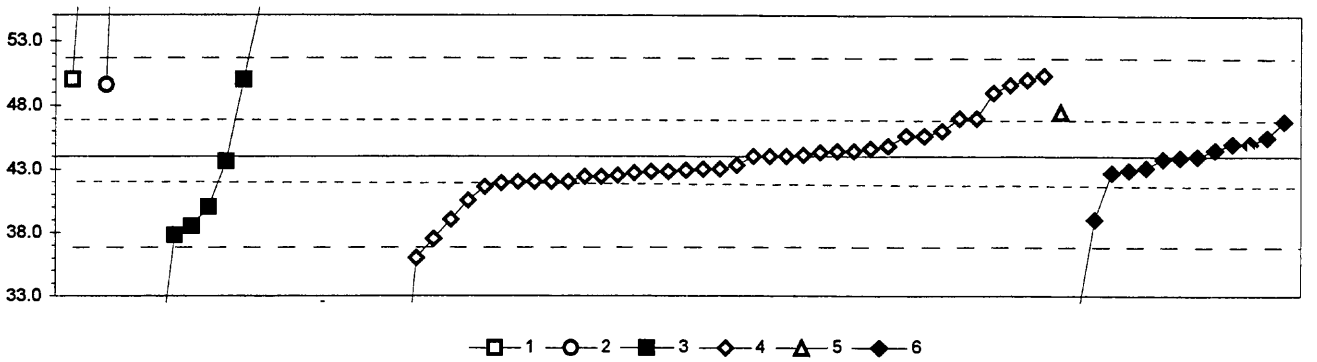
	4	5	6	22az	22cu
N =	30	1	4	1	1
Minimum =	10	36	30	70	197
Maximum =	1480		120		
Median =	35				
F-pseudosigma =	7				

MPV =	36
F-pseudosigma =	9
N =	37
Hu =	43
HI =	31

Lab	Rating	Z-value	4	5	6	22az	22cu
1	4	0.05		36			
3	4	-0.41	32				
11	4	0.28	38				
15	2	1.33	47				
16	0	12.81	145				
18	NR		< 50				
24	4	0.13	37				
25	NR		< 23				
26	2	-1.50	23				
32	3	-0.66			30		
39	4	0.33	38				
48	1	1.69	50				
60	0	18.93					197
61	4	-0.12	35				
63	0	-3.00	10				
68	0	9.90			120		
70	NR		< 50				
75	4	0.29	38				
85	3	0.81	43				
86	4	-0.38	32				
100	NR		< 50				
116	3	-0.54	31				
119	1	-1.83	20				
121	3	-0.77	29				
128	0	-2.43	15				
129	0	4.04				70	
131	0	169.43	1480				
134	4	-0.07	35				
138	3	0.67			41		
141	4	-0.02	35				
142	0	3.80	68				
145	2	-1.13	26				
158	4	-0.07	35				
180	4	0.00	36				
182	0	41.23	387				
211	NR		< 40				
212	4	0.05	36				
215	1	-1.83	20				
219	3	0.63	41				
234	4	-0.22	34				
236	3	-0.55	31				
247	4	-0.34			33		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Ba (Barium) µg/L



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

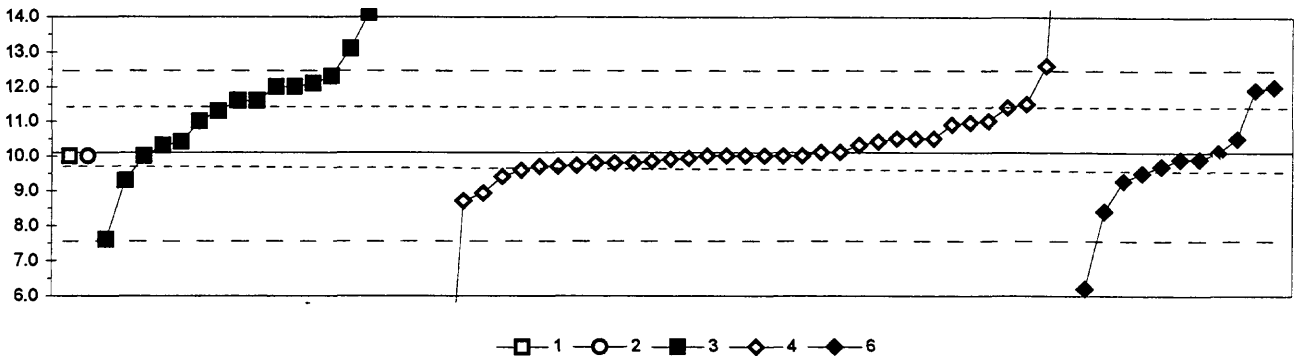
	1	2	3	4	5	6
N =	2	2	13	41	1	13
Minimum =	50.0	49.6	25.0	0.0	47.5	31.0
Maximum =	70.0	90.1	85.0	50.3		46.8
Median =			50.0	43.0		43.9
F-pseudosigma =			14.0	1.9		1.6

MPV = 44.0
F-pseudosigma = 3.6
N = 72
Hu = 46.9
Hl = 42.0

Lab	Rating	Z-value	1	2	3	4	5	6
1	4	0.01						44.0
3	4	0.18				44.6		
4	3	0.84				47.0		
11	3	0.56				46.0		
13	4	-0.43				42.4		
15	1	1.56				49.6		
16	4	-0.04						43.8
18	4	-0.26				43.0		
24	4	-0.32				42.8		
25	2	1.39				49.0		
26	4	0.12				44.4		
30	2	-1.36						39.0
32	4	-0.23						43.1
33	3	0.98					47.5	
36	0	12.71		90.1				
39	4	0.12				44.4		
40	4	-0.34				42.7		
48	0	3.37			56.2			
50	0	-5.22			25.0			
59	4	0.29						45.0
61	4	0.45				45.6		
63	0	-6.59				20.0		
68	0	-3.57						31.0
69	0	11.30			85.0			
70	NR					< 50		
75	3	-0.95				40.5		
76	4	0.15						44.5
80	NR			< 60				
81	0	-2.19				36.0		
83	3	-0.54				42.0		
85	4	0.45				45.6		
86	4	0.23				44.8		
87	2	-1.50			38.5			
89	0	-4.69			26.9			
90	0	10.61			82.5			
96	NR			< 100				
97	4	-0.10			43.6			
100	4	-0.43				42.4		
105	4	-0.34						42.7
113	3	-0.65				41.6		
116	3	-0.54				42.0		
119	4	0.01				44.0		
121	4	0.01				44.0		
128	4	-0.29						42.9
131	3	-0.54				42.0		
133	4	0.04				44.1		
134	4	-0.26				43.0		
138	3	-0.54				42.0		
140	0	7.17	70.0					
141	4	0.10				44.3		
142	3	0.78						46.8
145	4	-0.29				42.9		
146	4	-0.40				42.5		
149	2	-1.09			40.0			
153	0	3.70			57.4			
154	1	-1.78				37.5		
158	4	-0.32				42.8		
180	3	-0.56				41.9		
182	1	1.75				50.3		
183	0	3.59			57.0			
191	4	0.29						45.0
196	4	-0.01						43.9
203	1	1.67			50.0			
211	1	1.67	50.0					
212	4	0.01				44.0		
215	1	1.67				50.0		
217	0	-12.09				0.0		
219	2	-1.36				39.0		
224	0	-10.20				6.9		
227	1	-1.69			37.8			
231	1	1.56		49.6				
234	4	-0.18				43.3		
236	3	0.84				47.0		
241	0	5.74			64.8			
247	4	0.43						45.5

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Be (Berylium) µg/L



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

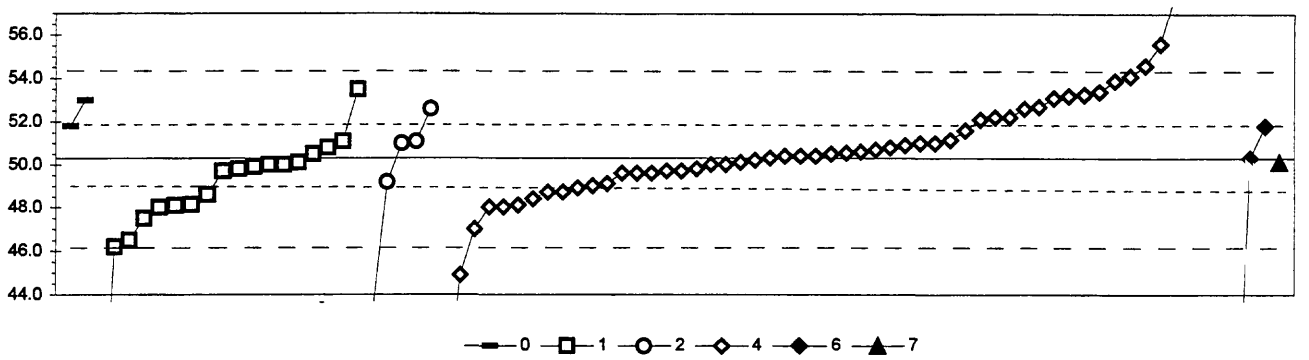
	1	2	3	4	6
N =	1	1	18	34	11
Minimum =	10.0	10.0	7.6	0.0	6.2
Maximum =			22.2	21.0	12.0
Median =			11.8	10.0	9.9
F-pseudosigma =			2.0	0.5	0.7

MPV = 10.1
F-pseudosigma = 1.2
N = 65
Hu = 11.5
HI = 9.8

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.16				9.9	
3	2	1.14				11.5	
4	4	-0.33				9.7	
11	4	-0.08				10.0	
13	3	-0.96				8.9	
15	3	0.65				10.9	
16	3	-0.68					9.3
18	4	-0.08				10.0	
24	0	5.15			16.4		
25	3	0.74				11.0	
26	4	0.25				10.4	
30	2	-1.39					8.4
32	4	-0.49					9.5
36	0	9.89			22.2		
39	4	-0.08				10.0	
40	4	-0.25				9.8	
48	2	1.23			11.6		
59	1	1.55					12.0
61	4	0.16				10.3	
63	1	1.55			12.0		
68	0	-3.19					6.2
69	3	-0.65			9.3		
70	4	-0.14				9.9	
75	4	-0.31				9.7	
76	4	0.33					10.5
81	0	8.91				21.0	
83	4	-0.08				10.0	
85	4	0.33				10.5	
86	4	-0.42				9.6	
89	1	1.80			12.3		
96	4	-0.08	10.0				
97	2	1.23			11.6		
100	4	0.00				10.1	
105	4	-0.16					9.9
113	4	0.33				10.5	
114	4	-0.08		10.0			
119	4	0.16			10.3		
128	4	-0.33					9.7
133	3	0.70				11.0	
134	4	-0.08				10.0	
138	4	-0.33				9.7	
141	0	2.45			13.1		
142	2	1.47					11.9
145	4	-0.25				9.8	
146	4	0.33				10.5	
149	4	-0.08			10.0		
154	3	0.98			11.3		
158	4	-0.25				9.8	
180	3	-0.57				9.4	
182	1	2.04				12.6	
183	1	1.64			12.1		
196	4	-0.16					9.9
198	3	0.74			11.0		
211	0	3.27			14.1		
212	4	-0.08				10.0	
213	4	0.25			10.4		
215	0	4.82			16.0		
217	0	-8.25				0.0	
219	2	-1.14				8.7	
224	2	1.06				11.4	
234	4	-0.21				9.8	
236	4	0.00				10.1	
241	1	-2.04			7.6		
247	4	0.00					10.1
252	1	1.55			12.0		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Ca (Calcium) mg/L



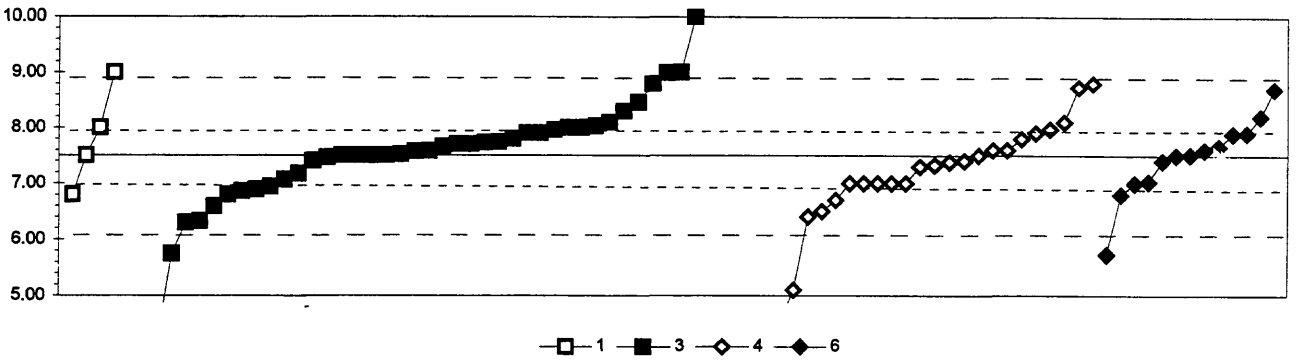
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
2. AA: direct nitrous oxide			7. Ion chromatography					
		N =	2	18	5	53	3	1
		Minimum =	51.8	33.9	43.0	38.4	34.0	50.1
		Maximum =	53.0	53.5	52.6	63.3	51.8	
		Median =		49.8		50.5		
		F-pseudosigma =		1.6		2.2		

MPV = 50.3
F-pseudosigma = 2.1
N = 82
Hu = 51.8
Hl = 49.0

Lab	Rating	Z-value	0	1	2	4	6	7
1	4	0.10				50.5		
3	3	-0.58				49.1		
4	2	1.11				52.6		
11	2	1.16				52.7		
12	4	-0.14				50.0		
13	0	5.11				60.9		
15	0	2.55				55.6		
16	4	0.12				50.6		
18	4	-0.24				49.8		
23	4	0.39			51.1			
24	4	0.00				50.3		
25	0	3.95				58.5		
26	4	0.05				50.4		
30	4	0.34			51.0			
32	3	0.72					51.8	
33	3	0.72	51.8					
36	2	1.11			52.6			
39	4	0.24				50.8		
43	4	0.34				51.0		
48	4	0.29				50.9		
55	4	0.05				50.4		
58	2	-1.35		47.5				
59	3	-0.63				49.0		
61	1	1.73				53.9		
63	2	-1.11				48.0		
68	0	-7.85					34.0	
69	4	-0.14		50.0				
70	3	0.92				52.2		
75	4	0.24		50.8				
81	3	-0.92				48.4		
83	4	-0.34				49.6		
84	2	-1.06		48.1				
85	4	-0.29		49.7				
86	2	1.35				53.1		
87	3	-0.53			49.2			
89	4	-0.14		50.0				
93	4	-0.05				50.2		
97	4	-0.19		49.9				
100	1	1.83				54.1		
105	2	1.40				53.2		
107	4	-0.10		50.1				
108	2	1.30	53.0					
109	2	-1.04		48.1				
110	0	-7.92		33.9				
113	3	-0.77				48.7		
114	0	-3.52			43.0			
116	2	-1.11				48.0		
119	3	-0.77				48.7		
121	4	-0.29				49.7		
128	2	1.49				53.4		
129	1	1.54		53.5				
131	0	-5.73				38.4		
133	4	-0.34				49.6		
134	4	0.34				51.0		
138	4	-0.14				50.0		
140	4	0.10		50.5				
141	4	-0.10				50.1		
142	3	0.92				52.2		
145	4	-0.29				49.7		
146	2	-1.06				48.1		
149	4	-0.24		49.8				
154	0	-2.60				44.9		
158	4	0.19				50.7		
180	3	-0.67				48.9		
182	0	6.26				63.3		
190	4	-0.10						50.1
191	4	0.00					50.3	
198	0	2.07				54.6		
203	4	0.39		51.1				
211	0	3.71				58.0		
212	3	0.63				51.6		
215	4	0.14				50.6		
217	4	-0.34				49.6		
219	1	-1.59				47.0		
220	1	-1.98		46.2				
221	1	-1.83		46.5				
224	3	0.87				52.1		
231	3	-0.82		48.6				
234	4	0.05				50.4		
236	2	1.43				53.3		
241	2	-1.11		48.0				
247	4	0.41				51.2		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Cd (Cadmium) µg/L



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

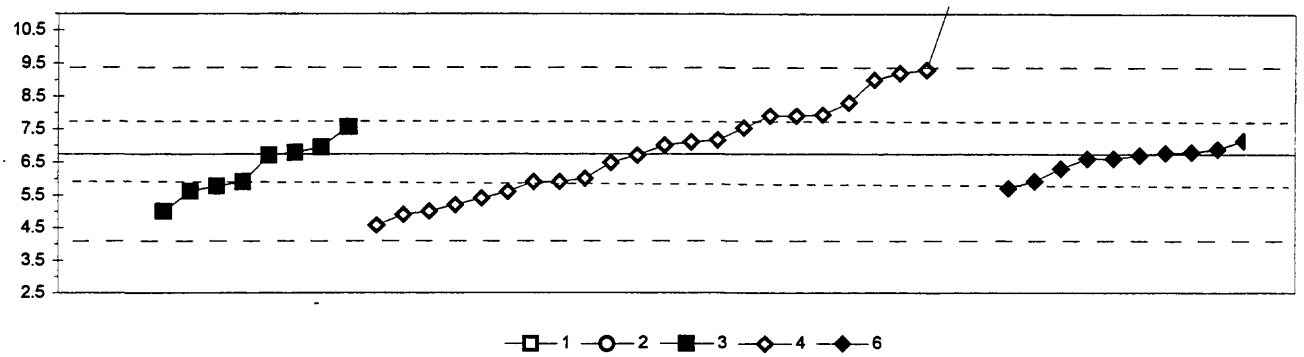
	1	3	4	6
N =	4	44	25	13
Minimum =	6.80	3.90	0.01	5.73
Maximum =	9.00	496.00	8.80	8.70
Median =		7.58	7.30	7.51
F-pseudosigma =		0.75	0.67	0.64

MPV = 7.50
F-pseudosigma = 0.71
N = 86
Hu = 7.96
Hl = 7.00

Lab	Rating	Z-value	1	3	4	6
1	4	-0.14				7.40
3	4	-0.14			7.40	
4	NR				< 100	
10	2	1.12		8.30		
11	4	-0.28			7.30	
12	4	0.42		7.80		
13	1	1.73			8.73	
15	4	0.34		7.74		
16	4	0.01				7.51
18	3	-0.70			7.00	
23	3	0.65		7.96		
24	4	0.42			7.80	
25	NR				< 6	
26	4	0.10		7.57		
30	3	-0.98				6.80
32	4	0.14				7.60
36	1	-1.64		6.33		
39	3	0.98				8.20
48	1	1.83		8.80		
50	4	0.00		7.50		
55	3	-0.90		6.86		
58	0	-5.06		3.90		
59	3	-0.70				7.00
60	3	0.56		7.90		
61	4	0.14			7.60	
63	0	-4.78		4.10		
68	0	4.08		10.40		
69	3	0.84		8.10		
70	0	-2.46		5.75		
73	4	0.00			7.50	
75	3	0.66			7.97	
80	0		< 5			
81	3	-0.70			7.00	
83	3	-0.70			7.00	
85	3	-0.98	6.80			
86	4	-0.17			7.38	
87	0	2.11	9.00			
89	3	-0.60		7.07		
90	4	0.28		7.70		
96	4	0.28		7.70		
97	4	0.00		7.50		
100	NR		< 20			
105	3	-0.66				7.03
108	0	-4.71		4.15		
113	3	0.56			7.90	
114	3	0.70	8.00			
118	4	0.00		7.50		
119	3	0.70		8.00		
121	3	-0.70			7.00	
128	1	1.69				8.70
131	2	-1.12			6.70	
133	0	-4.24			4.48	
134	4	-0.24			7.33	
138	4	0.22				7.66
140	4	0.00	7.50			
141	3	0.74		8.03		
142	3	0.55				7.89
145	1	-1.55			6.40	
146	4	0.14			7.60	
149	0	2.11		9.00		
153	4	0.00		7.50		
154	2	1.35		8.46		
158	1	-1.69		6.30		
160	2	-1.41			6.50	
182	0	-6.32			3.00	
183	3	0.70		8.00		
190	0	3.51		10.00		
191	4	0.00				7.50
196	0	-2.49				5.73
198	4	0.22		7.66		
203	0	2.12		9.01		
211	3	0.56		7.90		
212	3	0.84			8.10	
213	3	-0.79		6.94		
215	4	-0.46		7.17		
217	0	-10.53			0.01	
219	3	-0.70			7.00	
220	3	-0.86		6.89		
221	4	-0.06		7.46		
224	0	-3.37			5.10	
227	2	-1.28		6.59		
231	4	0.32		7.73		
234	4	0.03		7.52		
236	1	1.83			8.80	
241	3	-0.98		6.80		
245	4	-0.14		7.40		
247	3	0.56				7.90
249	0	16.16		19.00		
252	4	0.11		7.58		
253	0	686.44		496.00		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Co (Cobalt) µg/L



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

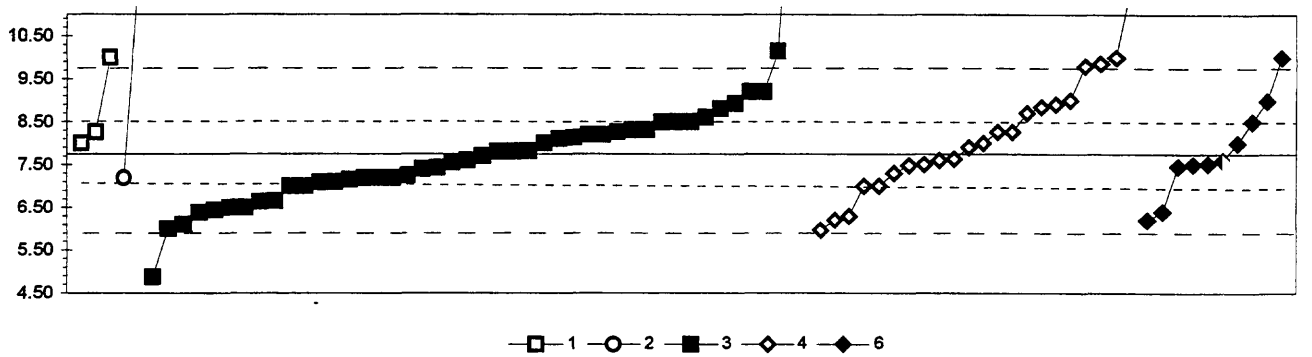
	1	2	3	4	6
N =	2	0	8	24	10
Minimum =	12.0	< 10	5.0	4.6	5.7
Maximum =	22.0		7.6	11.9	7.2
Median =			6.3	7.1	6.7
F-pseudosigma =			0.9	1.8	0.4

MPV = 6.7
F-pseudosigma = 1.4
N = 44
Hu = 7.7
Hl = 5.9

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.32					6.3
3	4	0.31				7.2	
4	NR					< 100	
11	4	0.20				7.0	
13	NR					< 50	
15	NR					< 20	
16	4	0.31					7.2
18	NR					< 10	
24	4	0.27				7.1	
25	NR					< 12	
26	4	-0.03				6.7	
30	4	-0.10					6.6
32	4	0.05					6.8
36	NR			< 10			
40	3	-0.98				5.4	
48	NR					< 50	
61	3	-0.84				5.6	
63	3	-0.62				5.9	
68	NR						< 5
70	NR					< 50	
75	3	0.88				7.9	
80	3	-0.71			5.8		
81	2	-1.28				5.0	
85	NR					< 10	
86	3	0.59				7.5	
89	3	-0.82			5.6		
97	3	-0.62			5.9		
100	0	11.25	22.0				
105	3	-0.76					5.7
121	1	1.67				9.0	
128	2	1.15				8.3	
131	1	1.89				9.3	
134	4	0.03			6.8		
138	4	-0.10					6.6
141	3	-0.54				6.0	
142	3	-0.60					5.9
145	2	-1.35				4.9	
146	4	-0.19				6.5	
154	3	0.86				7.9	
158	1	-1.60				4.6	
180	3	-0.62				5.9	
182	0	3.67				11.7	
191	4	0.12					6.9
196	4	0.03					6.8
211	0	3.88	12.0				
212	1	1.82				9.2	
213	4	0.16			7.0		
215	2	-1.28			5.0		
219	2	-1.13				5.2	
221	4	-0.03			6.7		
224	3	0.86				7.9	
234	3	0.61			7.6		
236	0	3.81				11.9	
247	4	-0.03					6.7

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Cr (Chromium) µg/L



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

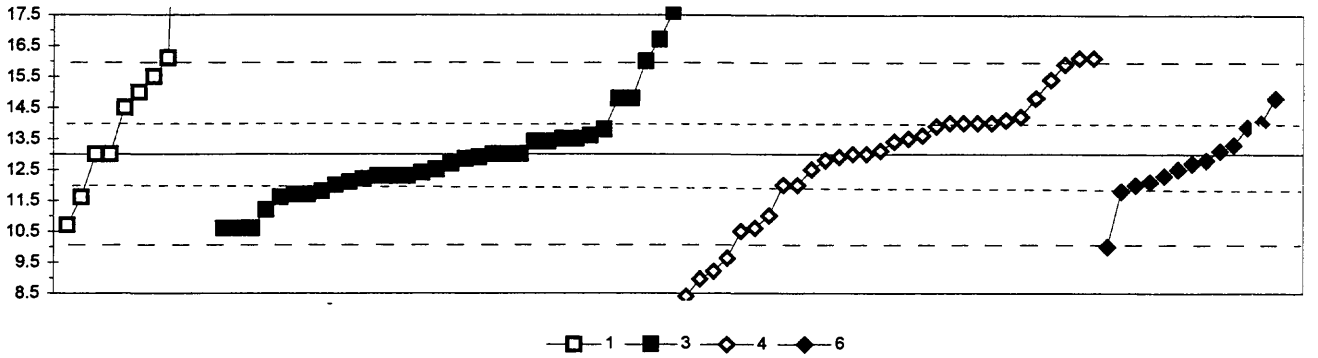
	1	2	3	4	6
N =	3	2	45	22	10
Minimum =	8.00	7.20	4.87	5.97	6.20
Maximum =	10.00	12.00	15.46	11.80	10.00
Median =			7.60	7.95	7.56
F-pseudosigma =			0.93	1.19	0.77

MPV = 7.75
F-pseudosigma = 1.02
N = 81
Hu = 8.50
HI = 7.13

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.25					7.50
3	2	-1.43				6.29	
4	NR					< 100	
10	3	0.54			8.30		
11	3	-0.74				7.00	
13	2	1.07				8.84	
15	2	-1.29			6.44		
16	2	1.21					8.98
18	2	1.23				9.00	
23	4	-0.49			7.25		
24	2	1.42			9.20		
25	NR					< 8	
26	3	0.83			8.60		
30	1	-1.52					6.20
32	4	0.25					8.00
36	4	0.37			8.13		
39	4	-0.05			7.70		
48	4	0.44			8.20		
50	0	7.31			15.20		
55	4	0.44			8.20		
58	4	0.34			8.10		
59	NR						< 10
60	2	-1.08			6.65		
61	2	1.13				8.90	
63	3	-0.64			7.10		
68	0						< 5
69	3	-0.54			7.20		
70	NR					< 10	
73	4	0.15				7.90	
75	4	0.50				8.26	
80	1	-1.61			6.11		
81	4	0.25				8.00	
83	3	-0.74				7.00	
85	NR					< 10	
86	4	-0.26				7.48	
87	3	-0.54		7.20			
89	4	-0.31			7.43		
90	2	-1.23			6.50		
96	2	1.03			8.80		
97	2	-1.34			6.38		
100	0	2.21	10.00				
105	2	-1.32					6.40
108	1	-1.72			6.00		
113	4	-0.44				7.30	
114	0	4.17		12.00			
118	4	0.25			8.00		
119	2	-1.23			6.50		
121	0	2.21				10.00	
128	4	-0.15					7.60
131	4	-0.25				7.50	
133	1	-1.75				5.97	
134	4	-0.12				7.63	
138	3	-0.74			7.00		
140	4	0.25	8.00				
141	0	3.97				11.80	
142	4	-0.28					7.46
145	4	-0.15				7.60	
146	4	0.50				8.26	
149	3	-0.74			7.00		
153	0	7.56			15.46		
154	3	-0.54			7.20		
158	3	0.74			8.50		
180	3	0.93				8.70	
182	0	2.07				9.86	
183	3	0.74			8.50		
190	4	0.06			7.81		
191	0	2.21					10.00
196	4	-0.23					7.52
198	4	0.05			7.80		
203	3	0.73			8.49		
211	0	-2.83			4.87		
212	4	-0.15			7.60		
213	3	-0.54			7.20		
215	0	2.35			10.15		
219	1	-1.52				6.20	
220	4	-0.34			7.40		
221	4	0.07			7.82		
227	2	-1.09			6.64		
231	3	0.55			8.31		
234	2	1.15			8.92		
236	1	2.01				9.80	
241	3	-0.59			7.15		
245	3	-0.65			7.09		
247	3	0.74					8.50
249	4	0.50	8.26				
252	2	1.42			9.20		
253	4	-0.20			7.55		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Cu (Copper) µg/L



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

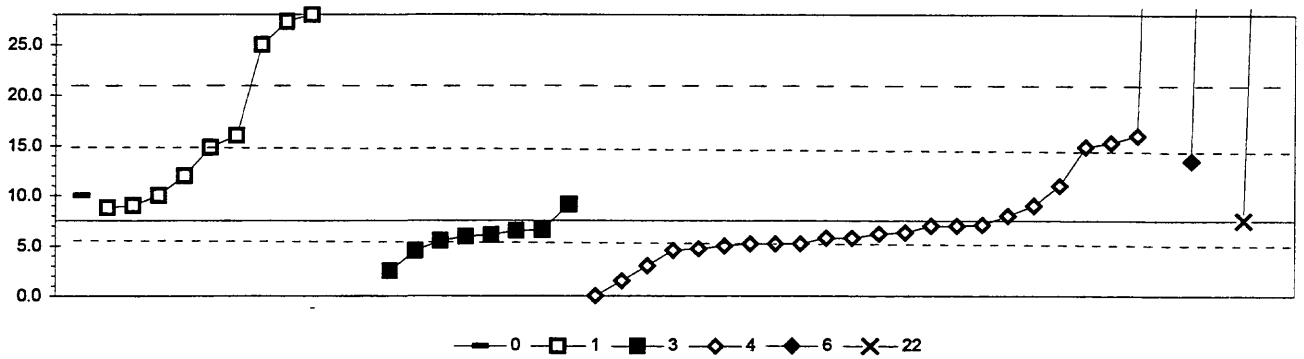
	1	3	4	6
N =	11	34	29	13
Minimum =	10.7	10.6	8.4	10.0
Maximum =	204.0	17.6	16.1	14.8
Median =	15.0	12.8	13.1	12.7
F-pseudosigma =	7.5	1.1	1.5	0.9

MPV = 13.0
F-pseudosigma = 1.5
N = 87
Hu = 14.0
Hl = 12.0

Lab	Rating	Z-value	1	3	4	6
1	4	-0.13				12.8
3	1	-1.62			10.6	
4	NR				< 30	
10	4	0.40		13.6		
11	3	0.67			14.0	
12	4	0.00		13.0		
13	NR				< 20	
15	1	1.62			15.4	
16	3	0.59				13.9
18	3	0.67			14.0	
23	2	1.21		14.8		
24	3	0.74			14.1	
25	0	-4.05			< 7	
26	4	-0.13			12.8	
30	1	-2.02				10.0
32	4	0.20				13.3
36	2	1.21		14.8		
39	3	-0.67			12.0	
40	4	0.07			13.1	
48	4	-0.34		12.5		
50	0	3.10		17.6		
55	4	0.27		13.4		
58	4	-0.47		12.3		
59	3	0.67				14.0
60	4	-0.07		12.9		
61	4	0.40			13.6	
63	4	0.00		13.0		
68	3	-0.67				12.0
69	3	-0.81		11.8		
70	4	0.34			13.5	
73	2	1.21			14.8	
75	4	-0.34			12.5	
80	4	-0.47		12.3		
81	3	-0.67			12.0	
83	3	0.67			14.0	
84	1	-1.62		10.6		
85	3	-0.94	11.6			
86	3	0.81			14.2	
87	4	0.00	13.0			
89	1	-1.55	10.7			
90	0	128.83	204.0			
96	1	-1.62		10.6		
97	1	-1.62		10.6		
100	1	1.69	15.5			
105	3	-0.81				11.8
108	2	1.35	15.0			
113	0	2.09			16.1	
114	4	0.00	13.0			
118	3	-0.54		12.2		
119	3	0.67			14.0	
121	4	0.00			13.0	
128	4	-0.47				12.3
129	0	11.47	30.0			
133	4	-0.06			12.9	
134	4	0.00			13.0	
138	4	-0.34				12.5
140	0	2.09	16.1			
141	4	0.27		13.4		
142	4	0.07				13.1
144	3	-0.88		11.7		
145	0	-3.10			8.4	
146	1	-1.69			10.5	
149	0		< 5			
153	0	2.50		16.7		
154	3	-0.88		11.7		
158	0	-2.27			9.6	
180	4	0.27			13.4	
182	0	-2.72			9.0	
183	4	0.34		13.5		
190	4	-0.20		12.7		
191	4	-0.20				12.7
196	2	1.21				14.8
203	2	1.01	14.5			
211	3	-0.94		11.6		
212	0	-2.56			9.2	
213	3	0.54		13.8		
215	1	2.02		16.0		
219	2	-1.35			11.0	
220	4	0.00		13.0		
221	4	-0.10		12.9		
224	3	0.61			13.9	
227	4	-0.40		12.4		
231	3	-0.61		12.1		
234	4	0.34		13.5		
236	0	2.09			16.1	
241	2	-1.21		11.2		
245	4	-0.47		12.3		
247	3	-0.61				12.1
249	1	1.96		15.9		
252	3	-0.67		12.0		
253	0	14.84	35.0			

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Fe (Iron) µg/L



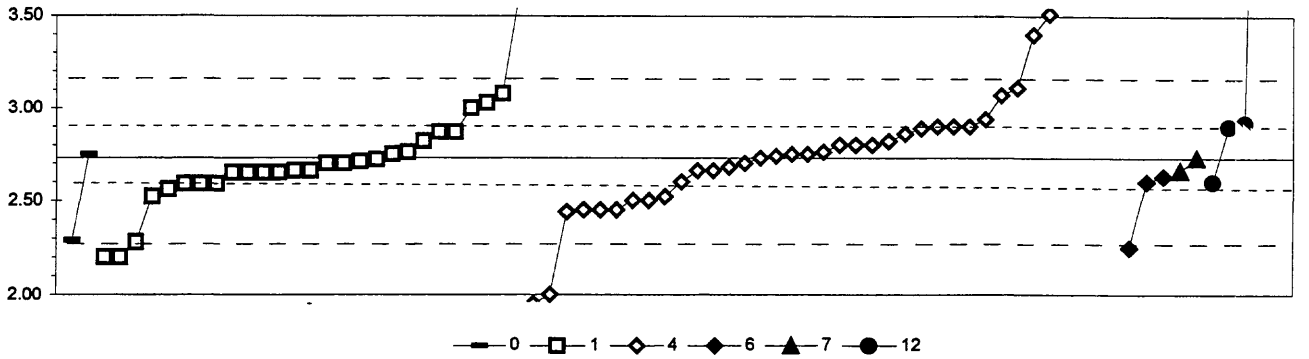
0. Other			4. ICP				
1. AA: direct air			6. ICP/MS				
3. AA: graphite furnace			22. Colorimetric				
	N =	1	11	8	23	2	2
	Minimum =	10.0	8.8	2.5	0.0	13.5	7.5
	Maximum =		840.0	9.1	100.0	120.0	92.0
	Median =		16.0	6.0	6.2		
	F-pseudosigma =		12.3	1.1	2.5		

MPV =	7.5
F-pseudosigma =	6.8
N =	47
Hu =	14.9
HI =	5.7

Lab	Rating	Z-value	0	1	3	4	6	22
1	4	-0.41				4.7		
3	2	1.14				15.3		
4	NR					< 60		
13	NR					< 10		
15	NR					< 30		
16	NR	-1.10				0.0		
18	NR					< 50		
23	NR			< 500				
24	4	-0.29			5.5			
25	NR					< 6		
26	4	-0.06				7.1		
30	NR			< 500				
32	0	16.47					120.0	
33	4	0.37	10.0					
35	4	0.00						7.5
36	NR		< 100					
40	4	-0.25				5.8		
43	NR					< 8		
48	NR					< 30		
50	3	-0.73			2.5			
59	0	13.54				100.0		
61	NR					< 10.8		
63	NR					< 10		
68	3	0.88					13.5	
70	NR					< 20		
75	4	-0.19				6.2		
80	4	-0.44			4.5			
81	4	-0.37				5.0		
83	4	0.07				8.0		
85	NR					< 10		
87	NR			< 40				
89	NR				< 20			
90	0	121.87		840.0				
91	NR					< 20		
96	NR			< 50				
100	2	1.24		16.0				
105	2	1.24				16.0		
109	2	1.07		14.8				
113	4	-0.34				5.2		
114	0	2.56		25.0				
116	3	0.51				11.0		
118	NR			< 100				
119	3	-0.66				3.0		
121	4	-0.07				7.0		
128	NR					<10		
129	0	12.37						92.0
131	2	1.08				14.9		
133	4	-0.43				4.5		
134	4	-0.25				5.8		
138	4	-0.15			6.5			
140	4	0.22		9.0				
141	NR					< 50		
142	4	-0.07				7.0		
145	4	-0.34				5.2		
146	NR					< 25		
149	NR			< 10				
180	4	-0.34				5.2		
182	4	-0.17				6.3		
190	0	2.90		27.3				
191	NR						< 10	
203	4	0.37		10.0				
211	0	5.34		44.0				
212	NR					< 40		
213	4	-0.21			6.1			
215	NR					< 10		
219	3	-0.88				1.5		
220	3	0.66		12.0				
221	4	-0.23			5.9			
224	4	0.22				9.0		
231	4	0.19		8.8				
234	4	-0.14			6.6			
236	NR					< 10		
241	4	0.23			9.1			
247	NR					< 5		
249	0	3.00		28.0				

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

K (Potassium) mg/L



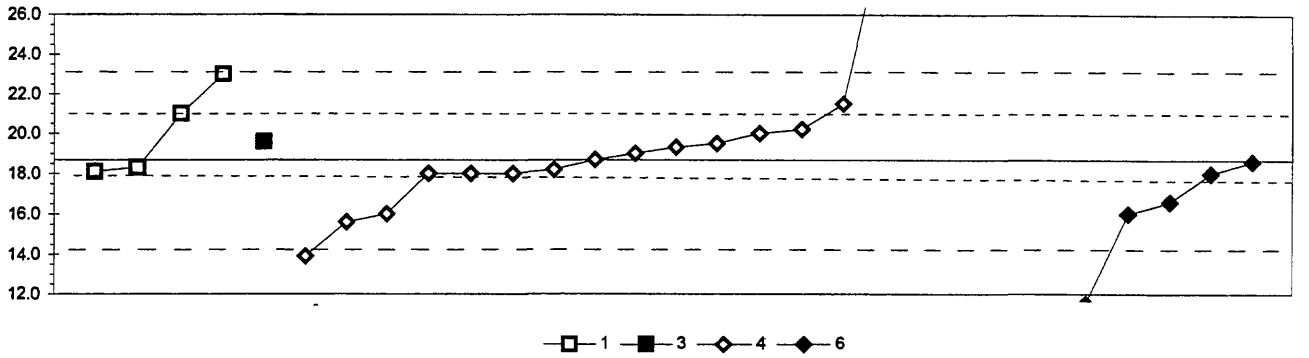
0. Other				6. ICP/MS				
1. AA: direct air				7. Ion chromatography				
4. ICP				12. Flame emission				
		N =	2	27	37	3	2	5
		Minimum =	2.29	2.20	1.95	2.25	2.66	2.60
		Maximum =	2.75	3.60	36.00	2.63	2.73	7.10
		Median =		2.66	2.76			
		F-pseudosigma =		0.15	0.22			

MPV = 2.73
F-pseudosigma = 0.23
N = 76
Hu = 2.90
Hl = 2.60

Lab	Rating	Z-value	0	1	4	6	7	12
1	4	-0.07		2.71				
3	4	-0.33		2.65				
11	3	0.60			2.86			
12	0	-3.21			2.00			
13	3	0.95			2.94			
15	3	0.77			2.90			
16	2	1.35		3.03				
18	3	0.77			2.90			
23	4	0.11		2.75				
24	2	-1.22			2.45			
25	0				< 1.21			
26	4	-0.29					2.66	
32	3	-0.55				2.60		
33	4	0.11	2.75					
36	1	-1.92	2.29					
40	0	14.49			6.00			
43	4	0.33			2.80			
48	3	-0.91			2.52			
55	4	-0.33		2.65				
58	0	-2.32		2.20				
59	3	-1.00			2.50			
61	3	-0.55			2.60			
63	0	147.17			36.00			
68	0	-2.10				2.25		
69	3	0.86						2.92
70	4	-0.29			2.66			
73	0				< 0.01			
75	3	-0.73		2.56				
76	3	0.64		2.87				
81	1	1.53			3.07			
83	4	-0.29		2.66				
85	3	-0.60		2.59				
86	4	0.42			2.82			
87	4	-0.29		2.66				
89	4	0.15		2.76				
93	3	0.77						2.90
97	3	-0.60		2.59				
100	4	-0.29			2.66			
105	4	0.11			2.75			
108	0	19.35						7.10
109	3	0.64		2.87				
110	4	0.42		2.82				
113	3	0.77			2.90			
114	0	3.87		3.60				
119	4	0.33			2.80			
121	4	-0.11		2.70				
128	0	-3.43			1.95			
129	4	-0.33		2.65				
131	4	0.11			2.75			
134	3	-0.60		2.59				
138	4	-0.20			2.68			
140	1	-1.97		2.28				
141	4	0.07			2.74			
142	2	-1.22			2.45			
145	2	-1.22			2.45			
146	0	3.47			3.51			
149	3	-0.55						2.60
154	0	8.91			4.74			
158	3	0.73			2.89			
180	0	2.99			3.40			
182	2	-1.26			2.44			
190	4	0.02					2.73	
191	4	-0.42				2.63		
198	2	1.22		3.00				
203	1	1.57		3.08				
211	3	-0.91		2.52				
212	4	0.33			2.80			
215	0	4.75			3.80			
219	3	-1.00			2.50			
220	0	-2.32		2.20				
221	4	-0.02		2.72				
224	4	0.02			2.73			
231	4	-0.33		2.65				
234	4	-0.11			2.70			
236	1	1.70			3.11			
241	4	-0.11		2.70				
247	4	0.16			2.76			
249	0	4.53						3.75

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Li (Lithium) µg/L



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

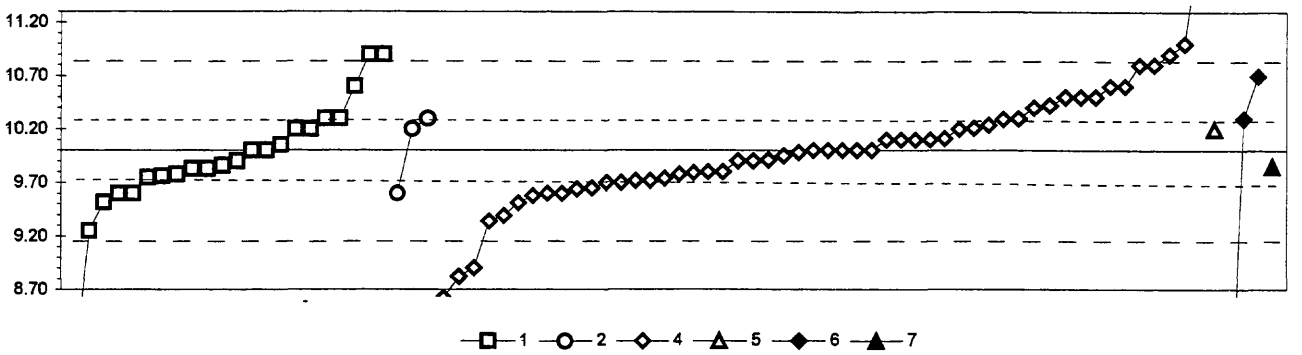
	1	3	4	6
N =	4	1	19	5
Minimum =	18.1	19.6	13.9	11.5
Maximum =	23.0		109.9	18.6
Median =			19.3	
F-pseudosigma =			6.0	

MPV = 18.7
F-pseudosigma = 2.2
N = 29
Hu = 21.0
Hl = 18.0

Lab	Rating	Z-value	1	3	4	6
1	4	0.27			19.3	
3	0	7.19			34.7	
4	NR				< 100	
11	0	5.35			30.6	
16	3	-0.94				16.6
24	0	5.35			30.6	
25	0	28.01			81.0	
26	3	0.58			20.0	
30	2	-1.21				16.0
32	4	-0.04				18.6
39	4	0.00			18.7	
40	4	-0.22			18.2	
68	0	-3.24				11.5
69	4	0.40		19.6		
75	4	0.36			19.5	
85	4	-0.27	18.1			
100	1	1.93	23.0			
105	4	-0.31			18.0	
109	4	-0.18	18.3			
131	2	1.26			21.5	
134	4	-0.31			18.0	
142	3	0.67			20.2	
145	0	-2.16			13.9	
149	2	1.03	21.0			
182	0	41.01			109.9	
212	4	0.13			19.0	
219	2	-1.21			16.0	
234	4	-0.31			18.0	
236	2	-1.39			15.6	
247	4	-0.31				18.0

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Mg (Magnesium) mg/L



1. AA: direct air			5. DCP				
2. AA: direct nitrous oxide			6. ICP/MS				
4. ICP			7. Ion chromatography				
	N =	22	3	52	1	3	1
	Minimum =	8.00	9.60	8.62	10.20	6.75	9.85
	Maximum =	10.90	10.30	12.01		10.70	
	Median =	9.88		10.00			
	F-pseudosigma =	0.33		0.44			

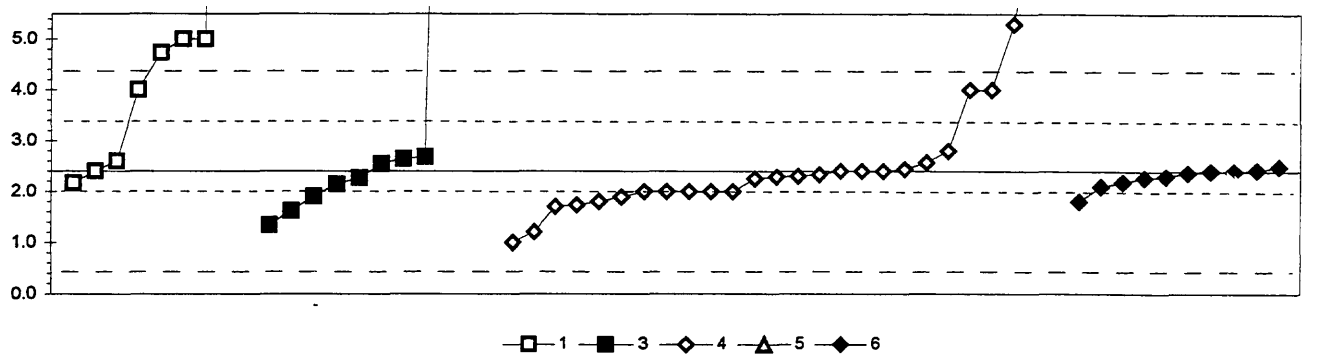
MPV = 10.00
F-pseudosigma = 0.43
N = 82
Hu = 10.30
Hl = 9.72

Lab	Rating	Z-value	1	2	4	5	6	7
1	3	-0.51	9.78					
3	1	-1.54			9.34			
4	4	0.47			10.20			
11	4	0.23			10.10			
12	4	0.23			10.10			
13	4	-0.12			9.95			
15	2	1.40			10.60			
16	4	0.49			10.21			
18	3	-0.70			9.70			
23	4	0.47	10.20					
24	3	-0.51			9.78			
25	1	1.86			10.80			
26	2	1.16			10.50			
30	3	0.70		10.30				
32	1	1.63					10.70	
33	4	0.47				10.20		
36	4	0.47		10.20				
39	4	0.00			10.00			
40	2	1.16			10.50			
43	4	0.00			10.00			
48	3	-0.81			9.65			
55	3	0.93			10.40			
59	3	-0.93			9.60			
61	2	1.18			10.50			
63	3	-0.93			9.60			
68	0	-7.56					6.75	
69	3	-0.56	9.76					
70	4	0.00			10.00			
75	4	-0.23	9.90					
76	4	0.47	10.20					
81	0	-2.74			8.82			
83	3	-0.70			9.70			
85	3	0.70	10.30					
86	4	0.23			10.10			
87	2	-1.12	9.52					
89	0	2.09	10.90					
93	3	0.98			10.42			
97	4	-0.40	9.83					
100	0	2.09			10.90			
105	4	-0.05			9.98			
107	4	0.00	10.00					
109	4	-0.40	9.83					
110	0	-4.65	8.00					
113	4	-0.47			9.80			
114	3	-0.93		9.60				
116	4	0.00			10.00			
119	4	0.00			10.00			
121	4	0.23			10.10			
128	0	-3.21			8.62			
129	0	2.09	10.90					

Lab	Rating	Z-value	1	2	4	5	6	7
131	3	-0.84			9.64			
133	3	0.56			10.24			
134	4	-0.23			9.90			
138	4	-0.21			9.91			
140	3	-0.93	9.60					
141	4	-0.23			9.90			
142	3	-0.60			9.74			
145	3	-0.98			9.58			
146	2	-1.14			9.51			
149	3	0.70	10.30					
154	2	-1.42			9.39			
158	4	-0.49			9.79			
180	3	-0.65			9.72			
182	0	4.67			12.01			
190	4	-0.35						9.85
191	3	0.70					10.30	
198	0	2.33			11.00			
203	4	-0.33	9.86					
211	1	-1.74	9.25					
212	2	1.40			10.60			
215	3	0.70			10.30			
217	4	-0.47			9.80			
219	0	-2.56			8.90			
220	3	-0.58	9.75					
221	4	0.12	10.05					
224	4	0.26			10.11			
231	4	0.00	10.00					
234	3	-0.65			9.72			
236	1	1.86			10.80			
241	3	-0.93	9.60					
247	3	0.68			10.29			
252	2	1.40	10.60					

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Mn (Manganese) µg/L



1. AA: direct air
3. AA: graphite furnace
4. ICP
5. DCP
6. ICP/MS

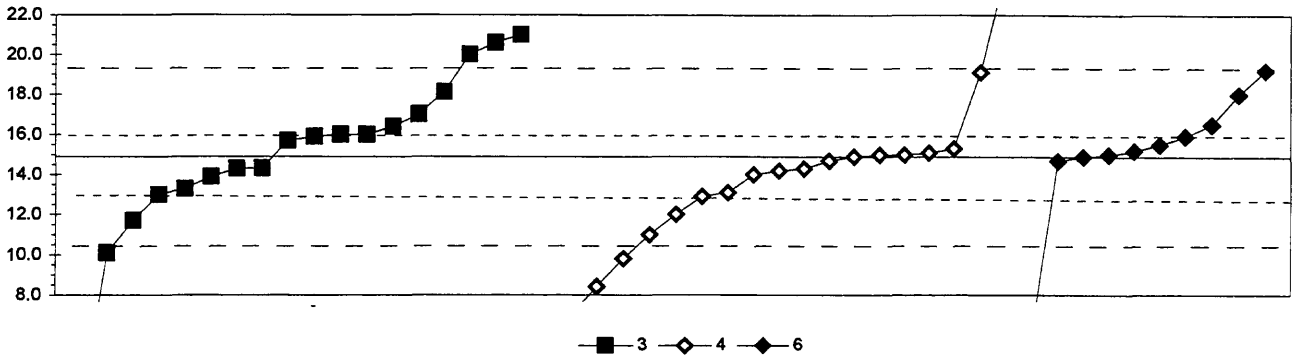
	1	3	4	5	6
N =	9	11	25	1	10
Minimum =	2.2	1.3	1.0	10.0	1.8
Maximum =	71.0	26.9	7.6		2.5
Median =	4.7	2.6	2.3		2.3
F-pseudosigma =	1.8	8.4	0.3		0.2

MPV = 2.4
F-pseudosigma = 1.0
N = 56
Hu = 3.4
HI = 2.0

Lab	Rating	Z-value	1	3	4	5	6
1	4	-0.20					2.2
3	3	-0.65			1.7		
4	NR				< 10		
11	4	-0.39			2.0		
13	NR				< 5		
15	NR				< 5		
16	4	-0.13					2.3
18	NR				< 15		
24	4	0.39			2.8		
25	NR				< 2		
26	4	-0.48		1.9			
30	3	-0.58					1.8
32	4	0.00					2.4
33	0	7.32				10.0	
36	4	0.14		2.6			
40	2	-1.16			1.2		
43	NR				< 2		
48	0	20.81		24.0			
50	0	23.22		26.5			
59	NR						< 10
61	4	-0.10			2.3		
63	NR				< 10		
68	4	0.10					2.5
70	NR				< 20		
75	4	0.04			2.4		
80	4	-0.13		2.3			
81	NR				< 1		
83	4	-0.39			2.0		
84	2	-1.02		1.3			
85	NR		< 10				
86	4	-0.14			2.3		
87	NR		< 5				
89	NR		< 5				
90	0	66.10	71.0				
91	NR				< 10		
96	NR		< 20				
100	NR		< 5				
105	4	-0.29					2.1
109	0	2.25	4.7				
113	4	-0.07			2.3		
114	0	2.51	5.0				
116	1	1.54			4.0		
118	NR			< 4			
119	4	-0.39			2.0		
121	4	-0.39			2.0		
128	4	-0.10					2.3
131	4	0.00			2.4		
134	4	0.16			2.6		
138	4	-0.03					2.4
140	4	0.00	2.4				
141	NR				< 10		
142	4	-0.39			2.0		
145	3	-0.67			1.7		
146	0	4.98			7.6		
149	0	2.51	5.0				
153	0	23.61		26.9			
154	4	-0.49			1.9		
158	4	-0.11			2.3		
180	4	0.00			2.4		
182	2	-1.35			1.0		
190	3	-0.75		1.6			
191	NR						<10
196	4	0.03					2.4
203	NR		<10				
211	1	1.54	4.0				
212	NR				< 10		
215	1	1.54			4.0		
219	3	-0.58			1.8		
220	NR		< 10				
221	4	0.27		2.7			
224	0	2.79			5.3		
227	4	-0.25		2.1			
231	4	-0.22	2.2				
234	4	0.23		2.6			
236	4	0.00			2.4		
241	4	0.19	2.6				
247	4	0.00					2.4
249	0	39.12	43.0				
252	NR		< 20				

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Mo (Molybdenum) µg/L



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

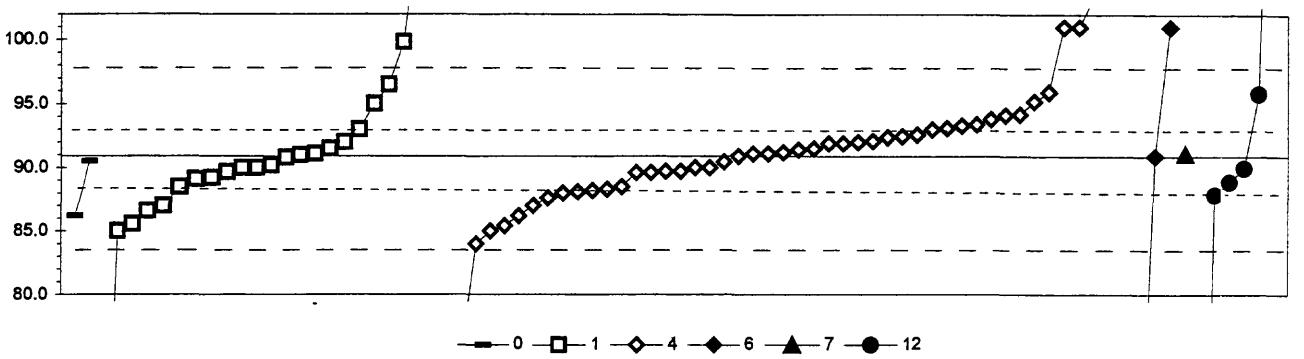
	3	4	6
N =	18	19	10
Minimum =	1.90	3.60	6.00
Maximum =	21.00	24.48	19.20
Median =	15.80	14.20	15.35
F-pseudosigma =	2.74	2.59	1.19

MPV = 14.9
F-pseudosigma = 2.2
N = 47
Hu = 16.0
Hl = 13.1

Lab	Rating	Z-value	3	4	6
1	4	-0.09			14.7
3	4	-0.09		14.7	
4	NR			< 500	
11	4	-0.41		14.0	
13	NR			< 50	
15	NR			< 20	
16	4	0.46			15.9
18	0			< 10	
24	4	0.18		15.3	
26	4	0.00		14.9	
30	2	1.42			18.0
32	4	0.05			15.0
39	4	-0.32		14.2	
40	1	1.92		19.1	
48	4	0.37	15.7		
50	0	-5.94	1.9		
61	0	-3.66		6.9	
63	4	0.50	16.0		
68	0	-4.07			6.0
70	NR			< 50	
75	4	-0.27		14.3	
80	3	0.69	16.4		
81	2	-1.33		12.0	
85	NR			< 30	
87	4	0.50	16.0		
97	4	-0.27	14.3		
100	NR			< 50	
105	3	0.73			16.5
108	0	2.61	20.6		
109	4	-0.27	14.3		
119	2	-1.46	11.7		
128	0	-2.97		8.4	
131	4	0.05		15.0	
134	4	0.05		15.0	
138	4	0.14			15.2
141	3	-0.91		12.9	
142	1	1.97			19.2
145	1	-1.78		11.0	
146	4	0.09		15.1	
149	3	-0.87	13.0		
180	3	-0.82		13.1	
182	0	4.38		24.5	
183	4	0.46	15.9		
196	4	0.00			14.9
211	0	-2.19	10.1		
212	NR			< 40	
215	0	2.79	21.0		
219	0	-2.33		9.8	
221	4	-0.46	13.9		
224	0	-5.17		3.6	
234	2	1.46	18.1		
236	NR			< 11	
241	3	0.96	17.0		
245	3	-0.73	13.3		
247	4	0.27			15.5
252	0	2.33	20.0		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Na (Sodium) mg/L



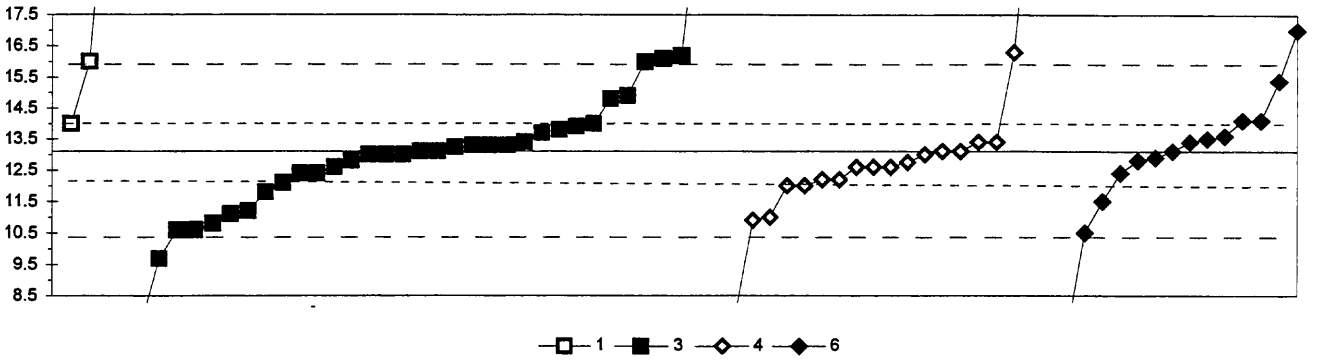
0. Other			6. ICP/MS					
1. AA: direct air			7. Ion chromatography					
4. ICP			12. Flame emission					
		N =	2	22	48	3	1	6
		Minimum =	86.2	57.0	31.8	61.0	91.1	38.5
		Maximum =	90.5	109.3	109.0	101.0		134.0
		Median =		90.1	91.2			
		F-pseudosigma =		2.6	3.7			

MPV = 90.9
F-pseudosigma = 3.6
N = 82
Hu = 93.0
HI = 88.2

Lab	Rating	Z-value	0	1	4	6	7	12
1	4	0.07		91.1				
3	0	-4.37			75.3			
4	3	0.63			93.1			
11	3	-0.72			88.3			
12	3	-0.80			88.0			
13	0	5.10			109.0			
15	2	1.22			95.2			
16	4	-0.11			90.5			
18	3	-0.66			88.5			
23	4	-0.01		90.8				
24	4	0.15			91.4			
25	0	2.85			101.0			
26	3	0.72			93.4			
32	0	2.85				101.0		
33	4	-0.10	90.5					
36	2	-1.31	86.2					
39	4	-0.24			90.0			
40	0	2.85			101.0			
43	4	-0.24			90.0			
48	4	0.07			91.1			
55	1	-1.64		85.0				
59	2	-1.08			87.0			
61	3	0.83			93.8			
63	1	-1.64			85.0			
68	0	-8.39				61.0		
69	3	-0.83						87.9
70	4	-0.32			89.7			
75	4	-0.24		90.0				
76	4	-0.49		89.1				
81	0	-5.97			69.6			
83	3	-0.74			88.2			
85	3	-0.66		88.5				
86	3	0.91			94.1			
87	4	-0.46		89.2				
89	4	-0.18		90.2				
90	3	-0.55						88.9
93	0	-14.71						38.5
97	4	0.18		91.5				
100	4	0.10			91.2			
105	4	0.30			91.9			
109	2	-1.49		85.6				
110	0	5.17		109.3				
113	1	-1.53			85.4			
114	0	-9.51		57.0				
116	4	0.49			92.6			
119	4	0.07			91.1			
121	4	0.01			90.9			
128	3	0.69			93.3			
129	4	-0.24		90.0				
131	4	0.44			92.4			
134	4	-0.34		89.7				
138	4	0.32			92.0			
140	4	0.04		91.0				
141	4	0.30			91.9			
142	4	0.46			92.5			
145	4	-0.32			89.7			
146	2	-1.31			86.2			
149	4	-0.24						90.0
154	0	-16.60			31.8			
158	4	-0.35			89.6			
180	3	-0.77			88.1			
182	0	3.57			103.6			
183	2	1.39						95.8
190	4	0.07					91.1	
191	4	0.01				90.9		
198	0	4.54			107.0			
203	2	-1.19		86.6				
211	1	1.59		96.5				
212	2	1.42			95.9			
215	3	0.60			93.0			
217	3	-0.91			87.6			
219	1	-1.93			84.0			
220	2	1.17		95.0				
221	2	-1.08		87.0				
224	4	0.35			92.1			
231	0	2.52		99.8				
234	4	0.18			91.5			
236	3	0.94			94.2			
241	4	0.32		92.0				
247	4	-0.35			89.6			
249	0	12.13						134.0
252	3	0.60		93.0				

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Ni (Nickel) µg/L



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

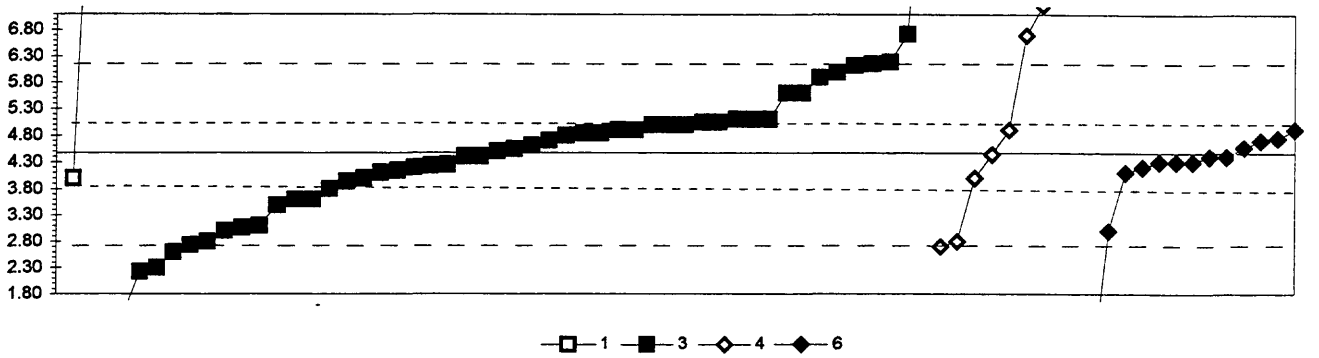
	1	3	4	6
N =	4	33	20	14
Minimum =	14.0	7.7	7.7	7.2
Maximum =	40.0	21.8	79.1	17.0
Median =		13.1	12.6	13.3
F-pseudosigma =		1.4	0.9	1.3

MPV = 13.1
F-pseudosigma = 1.4
N = 71
Hu = 14.0
Hl = 12.1

Lab	Rating	Z-value	1	3	4	6
1	3	0.64		14.0		
3	4	-0.36			12.6	
4	NR				< 200	
11	4	-0.07			13.0	
13	NR				< 20	
15	4	0.50		13.8		
16	1	1.61				15.4
18	NR				< 25	
23	NR			< 20		
24	4	0.21			13.4	
25	NR				< 49	
26	4	-0.50		12.4		
30	1	-1.85				10.5
32	4	0.21				13.4
36	0	6.18		21.8		
39	0	2.77				17.0
48	4	0.14		13.3		
50	0	2.20		16.2		
55	4	0.14		13.3		
59	4	0.28				13.5
60	3	-0.71		12.1		
61	3	-0.64			12.2	
63	4	-0.07		13.0		
68	0	-4.19				7.2
69	2	-1.35		11.2		
70	NR				< 50	
73	1	-1.56			10.9	
75	3	-0.92		11.8		
76	4	-0.50				12.4
80	4	-0.36		12.6		
81	3	-0.78			12.0	
83	NR				< 15	
85	0	.			< 10	
86	4	-0.36			12.6	
87	0	7.03	23.0			
89	1	-1.63		10.8		
90	0	2.13		16.1		
96	4	-0.21		12.8		
97	1	-1.78		10.6		
100	NR		< 15			
105	2	-1.14				11.5
108	0	2.06		16.0		
113	4	0.00			13.1	
114	0	2.06	16.0			
118	4	0.21		13.4		
119	2	1.21		14.8		
121	3	-0.78			12.0	
128	3	0.71				14.1
131	0	6.32			22.0	
133	4	-0.25			12.8	
134	4	0.00		13.1		
138	4	-0.14				12.9
140	3	0.64	14.0			
141	0	-3.85			7.7	
142	4	0.00				13.1
145	0	-3.69			7.9	
146	4	0.21			13.4	
149	4	-0.07		13.0		
153	2	1.28		14.9		
154	4	-0.36			12.6	
158	3	-0.64			12.2	
180	NR				< 13.3	
182	0	46.85			79.1	
183	4	0.14		13.3		
190	0	-2.43		9.7		
191	3	0.71				14.1
196	4	-0.21				12.8
203	NR		< 20			
211	4	0.00		13.1		
212	NR				< 40	
213	4	0.43		13.7		
215	4	0.10		13.2		
219	2	-1.49			11.0	
221	4	-0.50		12.4		
224	4	0.00			13.1	
231	2	-1.42		11.1		
234	3	0.57		13.9		
236	0	2.27			16.3	
241	4	-0.07		13.0		
245	0	-3.86		7.7		
247	4	0.36				13.6
249	1	-1.78		10.6		
252	NR		< 20			
253	0	19.10	40.0			

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Pb (Lead) µg/L



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

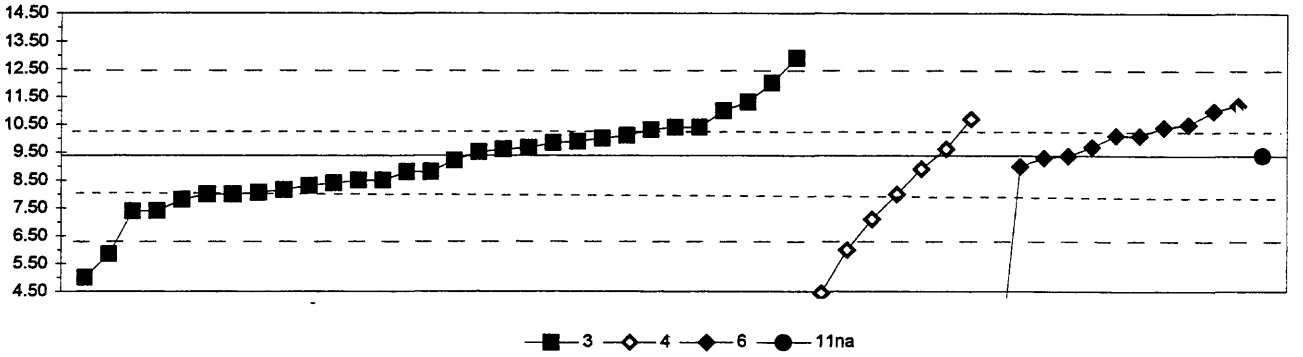
	1	3	4	6
N =	2	49	9	13
Minimum =	4.00	1.20	2.70	0.00
Maximum =	11.00	10.60	60.32	4.91
Median =		4.58	4.90	4.30
F-pseudosigma =		1.09	2.42	0.27

MPV = 4.47
F-pseudosigma = 0.87
N = 73
Hu = 5.05
Hl = 3.87

Lab	Rating	Z-value	1	3	4	6
1	4	-0.31				4.20
3	0	3.20			7.27	
4	NR				< 400	
13	NR			< 5		
15	1	-1.61		3.06		
16	4	0.50				4.91
18	3	-0.77		3.80		
23	NR			< 5		
24	0	-2.57		2.22		
25	NR				< 71	
26	3	0.61		5.00		
30	1	-1.68				3.00
32	4	-0.08				4.40
36	1	1.90		6.13		
39	4	-0.42				4.10
48	3	0.72		5.10		
50	3	0.61		5.00		
59	NR					< 5
60	4	-0.31		4.20		
61	1	-1.91			2.80	
63	1	-1.57		3.10		
68	4	0.26		4.70		
69	3	0.61		5.00		
70	3	0.66		5.05		
73	4	0.49			4.90	
75	4	-0.27		4.23		
80	4	-0.25		4.25		
81	3	-0.54			4.00	
84	4	0.08		4.54		
86	0	-2.48		2.30		
87	0	7.01		10.60		
89	NR			< 5		
90	1	-1.68		3.00		
96	4	-0.08		4.40		
97	4	0.42		4.84		
100	3	0.72		5.10		
105	4	0.11				4.57
108	1	1.63		5.90		
109	1	-1.91		2.80		
113	3	-0.61		3.94		
114	0	7.47	11.00			
118	4	-0.08		4.40		
119	4	0.38		4.80		
121	0	10.89			14.00	
128	4	-0.19				4.30
131	NR				< 50	
133	NR				< 20	
134	4	-0.03			4.44	
138	4	-0.19				4.30
140	3	-0.54	4.00			
141	3	0.72		5.10		
142	4	-0.19				4.30
144	0	-3.74		1.20		
145	NR				< 14.8	
146	0	2.55			6.70	
149	3	-0.54		4.00		
153	1	1.93		6.16		
154	2	-1.12		3.49		
158	4	0.49		4.90		
180	NR				< 27.2	
182	0	63.85			60.32	
183	1	1.75		6.00		
190	3	0.66		5.05		
191	4	-0.08				4.40
196	4	0.32				4.75
198	4	-0.38		4.14		
203	4	0.49		4.90		
211	3	-0.99		3.60		
212	0	-2.14		2.60		
213	4	0.16		4.61		
215	0	2.57		6.72		
217	0	-5.10				0.00
219	NR				< 10	
220	1	1.98		6.20		
221	4	0.03		4.50		
224	1	-2.02			2.70	
227	4	-0.42		4.10		
231	2	1.29		5.60		
234	4	0.42		4.84		
236	NR				< 20	
241	2	1.29		5.60		
245	1	-1.99		2.73		
247	4	0.26				4.70
249	0	-3.51		1.40		
252	3	-0.99		3.60		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Sb (Antimony) µg/L



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

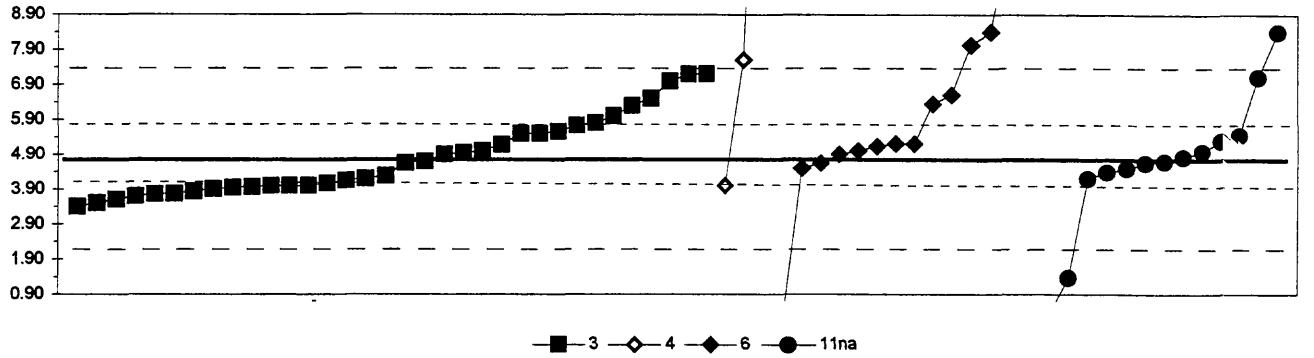
	3	4	6	11na
N =	30	7	11	1
Minimum =	5.00	4.43	0.01	9.40
Maximum =	12.90	10.70	11.20	
Median =	9.20	8.00	10.10	
F-pseudosigma =	1.45	2.01	0.83	

MPV = 9.39
F-pseudosigma = 1.56
N = 49
Hu = 10.20
Hl = 8.10

Lab	Rating	Z-value	3	4	6	11na
1	4	-0.38	8.80			
3	4	-0.31		8.90		
11	3	0.84		10.70		
13	2	-1.28	7.40			
15	4	0.29	9.83			
16	4	-0.01			9.37	
18	4	-0.38	8.80			
24	4	0.40	10.00			
25	NR			< 51		
26	NR			< 20		
30	2	1.04			11.00	
32	4	-0.05			9.30	
36	3	-0.63	8.40			
48	3	-0.70	8.30			
55	0	2.26	12.90			
58	4	0.14	9.60			
59	3	0.72			10.50	
60	3	-0.86	8.05			
61	2	-1.47		7.10		
63	4	-0.12	9.20			
68	0	-2.27	5.85			
69	3	-0.89	8.00			
70	3	0.65	10.40			
81	3	-0.89		8.00		
89	2	-1.29	7.38			
96	3	-1.02	7.80			
97	4	0.17	9.65			
100	4	0.46	10.10			
105	4	-0.25			9.00	
113	4	0.14		9.61		
119	4	0.01				9.40
128	4	0.46			10.10	
138	4	0.46			10.10	
141	2	1.23	11.30			
142	2	1.17			11.20	
146	NR			< 20		
149	3	-0.89	8.00			
153	1	1.68	12.00			
154	4	0.32	9.88			
180	NR			< 31.4		
182	0	-3.18		4.43		
183	4	0.07	9.50			
196	3	0.65			10.40	
198	3	-0.79	8.15			
211	2	1.04	11.00			
212	3	-0.57	8.50			
215	0	-2.82	5.00			
217	2	1.04			11.00	
219	0	-2.17		6.00		
234	3	0.65	10.40			
236	NR			< 10		
241	3	0.59	10.30			
247	4	0.20			9.70	
252	3	-0.57	8.50			

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Se (Selenium) µg/L



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

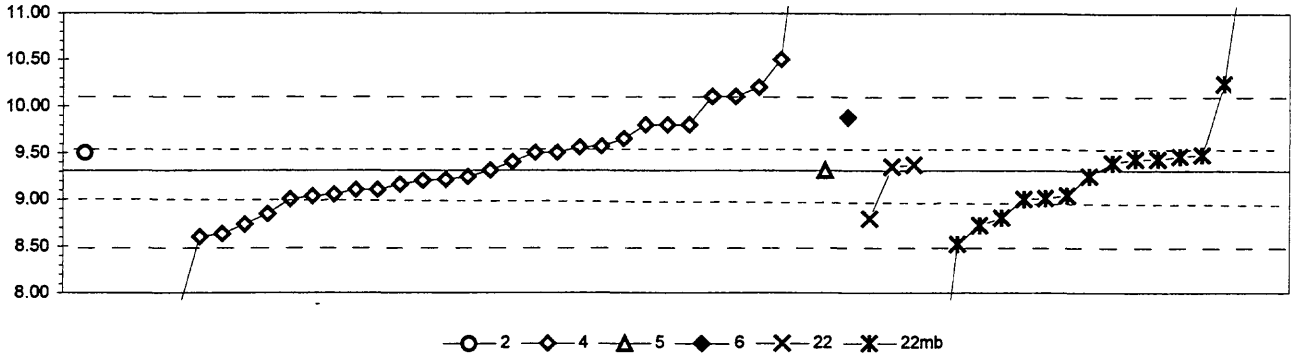
	3	4	6	11na
N =	34	3	13	14
Minimum =	3.40	4.00	0.01	0.06
Maximum =	7.21	22.70	11.40	8.40
Median =	4.28		5.20	4.68
F-pseudosigma =	0.00		0.00	0.00

MPV = 4.83
F-pseudosigma = 1.31
N = 64
Hu = 5.77
Hl = 4.00

Lab	Rating	Z-value	3	4	6	11na
1	3	-0.63	4.00			
3	1	1.82	7.21			
13	NR		< 5			
15	3	-0.71	3.90			
16	4	-0.15			4.64	
18	3	-0.94	3.60			
23	4	-0.34				4.39
24	3	-0.63	4.00			
25	NR			< 129		
26	4	-0.10				4.70
30	4	-0.25			4.50	
32	4	0.13			5.00	
34	4	0.00				4.83
36	3	-0.81	3.77			
39	4	0.36				5.30
48	2	-1.09	3.40			
50	0	2.73				8.40
55	4	0.13	5.00			
59	0	2.73			8.40	
60	4	0.09	4.95			
61	0	2.12		7.60		
63	NR		< 5			
68	3	-0.52	4.15			
70	NR		< 10			
75	4	-0.14				4.65
76	0	5.02			11.40	
80	3	0.69	5.73			
81	3	0.89	6.00			
85	4	-0.48				4.20
86	4	0.11				4.98
87	NR					< 2
89	0	-2.64				1.37
96	3	0.51	5.50			
97	3	-0.68	3.94			
100	3	0.51	5.50			
105	4	0.23			5.13	
108	0	-3.46				0.30
109	3	-0.76	3.83			
113	3	-0.66	3.96			
119	4	-0.25				4.50
128	2	1.35			6.60	
133	NR		< 5			
134	4	0.47				5.45
138	4	0.28			5.20	
141	4	-0.42	4.28			
142	0	2.45			8.03	
144	4	0.05	4.90			
146	NR			< 10		
149	3	-0.63	4.00			
153	4	-0.14	4.65			
154	4	-0.10	4.70			
180	NR			< 50.1		
182	1	1.74				7.11
183	1	1.81	7.20			
190	3	0.55	5.55			
191	4	0.28			5.20	
196	2	1.15			6.34	
203	NR		< 5			
211	3	0.74	5.80			
212	2	1.28	6.50			
215	1	1.66	7.00			
217	0	-3.69			0.01	
219	3	-0.63		4.00		
220	4	-0.48	4.20			
221	3	-0.82	3.76			
224	0	13.66		22.70		
227	0	-3.65				0.06
231	3	-0.59	4.06			
234	4	0.27	5.18			
236	NR			< 100		
241	3	-0.86	3.70			
247	4	0.05			4.90	
249	2	1.12	6.30			
252	2	-1.02	3.50			

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

SiO_2 (Silica) mg/L



2. AA: direct nitrous oxide
4. ICP
5. DCP
6. ICP/MS
22. Colorimetric
22mb. Color: molydate blue

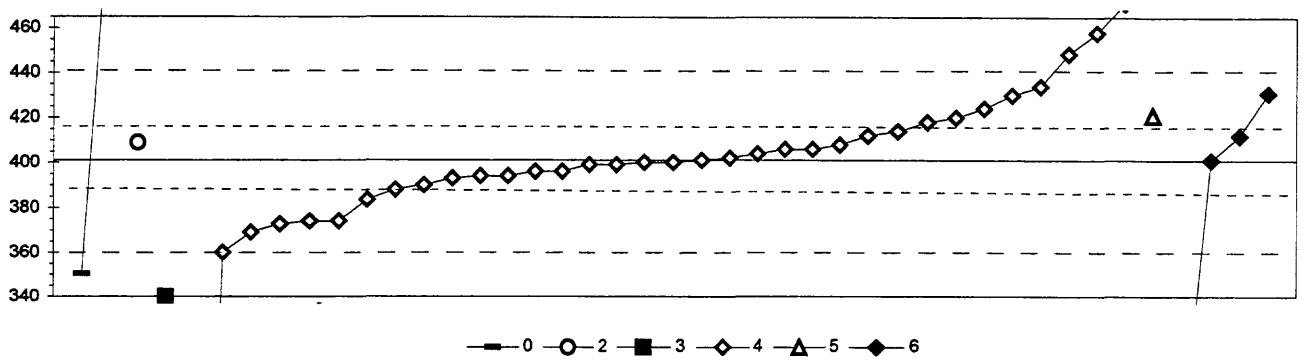
	2	4	5	6	22	22mb
N =	1	32	1	1	3	15
Minimum =	9.50	2.81	9.31	9.88	8.79	6.52
Maximum =		12.40			9.37	11.80
Median =		9.23				9.25
F-pseudosigma =		0.60				0.40

MPV = 9.31
F-pseudosigma = 0.42
N = 53
Hu = 9.56
HI = 9.00

Lab	Rating	Z-value	2	4	5	6	22	22mb
1	3	0.63		9.57				
3	1	1.90		10.10				
4	1	1.90		10.10				
11	0	2.87		10.50				
13	4	0.00		9.31				
15	0	6.00						11.80
24	3	0.82		9.65				
25	0	7.44		12.40				
26	4	-0.24		9.21				
32	2	1.37				9.88		
33	4	0.00			9.31			
39	4	0.22		9.40				
43	4	0.46		9.50				
55	3	-0.63		9.05				
61	0	-12.07		4.30				
63	3	-0.51		9.10				
70	2	-1.42						8.72
83	2	-1.40		8.73				
87	4	-0.14						9.25
89	3	-0.75						9.00
92	2	-1.23						8.80
97	4	0.14					9.37	
100	2	1.18		9.80				
104	4	0.37						9.46
105	2	-1.13		8.84				
107	1	-1.90						8.52
110	0	2.24						10.24
111	4	0.29						9.43
113	4	0.10					9.35	
116	3	-0.67		9.03				
118	4	0.29						9.43
119	4	-0.26		9.20				
121	4	0.46		9.50				
128	2	1.18		9.80				
131	0	-3.73		7.76				
134	4	-0.16		9.24				
138	3	-0.72						9.01
140	2	-1.25					8.79	
142	0	2.14		10.20				
145	3	0.60		9.56				
158	4	-0.36		9.16				
182	0	-9.18		5.50				
190	4	0.41						9.48
211	0	-6.72						6.52
212	2	1.18		9.80				
215	1	-1.64		8.63				
217	3	-0.51		9.10				
219	1	-1.71		8.60				
231	3	-0.65						9.04
234	3	-0.75		9.00				
236	0	-15.66		2.81				
241	4	0.46	9.50					
247	4	0.19						9.39

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Sr (Strontium) µg/L

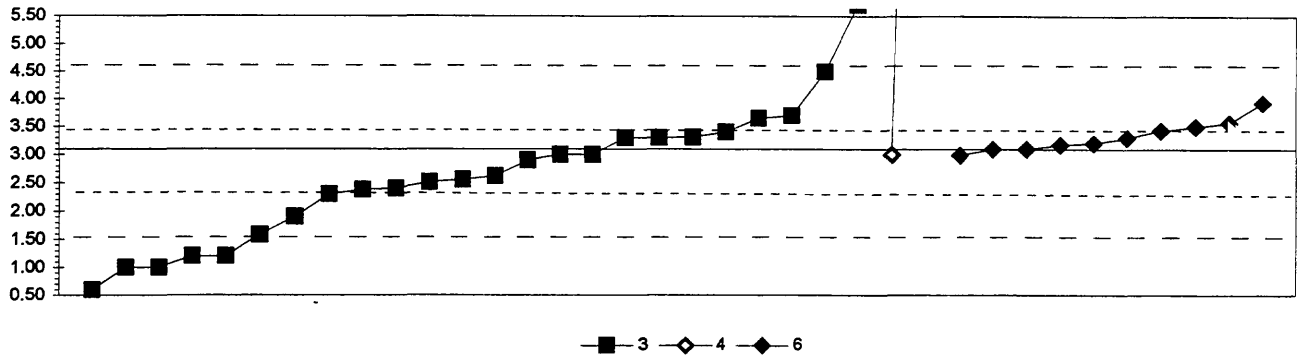


0. Other			4. ICP					
2. AA: direct nitrous oxide			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	2	1	1	34	1	4
		Minimum =	350	409	340	0	421	270
		Maximum =	522			471		431
		Median =				400		
		F-pseudosigma =				18		
Lab	Rating	Z-value	0	2	3	4	5	6
1	4	-0.10				399		
3	0	2.85				458		
4	3	0.95				420		
11	2	1.45				430		
16	2	-1.41				373		
18	4	-0.25				396		
24	4	-0.35				394		
25	0	3.50				471		
32	2	1.50						431
33	3	1.00					421	
39	4	0.00				401		
40	4	-0.25				396		
59	4	-0.05				400		
68	0	-6.55						270
70	4	0.35				408		
80	4	0.40		409				
81	3	0.85				418		
85	1	1.65				434		
86	4	0.15				404		
97	0	-3.05			340			
100	1	-1.60				369		
105	3	-0.65				388		
109	0	-2.53	350					
113	4	-0.10				399		
116	4	0.05				402		
121	3	0.55				412		
131	4	-0.35				394		
134	4	0.25				406		
138	4	-0.40				393		
142	4	-0.05				400		
145	3	-0.87				384		
154	2	-1.35				374		
182	0	2.37				448		
190	0	6.05	522					
191	3	0.55						412
196	4	0.00						401
211	1	-2.05				360		
212	3	-0.55				390		
217	4	-0.05				400		
219	2	-1.35				374		
234	4	0.25				406		
236	2	1.15				424		
247	3	0.65				414		

MPV =	401
F-pseudosigma =	20
N =	43
Hu =	416
Hl =	389

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

Tl (Thallium) µg/L



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

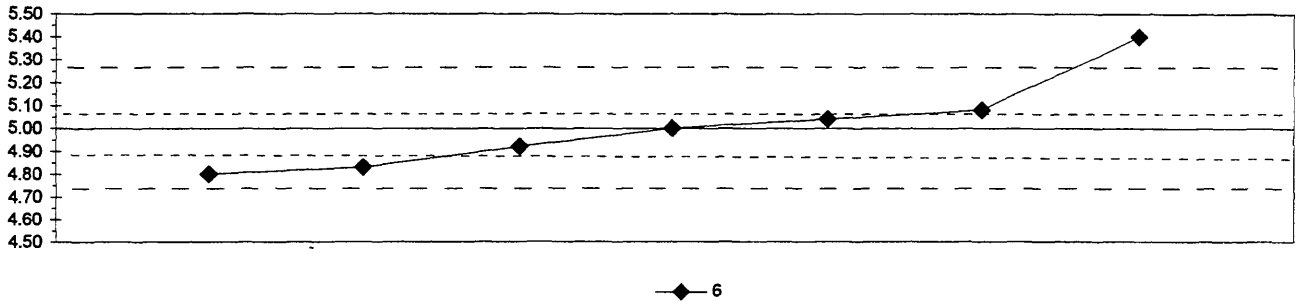
	3	4	6
N =	24	2	10
Minimum =	0.60	3.00	2.99
Maximum =	5.70	130.15	3.93
Median =	2.59		3.20
F-pseudosigma =	1.16		0.24

MPV = 3.10
F-pseudosigma = 0.76
N = 36
Hu = 3.42
Hl = 2.39

Lab	Rating	Z-value	3	4	6
1	3	0.62			3.57
3	3	-0.71	2.56		
13	NR		< 5		
15	1	-2.00	1.58		
16	4	0.43			3.43
18	4	0.26	3.30		
23	NR		< 5		
24	0	-2.76	1.00		
32	4	0.26			3.30
36	3	-0.95	2.38		
48	1	-1.58	1.90		
50	4	-0.13	3.00		
59	NR				< 5
60	3	0.79	3.70		
61	NR			< 2.1	
63	NR		< 5		
69	4	0.26	3.30		
70	4	-0.26	2.90		
81	4	-0.13		3.00	
89	NR		< 10		
97	3	-0.63	2.62		
100	2	-1.05	2.30		
113	3	-0.78	2.51		
119	0	-2.50	1.20		
128	4	0.13			3.20
134	4	0.28	3.31		
138	4	0.09			3.17
141	3	0.72	3.65		
142	4	-0.14			2.99
146	NR			< 10	
149	4	-0.13	3.00		
154	3	-0.92	2.40		
180	NR			< 32.1	
182	0	167.21		130.15	
183	1	1.84	4.50		
191	4	0.00			3.10
196	2	1.09			3.93
211	0	3.42	5.70		
212	NR			< 5000	
213	0	-3.29	0.60		
215	0	-2.76	1.00		
217	4	0.00			3.10
234	0	-2.50	1.20		
241	4	0.39	3.40		
247	3	0.53			3.50

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

U (Uranium) µg/L



6. ICP/MS

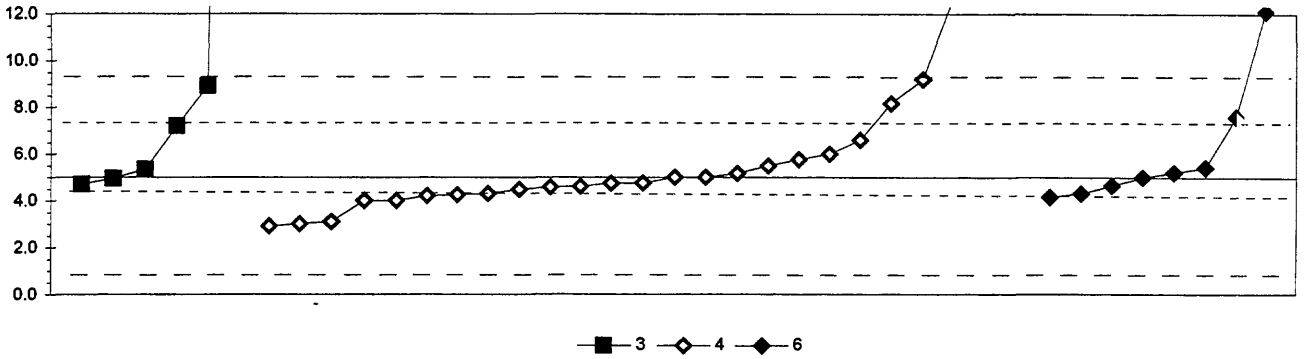
N =	7
Minimum =	4.80
Maximum =	5.40
Median =	5.00
F-pseudosigma =	0.14

Lab	Rating	Z-value	6
1	3	-0.95	4.80
16	4	0.19	5.04
30	4	0.00	5.00
32	3	-0.81	4.83
142	4	-0.38	4.92
196	4	0.38	5.08
217	1	1.90	5.40

MPV =	5.00
F-pseudosigma =	0.21
N =	7
Hu =	5.06
Hl =	4.88

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)–Continued*

V (Vanadium) µg/L



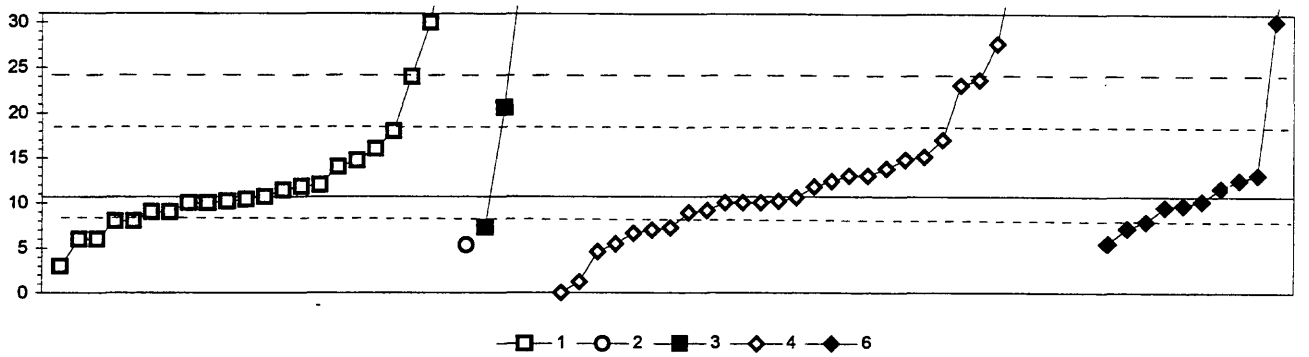
3. AA: graphite furnace				
4. ICP				
6. ICP/MS				
N =	6	25	8	
Minimum =	4.7	2.9	4.2	
Maximum =	61.0	31.4	12.1	
Median =		4.8	5.1	
F-pseudosigma =		1.3	1.5	

MPV =	5.0
F-pseudosigma =	2.1
N =	39
Hu =	7.2
HI =	4.3

Lab	Rating	Z-value	3	4	6
1	4	-0.33		4.3	
3	4	-0.11		4.8	
4	NR			< 50	
11	4	0.00		5.0	
13	NR			< 50	
15	NR			< 10	
16	0	3.31			12.1
18	4	0.00		5.0	
25	NR			< 4	
26	4	-0.35		4.3	
30	2	1.21			7.6
32	4	0.00			5.0
48	4	-0.14	4.7		
50	1	1.81	8.9		
61	3	-0.98		2.9	
63	4	0.47		6.0	
68	4	-0.40			4.2
70	NR			< 50	
75	4	0.08		5.2	
81	3	-0.93		3.0	
85	NR			< 20	
86	2	1.47		8.2	
89	4	0.16	5.3		
100	NR			< 10	
105	4	-0.33			4.3
121	4	-0.47		4.0	
128	4	0.23		5.5	
134	4	-0.12		4.7	
138	4	-0.24		4.5	
141	4	0.36		5.8	
142	4	-0.17			4.6
145	3	-0.88		3.1	
146	4	-0.19		4.6	
154	0	5.49		16.8	
158	4	-0.20		4.6	
180	3	0.74		6.6	
182	0	12.29		31.4	
196	4	0.20			5.4
211	NR			< 20	
212	4	-0.37		4.2	
219	4	-0.47		4.0	
224	0	3.67		12.9	
234	4	-0.02	5.0		
236	1	1.95		9.2	
241	2	1.02	7.2		
247	4	0.09			5.2
252	0	26.05	61.0		

Table 12. *Statistical summary of reported data for standard reference water sample T-139 (trace constituents)--Continued*

Zn (Zinc) µg/L



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

	1	2	3	4	6
N =	22	1	4	30	11
Minimum =	3.0	5.4	7.3	0.0	5.5
Maximum =	41.0		219.0	74.0	41.0
Median =	10.4			12.1	10.2
F-pseudosigma =	4.2			10.5	3.0

MPV = 11
F-pseudosigma = 7
N = 68
Hu = 18
Hl = 8

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.42					8
3	3	-0.78				5	
4	NR					< 250	
10	4	-0.40	8				
12	0	7.35				60	
13	NR					< 10	
15	4	-0.07				10	
16	4	0.36					13
18	NR					< 100	
23	NR		< 20				
24	4	-0.27				9	
25	NR					< 4	
26	3	-0.51				7	
30	3	-0.78					6
32	0	2.91					30
36	3	-0.80		5			
48	NR					< 5	
50	0	31.05			219		
59	4	0.27					13
60	4	-0.40	8				
61	3	-0.55				7	
63	NR					< 10	
68	0	4.52					41
70	NR					< 20	
73	0	4.31				40	
80	NR		< 4				
81	4	0.34				13	
83	4	-0.10				10	
85	4	0.10	11				
86	1	1.85				23	
87	2	1.09	18				
89	3	-0.51			7		
90	2	-1.15	3				
96	3	0.49	14				
97	2	1.48			21		
100	3	-0.70	6				
105	4	-0.18					10
108	1	1.98	24				
113	0	5.77				49	
114	3	-0.70	6				
116	NR					< 6	
119	NR	-1.59				0	
121	4	0.34				13	
128	0	4.02				38	
131	3	0.61				15	
133	4	0.16				12	
134	4	-0.10				10	
138	1	1.94				24	
140	3	0.60	15				
141	4	0.25				12	
142	4	-0.15					10
144	4	0.19	12				
145	4	-0.01				11	
146	3	0.66				15	
149	4	-0.25	9				
154	4	0.46				14	
158	4	-0.23				9	
180	NR					< 2.8	
182	3	-0.91				5	
190	4	0.16	12				
191	4	0.13					12
196	3	-0.53					7
203	4	-0.07	10				
211	3	0.79	16				
212	0	9.44				74	
213	4	-0.25	9				
215	4	-0.10				10	
219	3	0.94				17	
220	NR		< 10				
221	4	-0.10	10				
224	0	2.53				28	
227	4	-0.04	10				
231	4	0.00	11				
234	3	-0.61				7	
236	2	-1.42				1	
241	0	4.52	41				
247	4	-0.07					10
249	0	4.07			38		
252	4	-0.10	10				
253	0	2.88	30				

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

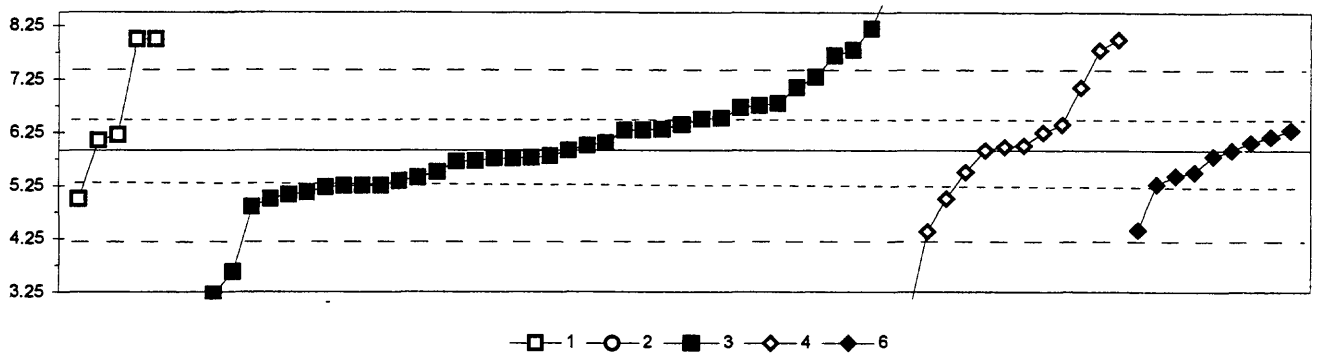
0. Other/Not reported		
1. AA: direct, air	=	atomic absorption: direct,air
2. AA: direct, N_2O	=	atomic absorption: direct,nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma/mass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

Abbreviations and symbols

N	=	number of samples
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
<	=	less than

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Ag (Silver) µg/L



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

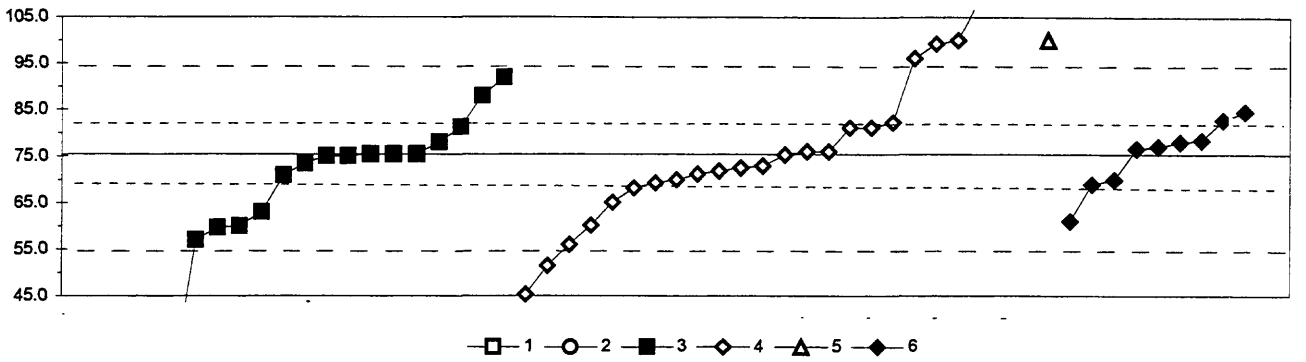
	1	2	3	4	6
N =	5	0	38	12	9
Minimum =	5.00	< 10	2.60	2.73	4.41
Maximum =	8.00		9.00	8.00	6.30
Median =			5.79	5.99	5.80
F-pseudosigma =			0.94	1.11	0.47

MPV = 5.91
F-pseudosigma = 0.88
N = 64
Hu = 6.45
Hl = 5.26

Lab	Rating	Z-value	1	2	3	4	6
1	4	0.10			6.00		
3	0	-3.60				2.73	
11	4	0.10				6.00	
12	0	2.60			8.20		
13	NR					< 10	
15	0	-3.07			3.20		
16	4	0.00					5.91
18	0	2.37				8.00	
23	4	-0.16			5.77		
24	3	-0.78			5.22		
25	NR					< 6	
26	3	-0.66			5.33		
32	4	-0.12					5.80
36	NR			< 10			
48	0	2.14			7.80		
58	2	1.35			7.10		
59	NR						< 10
60	3	-0.90			5.12		
61	3	0.56				6.40	
68	3	-0.75			5.25		
69	4	-0.17			5.76		
70	NR				< 10		
73	0	2.14				7.80	
75	3	-0.94			5.08		
76	3	-0.73					5.27
80	3	0.92			6.72		
81	2	-1.03				5.00	
85	4	0.22	6.10				
86	1	-1.73				4.38	
87	0	2.37	8.00				
89	3	0.69			6.52		
96	4	0.44			6.30		
97	4	0.00			5.91		
100	4	0.33	6.20				
105	3	-0.54					5.43
107	2	-1.03			5.00		
108	0	-3.75			2.60		
113	4	0.45			6.31		
114	2	-1.03	5.00				
118	3	0.67			6.50		
119	4	-0.12			5.80		
128	4	0.44					6.30
133	NR					< 6	
134	4	0.08				5.98	
138	4	0.29					6.17
140	0	2.37	8.00				
141	3	-0.75			5.25		
142	4	0.17					6.06
146	4	0.00				5.91	
149	3	-0.58			5.40		
154	3	0.96			6.76		
182	4	0.39				6.25	
190	4	0.43			6.29		
196	1	-1.70					4.41
198	4	0.16			6.05		
203	4	-0.23			5.71		
211	1	1.58			7.30		
212	2	1.01			6.80		
213	4	-0.46			5.50		
215	1	2.03			7.70		
219	4	-0.46				5.50	
221	0	3.50			9.00		
227	3	-0.76			5.24		
231	0	-2.60			3.62		
234	4	-0.17			5.76		
236	2	1.35				7.10	
241	2	-1.20			4.85		
247	4	-0.46					5.50
249	4	-0.24			5.70		
252	3	0.56			6.40		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Al (Aluminum) µg/L



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

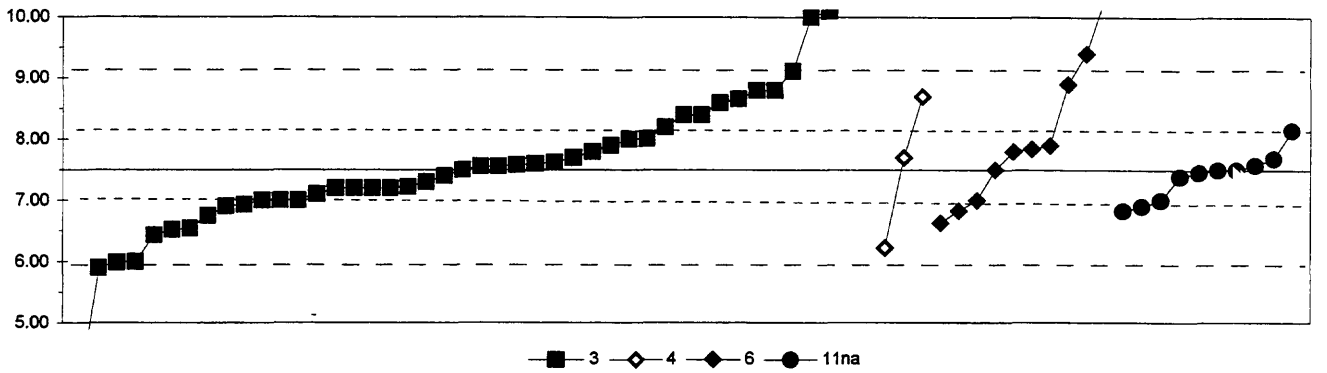
MPV = 75.4
F-pseudosigma = 9.8
N = 53
Hu = 82.2
Hl = 69.0

	1	2	3	4	5	6
N =	2	0	17	24	1	9
Minimum =	233.0	< 2000	11.0	45.3	100.0	61.0
Maximum =	302.0		92.0	193.0		84.5
Median =			75.0	74.1		77.0
F-pseudosigma =			11.4	15.1		6.2

Lab	Rating	Z-value	1	2	3	4	5	6
1	3	-0.65						69.0
3	3	0.69				82.2		
4	NR					< 2000		
11	4	0.06				76.0		
13	4	-0.04			75.0			
15	0	2.43				99.2		
16	2	-1.47						61.0
18	NR					< 100		
25	0					< 19		
26	4	0.00			75.4			
32	4	0.27						78.0
33	0	2.51					100.0	
48	4	-0.19			73.5			
59	0	2.51				100.0		
61	0					< 22.9		
68	3	0.93						84.5
69	4	-0.04			75.0			
70	NR					< 100		
73	1	-1.56				60.1		
75	2	-1.05				65.1		
81	0	-6.58			11.0			
85	NR					< 100		
86	3	0.58				81.1		
89	2	1.29			88.0			
97	3	0.59			81.2			
100	3	-0.74				68.2		
105	4	0.16						77.0
107	2	-1.27			63.0			
110	0	-5.00			26.4			
113	4	-0.01				75.3		
118	NR			< 2000				
119	1	-1.88			57.0			
128	4	0.12						76.6
131	NR					< 60		
134	4	0.06				76.0		
138	4	-0.37				71.8		
141	0	-2.45				51.4		
145	0	-3.08				45.3		
146	3	0.58				81.1		
149	1	-1.57			60.0			
154	4	-0.30				72.5		
158	4	-0.43				71.2		
182	0	2.11				96.1		
190	4	-0.46			70.9			
191	3	-0.55						70.0
196	3	0.75						82.7
198	1	-1.61			59.6			
203	4	0.27			78.0			
209	3	-0.63				69.3		
211	0	16.11	233.0					
212	0	7.62				150.0		
215	0	12.02				193.0		
219	3	-0.55				70.0		
221	4	0.00			75.4			
224	1	-1.98				56.0		
227	4	0.00			75.4			
234	4	-0.26				72.9		
236	0	3.44				109.1		
241	1	1.70			92.0			
247	4	0.31						78.4
249	0	23.16	302.0					
252	0	-7.18	< 5					

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

As (Arsenic) µg/L



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

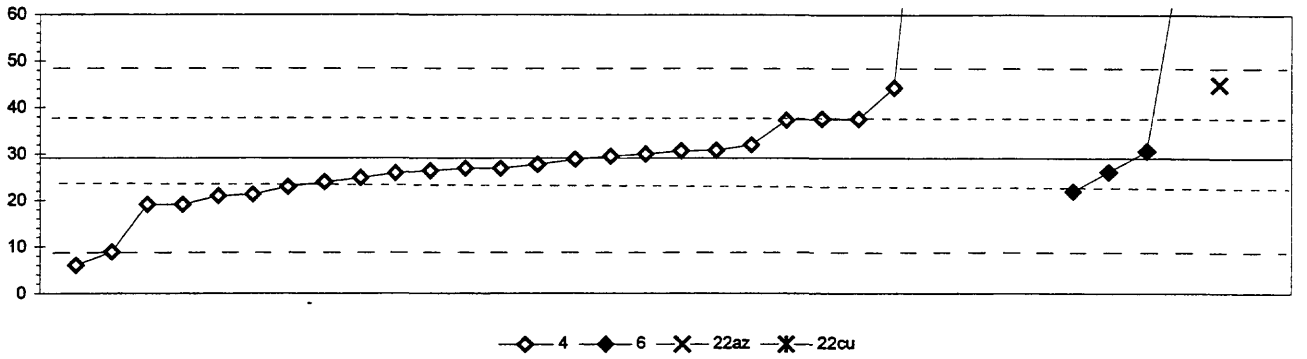
	3	4	6	11na
N =	44	3	10	10
Minimum =	3.95	6.22	6.63	6.83
Maximum =	12.40	8.70	10.30	8.15
Median =	7.53		7.82	7.48
F-pseudosigma =	0.96		1.41	0.43

MPV = 7.50
F-pseudosigma = 0.80
N = 67
Hu = 8.08
Hl = 7.00

Lab	Rating	Z-value	3	4	6	11na
1	4	0.00	7.50			
3	1	-1.60		6.22		
12	0	3.12	10.00			
13	1	1.62	8.80			
15	4	-0.35	7.22			
16	4	0.42			7.84	
18	3	-0.62	7.00			
23	1	-1.89	5.99			
24	0	3.25	10.10			
25	NR			< 50		
26	4	0.00				7.50
32	4	0.00			7.50	
34	4	-0.05				7.46
36	3	-0.94	6.75			
48	3	0.87	8.20			
58	0	6.12	12.40			
59	NR				< 10	
60	2	1.12	8.40			
61	4	0.25		7.70		
68	0	-4.43	3.95			
69	4	0.37	7.80			
70	NR		< 10			
75	4	0.24				7.69
76	0	2.37			9.40	
80	1	2.02	9.12			
81	3	-0.62	7.00			
85	3	-0.75				8.90
86	3	-0.84				6.83
87	4	0.00				7.50
89	4	0.10				7.58
96	2	1.12	8.40			
97	4	0.07	7.56			
100	4	0.50	7.90			
105	3	-0.84			6.83	
107	1	-1.87	6.00			
108	0	3.62	10.40			
109	1	-2.00	5.90			
113	2	1.45	8.66			
118	4	0.12	7.60			
119	3	-0.62				7.00
128	4	0.37			7.80	
133	1	1.62	8.80			
134	4	-0.14				7.39
138	4	0.50			7.90	
141	3	-0.71	6.93			
142	0	3.50			10.30	
144	2	-1.34	6.43			
145	NR			< 5.9		
146	NR			< 10		
149	3	0.62	8.00			
153	4	0.07	7.56			
154	2	-1.20	6.54			
180	NR			< 37.4		
182	3	0.81				8.15
183	2	1.37	8.60			
190	4	-0.37	7.20			
191	1	1.75			8.90	
196	2	-1.09			6.63	
203	4	-0.37	7.20			
211	4	-0.25	7.30			
212	3	-0.62	7.00			
213	4	-0.37	7.20			
215	4	0.25	7.70			
220	4	-0.37	7.20			
221	4	0.10	7.58			
224	2	1.50		8.70		
227	2	-1.22	6.52			
231	4	0.15	7.62			
234	3	0.64	8.01			
236	NR			< 35		
241	4	-0.50	7.10			
247	3	-0.62			7.00	
249	4	-0.12	7.40			
252	3	-0.75	6.90			

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

B (Boron) µg/L



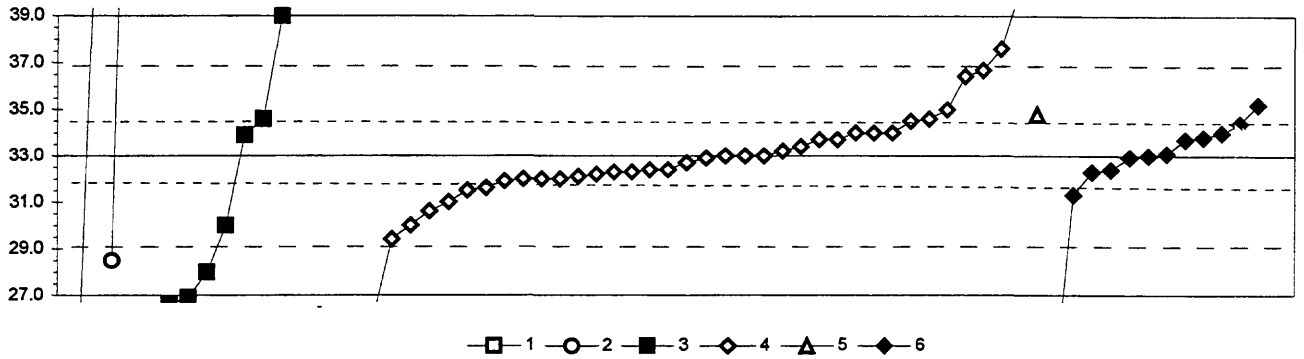
4. ICP			22cu. Color: curcumin			
6. ICP/MS						
22az. Color: azomethine						
		N =	28	4	1	1
		Minimum =	6	22	45	207
		Maximum =	1540	78		
		Median =	28			
		F-pseudosigma =	10			

MPV =	29
F-pseudosigma =	10
N =	34
Hu =	38
HI =	24

Lab	Rating	Z-value	4	6	22az	22cu
1	4	0.03	30			
3	3	0.83	38			
11	4	0.08	30			
15	2	1.50	44			
16	0	11.34	144			
18	NR		< 50			
24	4	-0.22	27			
25	NR		< 23			
26	3	-1.00	19			
32	3	-0.71		22		
48	0	-2.30	6			
60	0	17.64				207
61	3	-0.78	21			
68	0	4.79		78		
70	NR		< 50			
75	4	-0.33	26			
85	4	0.15	31			
100	NR		< 50			
116	3	-0.81	21			
119	3	-0.52	24			
121	3	-0.61	23			
128	1	-2.02	9			
129	1	1.57			45	
131	0	149.86	1540			
134	4	-0.03	29			
138	4	0.15		31		
141	3	0.80	37			
142	3	0.83	38			
145	3	-1.00	19			
158	4	-0.14	28			
180	4	0.16	31			
182	0	14.77	178			
211	NR		< 40			
212	4	-0.22	27			
215	0	9.20	122			
219	4	0.28	32			
234	4	-0.43	25			
236	4	-0.28	26			
247	4	-0.30		26		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Ba (Barium) µg/L



1. AA: direct air			4. ICP					
2. AA: direct nitrous oxide			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	2	2	12	36	1	12
		Minimum =	20.0	28.5	21.0	26.0	34.8	23.0
		Maximum =	41.0	63.5	53.0	40.0		35.2
		Median =			34.3	32.8		33.1
		F-pseudosigma =			9.8	1.5		1.2

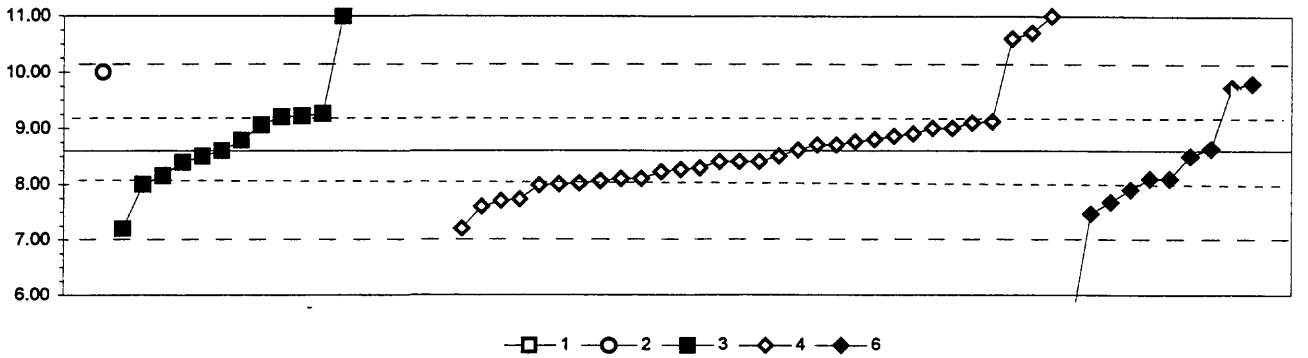
Lab	Rating	Z-value	1	2	3	4	5	6
1	4	-0.36						32.3
3	3	-0.73				31.6		
4	3	0.52				34.0		
11	3	0.52				34.0		
13	4	-0.42				32.2		
15	0	2.39				37.6		
16	4	-0.04						32.9
18	3	-0.52				32.0		
24	4	-0.31				32.4		
25	1	1.92				36.7		
26	4	-0.05				32.9		
32	4	-0.31						32.4
33	3	0.93					34.8	
36	0	15.82		63.5				
40	4	0.21				33.4		
48	0	4.83			42.3			
59	3	0.52						34.0
61	4	0.36				33.7		
68	0	-5.19						23.0
69	0	10.38			53.0			
70	NR					< 50		
75	2	-1.25				30.6		
76	4	0.42						33.8
80	NR			< 60				
81	0	-3.63				26.0		
85	3	0.83				34.6		
86	4	0.36				33.7		
87	0	-3.16			26.9			
89	NR				< 50			
90	0	-3.32			26.6			
96	NR			< 100				
97	0	-2.59			28.0			
100	3	-0.52				32.0		
105	3	-0.88						31.3
107	0	3.11			39.0			
113	4	-0.31				32.4		
116	2	-1.04				31.0		
119	4	0.00				33.0		
121	4	0.00				33.0		
128	3	0.73						34.4
131	3	0.52				34.0		
133	3	-0.78				31.5		
134	4	-0.16				32.7		
138	4	-0.36				32.3		
140	0	4.15	41.0					
141	4	0.10				33.2		
142	2	1.14						35.2
145	3	-0.52				32.0		
146	4	-0.36				32.3		
149	1	-1.56			30.0			

MPV =	33.0
F-pseudosigma =	1.9
N =	65
Hu =	34.5
Hl =	31.9

Lab	Rating	Z-value	1	2	3	4	5	6
153	0	3.94			40.6			
154	1	-1.87				29.4		
158	4	0.00				33.0		
180	3	-0.57				31.9		
182	1	1.78				36.4		
183	0	-6.23			21.0			
191	4	0.00						33.0
196	4	0.36						33.7
203	0	4.00			40.7			
211	0	-6.75	20.0					
212	2	1.04				35.0		
215	0	3.63				40.0		
219	1	-1.56				30.0		
224	0	-14.53				< 5		
227	4	0.47			33.9			
231	0	-2.33		28.5				
234	4	-0.47				32.1		
236	3	0.78				34.5		
241	3	0.83			34.6			
247	4	0.05						33.1

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Be (Berlyium) µg/L



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

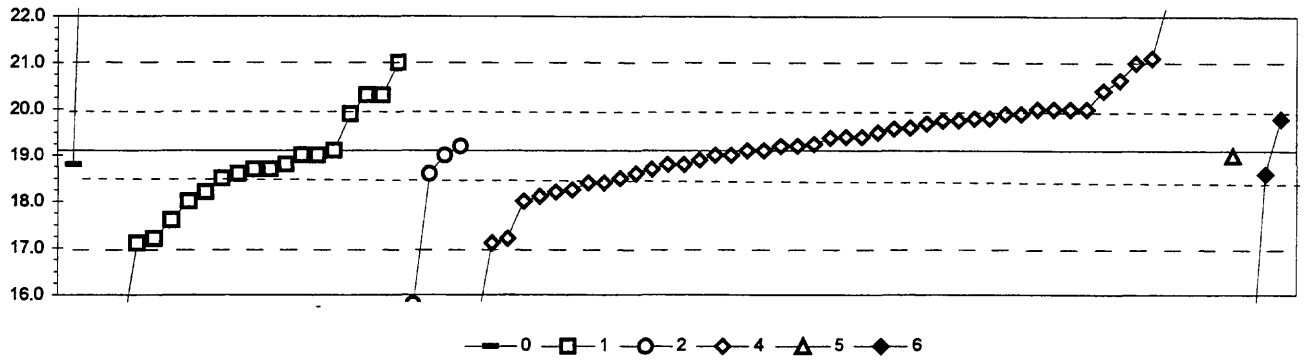
	1	2	3	4	6
N =	0	1	17	31	10
Minimum =	< 10	10.00	7.20	7.20	5.35
Maximum =			16.00	11.00	9.80
Median =			9.20	8.40	8.10
F-pseudosigma =			2.08	0.59	0.70

MPV = 8.60
F-pseudosigma = 0.79
N = 59
Hu = 9.16
Hl = 8.10

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.25				8.40	
3	3	0.64				9.10	
4	2	-1.27				7.60	
11	3	0.51				9.00	
13	4	-0.39				8.29	
15	3	0.66				9.12	
16	2	-1.44					7.47
18	3	0.51				9.00	
24	0	5.60			13.00		
25	4	-0.25				8.40	
26	3	-0.76				8.00	
32	4	-0.13					8.50
36	0	9.42			16.00		
40	4	0.13				8.70	
48	3	0.76			9.20		
59	1	1.53					9.80
61	4	-0.25				8.40	
68	0	-4.14					5.35
69	3	-0.57			8.15		
70	4	-0.48				8.22	
75	3	-0.74				8.02	
76	4	0.04					8.63
81	0	3.05				11.00	
85	4	-0.13				8.50	
86	2	-1.11				7.73	
89	4	-0.13			8.50		
96	NR		< 10				
97	3	0.59			9.06		
100	4	0.13				8.70	
105	3	-0.64					8.10
113	4	0.01				8.61	
114	1	1.78		10.00			
119	4	-0.27			8.39		
128	3	-0.89					7.90
133	4	0.33				8.86	
134	4	0.20				8.76	
138	4	-0.43				8.26	
141	4	0.23			8.78		
142	2	1.44					9.73
145	3	-0.64				8.10	
146	4	0.25				8.80	
149	3	-0.76			8.00		
154	4	0.00			8.60		
158	3	-0.69				8.06	
180	2	-1.15				7.70	
182	0	2.67				10.70	
183	0	3.44			11.30		
196	2	-1.17					7.68
198	3	0.79			9.22		
211	0	4.07			11.80		
212	4	0.38				8.90	
213	3	0.84			9.26		
215	0	6.87			14.00		
219	1	-1.78				7.20	
224	0	2.55				10.60	
234	3	-0.79				7.98	
236	3	-0.64				8.10	
241	1	-1.78			7.20		
247	3	-0.64					8.10
252	0	3.05			11.00		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Ca (Calcium) mg/L



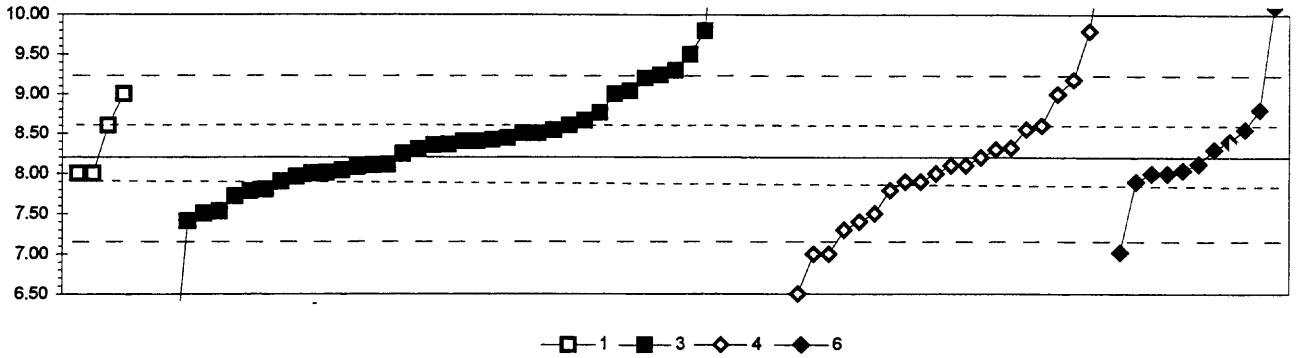
0. Other				4. ICP				
1. AA: direct air				5. DCP				
2. AA: direct nitrous oxide				6. ICP/MS				
		N =	2	19	4	47	1	3
		Minimum =	18.8	13.0	15.8	15.2	19.0	13.5
		Maximum =	32.0	21.0	19.2	23.6		19.8
		Median =		18.7		19.4		
		F-pseudosigma =		0.9		0.9		

MPV = 19.1
F-pseudosigma = 1.0
N = 76
Hu = 19.9
Hl = 18.5

Lab	Rating	Z-value	0	1	2	4	5	6
1	4	-0.05		19.0				
3	3	-0.95				18.1		
4	3	0.55				19.6		
11	3	0.95				20.0		
12	4	-0.05				19.0		
13	0	4.05				23.1		
15	1	1.95				21.0		
16	3	0.64				19.7		
18	4	-0.35				18.7		
23	4	-0.45			18.6			
24	4	-0.25				18.8		
25	0	3.35				22.4		
26	4	0.35				19.4		
32	3	0.75						19.8
33	4	-0.05					19.0	
36	4	-0.05			19.0			
43	3	0.95				20.0		
48	4	0.35				19.4		
58	0	-4.25		14.8				
59	4	-0.05				19.0		
61	3	0.95				20.0		
68	0	-5.55						13.5
69	4	-0.45		18.6				
70	3	0.75				19.8		
75	4	0.05		19.1				
81	1	-1.95				17.1		
84	4	-0.35		18.7				
85	3	0.85		19.9				
86	4	0.15				19.2		
87	4	0.15			19.2			
89	2	1.25		20.3				
97	4	-0.25		18.8				
100	1	1.58				20.6		
105	3	0.95				20.0		
107	1	-1.85		17.2				
108	0	12.94	32.0					
109	3	-0.55		18.5				
110	0	-6.02		13.0				
113	4	0.05				19.1		
114	0	-3.25			15.8			
116	3	-0.85				18.2		
119	4	-0.15				18.9		
121	4	-0.45				18.6		
128	2	1.35				20.4		
129	2	-1.05		18.0				
131	0	-3.85				15.2		
133	3	-0.80				18.3		
134	3	0.85				19.9		
138	4	0.15				19.2		
140	4	-0.35		18.7				
141	4	0.05				19.1		
142	4	0.33				19.4		
145	4	-0.25				18.8		
146	3	-0.65				18.4		
149	4	-0.05		19.0				
154	1	-1.85				17.2		
158	4	0.45				19.5		
180	3	-0.65				18.4		
182	0	4.58				23.6		
190	4	-0.25	18.8					
191	4	-0.45						18.6
198	1	2.05				21.1		
203	2	1.25		20.3				
209	3	0.53				19.6		
211	0	3.65				22.7		
212	3	0.85				19.9		
215	3	0.75				19.8		
219	2	-1.05				18.0		
220	1	-1.95		17.1				
221	1	1.95		21.0				
224	3	0.70				19.8		
231	3	-0.85		18.2				
234	3	-0.55				18.5		
236	3	0.71				19.8		
241	2	-1.45		17.6				
247	4	0.19				19.2		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Cd (Cadmium) µg/L



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

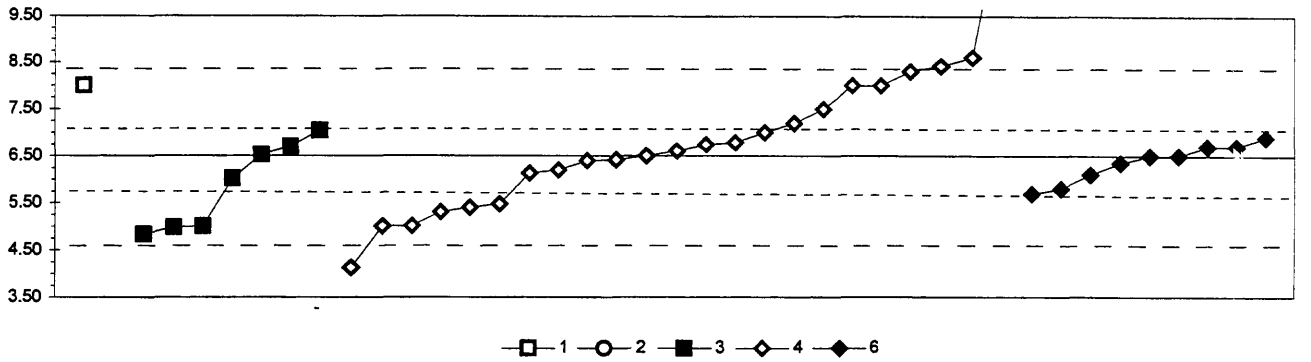
	1	3	4	6
N =	4	41	23	11
Minimum =	8.00	2.80	4.82	7.02
Maximum =	9.00	443.00	11.00	10.10
Median =		8.36	8.00	8.12
F-pseudosigma =		0.59	0.80	0.35

MPV = 8.20
F-pseudosigma = 0.52
N = 79
Hu = 8.60
Hl = 7.90

Lab	Rating	Z-value	1	3	4	6
1	4	-0.39				8.00
3	3	0.67			8.55	
4	NR				< 100	
10	3	0.58		8.50		
11	4	-0.19			8.10	
12	4	-0.19		8.10		
13	0	3.06			9.79	
15	4	0.46		8.44		
16	4	-0.31				8.04
18	1	1.54			9.00	
23	3	0.89		8.66		
24	1	-1.73			7.30	
25	0	-4.24			< 6	
26	4	-0.39		8.00		
32	4	0.39				8.40
36	1	-1.52		7.41		
48	1	1.93		9.20		
58	0	-10.02		3.00		
59	4	-0.39				8.00
60	4	0.42		8.42		
61	4	0.19			8.30	
68	0	7.32		12.00		
69	3	0.66		8.54		
70	0	-10.41		2.80		
73	4	-0.19			8.10	
75	1	1.89			9.18	
80	0	-6.17	< 5			
81	0	-2.31			7.00	
85	4	-0.39	8.00			
86	3	-0.79			7.79	
87	1	1.54	9.00			
89	4	-0.37		8.01		
90	3	-0.58		7.90		
96	3	0.77		8.60		
97	4	-0.23		8.08		
100	NR		< 20			
105	3	-0.58				7.90
108	0	-5.90		5.14		
113	3	0.77			8.60	
114	4	-0.39	8.00			
118	4	0.39		8.40		
119	3	-0.77		7.80		
121	0	-2.31			7.00	
128	0	3.66				10.10
131	3	-0.58			7.90	
133	0	-6.51			4.82	
134	4	0.23			8.32	
138	4	-0.15				8.12
140	3	0.77	8.60			
141	4	0.31		8.36		
142	3	0.67				8.55
145	3	-0.58			7.90	
146	4	0.00			8.20	
149	1	1.54		9.00		
153	2	1.08		8.76		
154	1	2.00		9.24		
158	4	0.19		8.30		
180	4	-0.39			8.00	
182	0	-5.92			5.13	
183	0	2.12		9.30		
190	0	3.08		9.80		
191	4	0.19				8.30
196	0	-2.27				7.02
198	4	-0.31		8.04		
203	1	1.62		9.04		
211	0	2.51		9.50		
212	0	5.40			11.00	
213	4	0.39		8.40		
215	3	0.58		8.50		
219	2	-1.35			7.50	
220	3	-0.93		7.72		
221	4	0.08		8.24		
224	0	-3.28			6.50	
227	2	-1.29		7.53		
231	4	0.29		8.35		
234	4	-0.46		7.96		
236	1	-1.54			7.40	
241	2	-1.35		7.50		
245	3	-0.81		7.78		
247	2	1.16				8.80
249	0	61.28		40.00		
252	4	-0.17		8.11		
253	0	837.92		443.00		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Co (Cobalt) µg/L



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

	1	2	3	4	6
N =	1	0	7	23	9
Minimum =	8.00	< 10	4.83	4.12	5.69
Maximum =			7.04	12.10	6.90
Median =			6.02	6.60	6.50
F-pseudosigma =			1.20	1.45	0.44

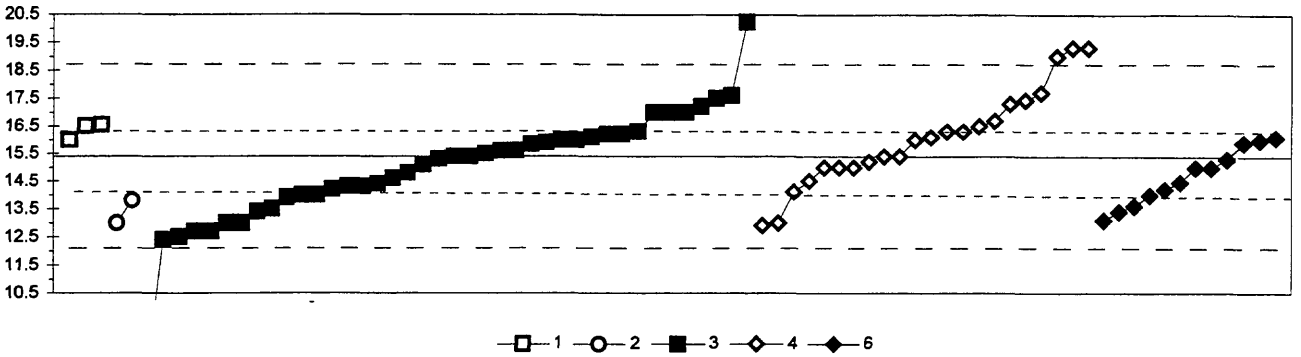
MPV = 6.50
F-pseudosigma = 0.95
N = 40
Hu = 7.02
Hl = 5.75

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.42					6.10
3	4	-0.39				6.13	
4	NR					< 100	
11	3	0.53				7.00	
13	NR					< 50	
15	NR					< 20	
16	4	0.21					6.70
18	NR					< 10	
24	4	0.00				6.50	
25	NR					< 12	
26	4	-0.11				6.40	
32	4	0.21					6.70
36	NR			< 10			
48	NR					< 50	
61	4	-0.32				6.20	
68	NR						< 5
70	NR					< 50	
75	1	2.03				8.42	
80	1	-1.61			4.98		
81	1	-1.59				5.00	
85	NR					< 10	
86	4	0.25				6.74	
89	1	-1.77			4.83		
97	3	-0.51			6.02		
100	NR		< 15				
105	3	-0.74					5.80
121	1	1.59				8.00	
128	3	0.74				7.20	
131	0	2.22				8.60	
134	4	0.30				6.78	
138	4	-0.16					6.35
141	0	-2.52				4.12	
142	3	-0.86					5.69
145	2	-1.27				5.30	
146	4	-0.10				6.41	
154	2	1.06				7.50	
158	1	-1.58				5.01	
160	4	0.11				6.60	
182	2	-1.09				5.47	
191	4	0.42					6.90
196	4	0.00					6.50
211	1	1.59	8.00				
212	1	1.59				8.00	
213	4	0.03			6.53		
215	1	-1.59			5.00		
219	2	-1.16				5.40	
221	4	0.21			6.70		
224	1	1.90				8.30	
234	3	0.57			7.04		
236	0	5.93				12.10	

Lab	Rating	Z-value	1	2	3	4	6
247	4	0.00					6.50

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Cr (Chromium) µg/L



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

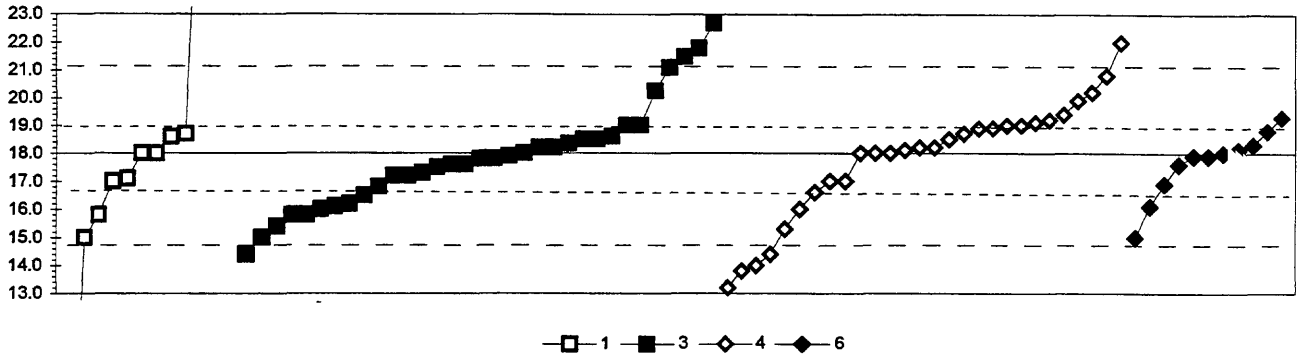
	1	2	3	4	6
N =	3	2	40	22	12
Minimum =	16.0	13.0	7.9	12.9	13.1
Maximum =	16.6	13.8	20.2	19.3	16.1
Median =			15.4	16.1	14.7
F-pseudosigma =			1.6	1.7	1.3

MPV = 15.4
F-pseudosigma = 1.6
N = 79
Hu = 16.3
Hl = 14.1

Lab	Rating	Z-value	1	2	3	4	6
1	3	-0.86					14.0
3	3	-0.55				14.5	
4	NR					< 100	
10	4	0.31			15.9		
11	4	-0.25				15.0	
13	2	1.41				17.7	
15	1	-1.84			12.4		
16	3	-0.58					14.5
18	4	0.37				16.0	
23	3	-0.68			14.3		
24	2	1.29			17.5		
25	0	-4.55				< 8	
26	4	0.43			16.1		
32	4	-0.25					15.0
36	4	0.00			15.4		
48	2	1.11			17.2		
58	4	0.49			16.2		
59	4	0.37					16.0
60	1	-1.66			12.7		
61	3	0.68				16.5	
68	0	-6.39					< 5
69	4	-0.18			15.1		
70	3	0.55				16.3	
73	4	0.43				16.1	
75	4	0.00				15.4	
76	4	0.31					15.9
80	1	-1.66			12.7		
81	4	-0.25				15.0	
85	0	2.40				19.3	
86	1	-1.54				12.9	
87	3	-0.98		13.8			
89	0	-6.39			< 5		
90	2	-1.47			13.0		
96	3	0.98			17.0		
97	4	-0.37			14.8		
100	3	0.68	16.5				
105	2	-1.23					13.4
107	3	-0.86			14.0		
108	2	-1.47			13.0		
113	4	-0.25				15.0	
114	2	-1.47		13.0			
118	4	0.06			15.5		
119	1	-1.78			12.5		
121	0	2.21				19.0	
128	2	-1.11					13.6
131	2	1.17				17.3	
133	3	-0.79				14.1	
134	4	0.27			15.8		
138	2	-1.41					13.1
140	4	0.37	16.0				
141	4	0.00				15.4	
142	3	-0.74					14.2
145	4	-0.12				15.2	
146	3	0.80				16.7	
149	4	0.37			16.0		
153	0	-4.60			7.9		
154	4	0.37			16.0		
158	3	-0.92			13.9		
180	3	0.55				16.3	
182	2	1.25				17.4	
183	4	0.00			15.4		
190	3	0.98			17.0		
191	4	0.43					16.1
196	4	-0.25					15.0
198	4	0.12			15.6		
203	3	0.55			16.3		
211	2	-1.17			13.5		
212	3	-0.86			14.0		
213	3	-0.61			14.4		
215	0	2.97			20.2		
219	2	-1.47				13.0	
220	3	-0.68			14.3		
221	4	-0.06			15.3		
227	3	-0.74			14.2		
231	4	0.49			16.2		
234	2	1.35			17.6		
236	0	2.40				19.3	
241	4	-0.49			14.6		
245	2	-1.23			13.4		
247	4	-0.06					15.3
249	4	0.12			15.6		
252	3	0.98			17.0		
253	3	0.71	16.6				

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Cu (Copper) µg/L



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

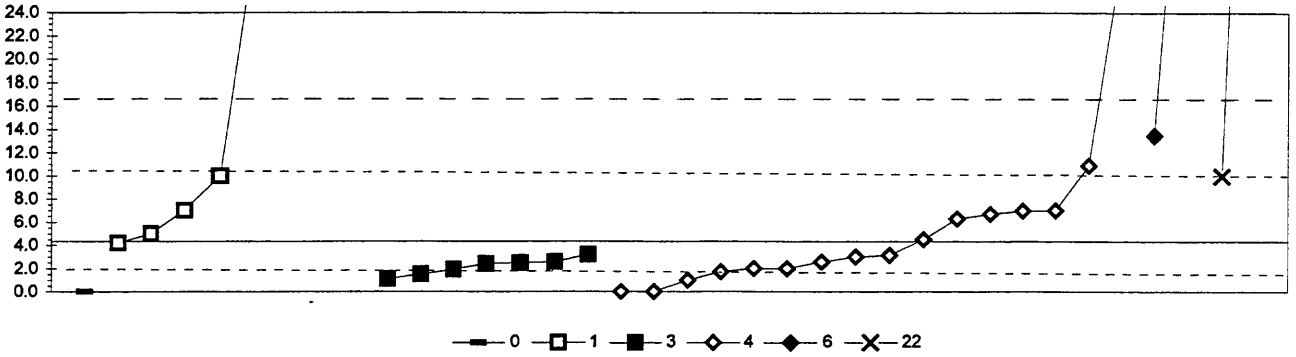
	1	3	4	6
N =	12	33	28	11
Minimum =	5.0	14.4	13.2	15.0
Maximum =	240.0	22.7	22.0	19.3
Median =	18.0	17.8	18.2	17.9
F-pseudosigma =	5.9	1.5	0.0	0.7

MPV = 18.0
F-pseudosigma = 1.6
N = 84
Hu = 18.9
Hl = 16.7

Lab	Rating	Z-value	1	3	4	6
1	4	0.31		18.5		
3	0	-2.59			13.8	
4	NR				< 30	
10	3	0.62		19.0		
11	3	0.62			19.0	
12	3	0.62		19.0		
13	NR				< 20	
15	0	2.46			22.0	
16	4	0.08				18.1
18	3	0.62			19.0	
23	4	-0.06		17.9		
24	4	0.43			18.7	
25	4	0.00			18.0	
26	4	0.12			18.2	
32	4	0.49				18.8
36	1	1.91		21.1		
40	3	0.68			19.1	
48	4	-0.12		17.8		
58	1	-1.60		15.4		
59	4	0.00				18.0
60	4	0.22		18.4		
61	3	0.74			19.2	
68	1	-1.85				15.0
69	3	-0.74		16.8		
70	4	0.06			18.1	
73	4	0.12			18.2	
75	4	0.31			18.5	
80	3	-0.92		16.5		
81	3	-0.62			17.0	
84	2	-1.17		16.1		
85	2	-1.36	15.8			
86	3	0.86			19.4	
87	3	-0.62	17.0			
89	3	-0.55	17.1			
90	0	136.75	240.0			
96	2	-1.36		15.8		
97	2	-1.36		15.8		
100	4	0.00	18.0			
105	2	-1.17				16.1
107	2	-1.23		16.0		
108	4	0.00	18.0			
113	1	1.72			20.8	
114	1	-1.85	15.0			
118	4	-0.25		17.6		
119	4	0.00			18.0	
121	0	-2.46			14.0	
128	4	-0.25				17.6
129	0	7.39	30.0			
133	3	0.54			18.9	
134	4	0.00			18.0	
138	4	-0.06				17.9
140	4	0.37	18.6			
141	0	2.90		22.7		
142	3	-0.68				16.9
144	4	0.37		18.6		
145	0	-2.22			14.4	
146	3	-0.86			16.6	
149	0	-8.01	5.0			
153	0	-2.22		14.4		
154	4	-0.25		17.6		
158	1	-1.66			15.3	
180	3	0.55			18.9	
182	0	-2.96			13.2	
183	4	-0.12		17.8		
190	0	2.16		21.5		
191	4	0.18				18.3
196	3	0.80				19.3
203	4	0.43	18.7			
211	1	-1.85		15.0		
212	3	-0.62			17.0	
213	4	0.12		18.2		
215	2	1.39		20.3		
219	2	-1.23			16.0	
220	4	-0.31		17.5		
221	4	-0.43		17.3		
224	2	1.17			19.9	
227	4	-0.49		17.2		
231	4	0.12		18.2		
234	4	-0.49		17.2		
236	2	1.36			20.2	
241	4	0.31		18.5		
245	2	-1.11		16.2		
247	4	-0.06				17.9
249	0	2.34		21.8		
252	4	0.00		18.0		
253	0	7.39	30.0			

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Fe (Iron) µg/L



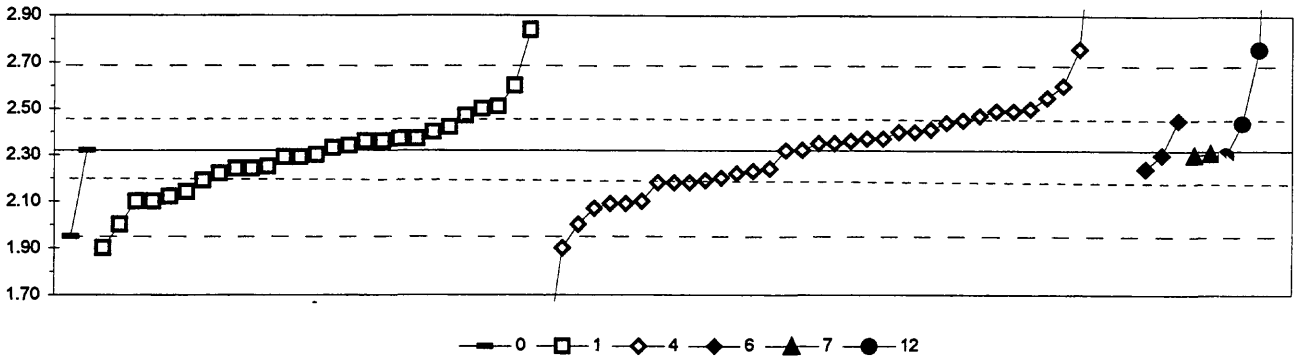
0. Other		4. ICP					
1. AA: direct air		6. ICP/MS					
3. AA: graphite furnace		22. Colorimetric					
N =	1	8	7	16	2	2
Minimum =	0.0	4.2	1.1	0.0	13.5	10.0
Maximum =		560.0	3.2	29.0	50.0	80.0
Median =		20.6	2.4	3.1		
F-pseudosigma =		26.7	0.6	3.7		

MPV =	4.3
F-pseudosigma =	6.3
N =	36
Hu =	10.5
Hl =	2.0

Lab	Rating	Z-value	0	1	3	4	6	22
1	NR					< 3		
3	NR					< 30		
4	NR					< 60		
13	NR					< 10		
15	NR					< 30		
16	NR	-0.69				0.0		
18	NR					< 50		
21	3	0.90						10.0
23	NR			< 500				
24	3	-0.52			1.1			
25	NR					< 6		
26	NR					< 3		
32	0	7.29					50.0	
33	NR	-0.69	0.0					
35	NR							<10
36	NR		< 100					
40	4	-0.42				1.7		
43	NR					< 8		
48	NR					< 30		
59	NR					< 10		
61	2	1.05				10.9		
68	2	1.46					13.5	
70	NR					< 20		
73	3	-0.53				1.0		
75	4	0.42				7.0		
80	4	-0.45			1.5			
81	NR					< 3		
85	NR					< 10		
87	NR			< 40				
89	NR				< 20			
90	0	88.71		560.0				
91	NR					< 20		
96	NR			< 50				
100	NR			< 15				
105	NR					< 10		
107	NR			< 10				
109	4	0.42		7.0				
113	4	0.03				4.5		
114	3	0.90		10.0				
118	NR			< 100				
119	NR	-0.69				0.0		
121	4	-0.21				3.0		
128	NR					< 10		
129	0	12.08						80.0
131	4	0.31				6.3		
133	4	-0.19				3.1		
134	4	-0.37				2.0		
138	4	-0.39			1.9			
140	4	0.11		5.0				
141	NR					< 50		
142	4	0.42				7.0		
145	4	-0.37				2.0		
146	NR					< 25		
149	NR			< 10				
180	NR					< 3.6		
182	4	-0.28				2.6		
190	0	4.29		31.2				
191	NR						< 10	
203	NR			< 10				
211	0	6.49		45.0				
212	0	3.94				29.0		
213	4	-0.30			2.5			
215	NR					< 10		
220	NR			< 20				
221	4	-0.31			2.4			
224	4	0.38				6.7		
231	4	-0.03		4.2				
234	4	-0.28			2.6			
236	NR					< 10		
241	4	-0.18			3.2			
247	NR					< 5		
249	0	5.53		39.0				

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

K (Potassium) mg/L



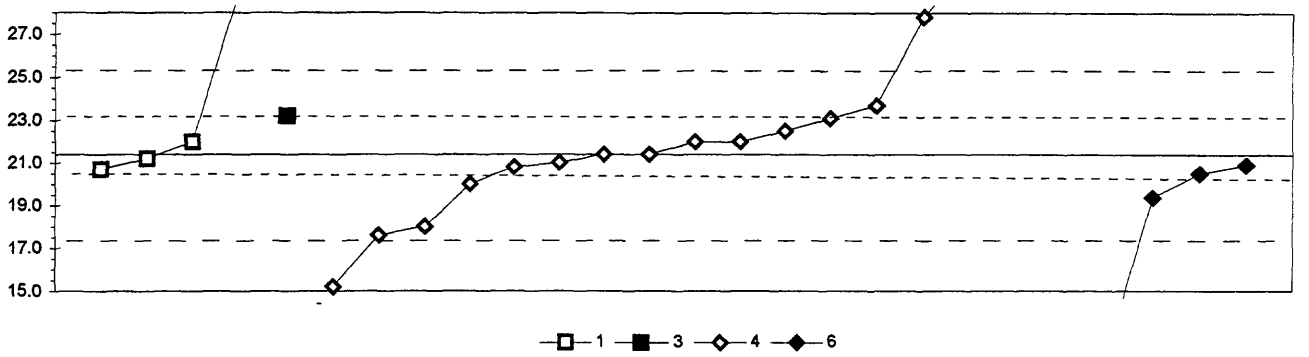
0. Other		6. ICP/MS					
1. AA: direct air		7. Ion chromatography					
4. ICP		12. Flame emission					
N =	2	27	37	3	2	4
Minimum =	1.95	1.90	1.39	2.24	2.30	2.30
Maximum =	2.32	2.84	5.30	2.45	2.31	4.51
Median =		2.30	2.35			
F-pseudosigma =		0.13	0.21			

MPV = 2.32
F-pseudosigma = 0.19
N = 75
Hu = 2.45
HI = 2.20

Lab	Rating	Z-value	0	1	4	6	7	12
1	4	0.10		2.34				
3	4	-0.38		2.25				
11	4	0.26			2.37			
12	1	-1.73			2.00			
13	0	2.37			2.76			
15	3	0.80			2.47			
16	2	1.02		2.51				
18	1	1.51			2.60			
23	4	0.21		2.36				
24	3	-0.76			2.18			
25	4	-0.49			2.23			
26	4	-0.11					2.30	
32	4	-0.11				2.30		
33	4	-0.01	2.32					
36	1	-2.00	1.95					
40	0	16.07			5.30			
43	4	0.43			2.40			
48	3	-0.76			2.18			
58	0	-2.27		1.90				
59	3	-0.65			2.20			
61	0	-2.27			1.90			
68	3	0.70				2.45		
69	3	0.64						2.44
70	4	-0.44			2.24			
75	3	-0.54		2.22				
76	4	0.26		2.37				
81	2	-1.35			2.07			
85	2	-1.08		2.12				
86	4	0.21			2.36			
87	4	-0.17		2.29				
89	4	0.43		2.40				
97	4	-0.44		2.24				
100	3	0.64			2.44			
105	4	0.48			2.41			
107	4	-0.44		2.24				
108	0	11.81						4.51
109	4	0.05		2.33				
110	3	0.53		2.42				
113	2	-1.25			2.09			
114	3	0.97		2.50				
119	4	0.43			2.40			
121	4	-0.11		2.30				
128	0	-5.02			1.39			
129	2	-1.19		2.10				
131	4	-0.01			2.32			
134	3	-0.71		2.19				
138	4	0.26			2.37			
140	1	-1.73		2.00				
141	4	0.16			2.35			
142	3	-0.76			2.18			
145	2	-1.25			2.09			
146	2	1.24			2.55			
149	4	-0.11						2.30
154	0	5.98			3.43			
158	3	0.70			2.45			
180	3	0.91			2.49			
182	4	0.16			2.35			
190	4	-0.06					2.31	
191	4	-0.44				2.24		
198	3	0.80		2.47				
203	4	0.26		2.37				
209	0	2.80		2.84				
211	3	-0.98		2.14				
212	3	0.97			2.50			
215	0	10.14			4.20			
219	2	-1.19			2.10			
220	1	1.51		2.60				
221	4	0.21		2.36				
224	3	-0.54			2.22			
231	4	-0.17		2.29				
234	3	-0.71			2.19			
236	3	0.91			2.49			
241	2	-1.19		2.10				
247	4	0.00			2.32			
249	0	2.37						2.76

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Li (Lithium) µg/L



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

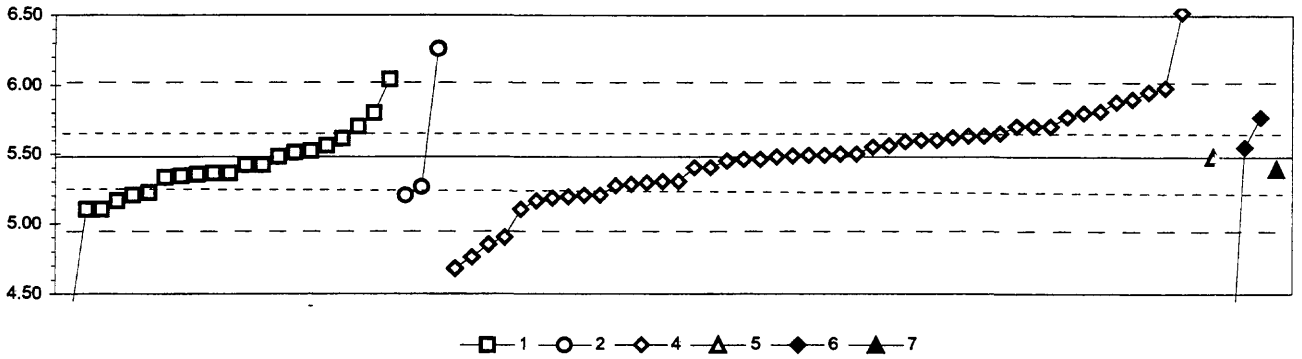
	1	3	4	6
N =	4	1	17	4
Minimum =	20.7	23.2	15.2	12.0
Maximum =	29.0		89.0	20.9
Median =			22.0	
F-pseudosigma =			2.2	

MPV = 21.4
F-pseudosigma = 2.0
N = 26
Hu = 23.2
Hl = 20.5

Lab	Rating	Z-value	1	3	4	6
1	4	0.30			22.0	
3	0	4.45			30.3	
4	NR				< 100	
16	2	-1.02				19.4
24	0	3.20			27.8	
25	0	33.77			89.0	
26	4	0.00			21.4	
32	4	-0.25				20.9
40	4	0.00			21.4	
68	0	-4.70				12.0
69	3	0.90		23.2		
75	3	0.55			22.5	
85	4	-0.10	21.2			
100	0	3.80	29.0			
105	3	-0.70			20.0	
109	4	-0.35	20.7			
131	2	1.15			23.7	
134	4	-0.20			21.0	
142	3	0.85			23.1	
145	1	-1.90			17.6	
149	4	0.30	22.0			
182	0	27.67			76.8	
212	4	0.30			22.0	
219	1	-1.70			18.0	
234	4	-0.30			20.8	
236	0	-3.10			15.2	
247	4	-0.45				20.5

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Mg (Magnesium) mg/L



1. AA: direct air
2. AA: direct nitrous oxide
4. ICP
5. DCP
6. ICP/MS
7. Ion chromatography

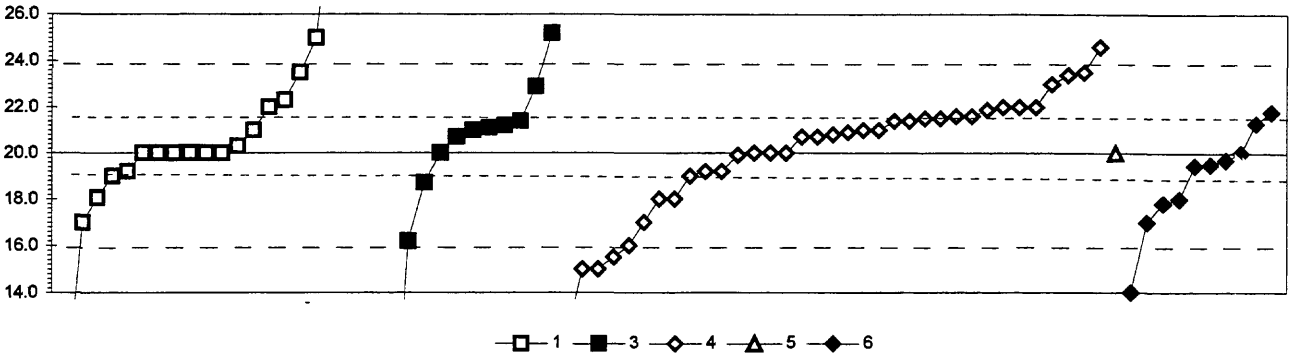
	1	2	4	5	6	7
N =	21	3	47	1	3	1
Minimum =	4.33	5.20	4.68	5.48	3.55	5.39
Maximum =	6.04	6.26	7.09		5.77	
Median =	5.36		5.49			
F-pseudosigma =	0.18		0.29			

MPV = 5.48
F-pseudosigma = 0.27
N = 76
Hu = 5.63
HI = 5.27

Lab	Rating	Z-value	1	2	4	5	6	7
1	3	-0.81		5.26				
3	0	-2.66			4.76			
4	3	0.81			5.70			
11	4	0.04			5.49			
12	4	0.44			5.60			
13	3	0.63			5.65			
15	2	1.22			5.81			
16	3	0.55			5.63			
18	3	-0.67			5.30			
23	4	0.30	5.56					
24	3	-0.70			5.29			
25	2	1.48			5.68			
26	3	0.55			5.63			
32	2	1.07					5.77	
33	4	0.00				5.48		
36	0	2.88		6.26				
40	2	1.18			5.80			
43	4	0.44			5.60			
48	2	-1.03			5.20			
59	3	-0.67			5.30			
61	3	0.81			5.70			
68	0	-7.13					3.55	
69	3	-0.96	5.22					
70	4	-0.07			5.46			
75	3	-0.55	5.33					
76	4	0.48	5.61					
81	0	-2.33			4.85			
85	4	0.00	5.48					
86	4	0.41			5.59			
87	2	-1.18	5.16					
89	0	2.07	6.04					
97	4	-0.22	5.42					
100	0	3.84			6.52			
105	4	0.26			5.55			
107	4	-0.22	5.42					
109	4	-0.44	5.36					
110	0	-4.25	4.33					
113	4	-0.30			5.40			
114	2	-1.03		5.20				
116	4	0.07			5.50			
119	4	-0.30			5.40			
121	4	-0.11			5.45			
128	0	-2.96			4.68			
129	2	-1.40	5.10					
131	2	-1.18			5.16			
133	4	0.02			5.49			
134	4	0.07			5.50			
138	4	0.00			5.48			
140	2	-1.40	5.10					
141	4	0.04			5.49			
142	2	-1.03			5.20			
145	2	-1.07			5.19			
146	2	-1.11			5.18			
149	3	0.81	5.70					
154	2	-1.40			5.10			
158	4	-0.07			5.46			
180	3	-0.78			5.27			
182	0	5.95			7.09			
190	4	-0.33						5.39
191	4	0.26					5.55	
198	1	1.74			5.95			
203	4	-0.48	5.35					
209	4	0.30			5.56			
211	3	-0.52	5.34					
212	1	1.55			5.90			
215	3	0.81			5.70			
219	0	-2.14			4.90			
220	4	0.15	5.52					
221	4	0.11	5.51					
224	1	1.85			5.98			
231	4	-0.44	5.36					
234	3	-0.74			5.28			
236	2	1.07			5.77			
241	2	-1.03	5.20					
247	3	0.52			5.62			
252	2	1.18	5.80					

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Mn (Mangenese) µg/L



1. AA: direct air
3. AA: graphite furnace
4. ICP
5. DCP
6. ICP/MS

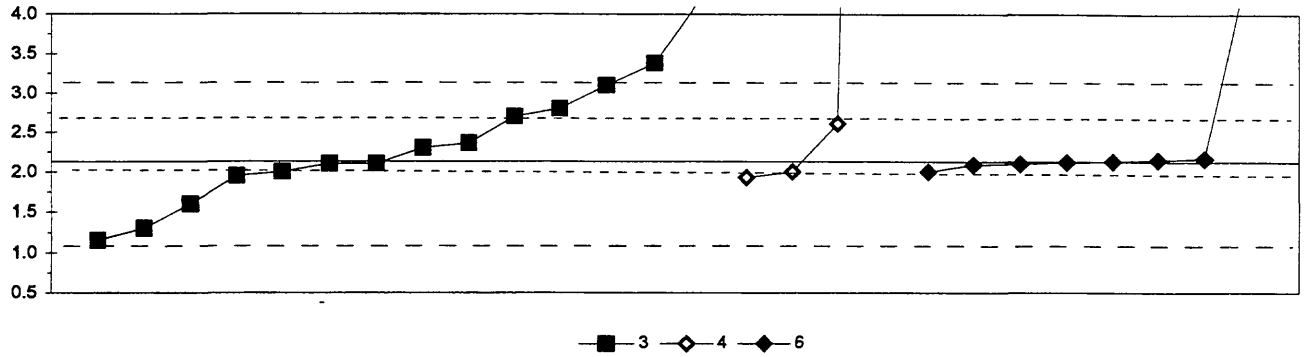
	1	3	4	5	6
N =	20	12	35	1	10
Minimum =	10.0	3.3	12.0	20.0	14.0
Maximum =	313.0	25.2	24.6		21.8
Median =	20.0	20.9	20.8		19.5
F-pseudosigma =	2.5	2.9	1.9		1.6

MPV = 20.0
F-pseudosigma = 1.9
N = 78
Hu = 21.6
Hl = 19.0

Lab	Rating	Z-value	1	3	4	5	6
1	4	-0.16					19.7
3	1	-1.56			17.0		
4	3	0.52			21.0		
11	2	-1.04			18.0		
13	4	-0.05			19.9		
15	3	0.73			21.4		
16	4	-0.29					19.5
18	3	0.52			21.0		
24	4	-0.42			19.2		
25	0	-9.34			< 2		
26	4	0.00			20.0		
32	3	0.67					21.3
33	4	0.00				20.0	
36	3	0.62		21.2			
40	3	0.78			21.5		
43	0	-2.08			16.0		
48	0	-8.66		3.3			
59	1	-1.56					17.0
61	4	-0.42			19.2		
68	0	-3.11					14.0
69	4	0.00	20.0				
70	NR				< 20		
75	4	0.36			20.7		
80	3	0.73		21.4			
81	0	-2.59			15.0		
84	3	-0.67		18.7			
85	4	-0.42	19.2				
86	3	0.83			21.6		
87	4	0.00	20.0				
89	2	1.19	22.3				
90	0	152.02	313.0				
91	4	0.42			20.8		
96	4	0.00	20.0				
97	0	2.70		25.2			
100	1	1.82	23.5				
105	2	-1.04					18.0
107	0	-5.19	10.0				
109	2	-1.01	18.1				
113	3	0.73			21.4		
114	0	2.59	25.0				
116	1	1.56			23.0		
118	4	0.36		20.7			
119	2	1.04			22.0		
121	3	-0.52			19.0		
128	2	-1.14					17.8
129	4	0.00	20.0				
131	2	1.04			22.0		
134	3	0.83			21.6		
138	4	0.47			20.9		
140	4	0.00	20.0				
141	2	-1.04			18.0		
142	4	0.00			20.0		
145	2	1.04			22.0		
146	1	1.76			23.4		
149	2	1.04	22.0				
153	0	-7.83		4.9			
154	0	2.39			24.6		
158	0	-2.33			15.5		
180	4	0.36			20.7		
182	3	0.98			21.9		
183	1	-1.97		16.2			
190	3	0.52		21.0			
191	4	0.00					20.0
196	3	0.93					21.8
203	4	0.00	20.0				
211	3	-0.52	19.0				
212	0	-2.59			15.0		
215	4	0.00			20.0		
219	0	-4.15			12.0		
220	3	0.52	21.0				
221	2	1.50		22.9			
224	1	1.82			23.5		
227	4	0.00		20.0			
231	4	0.16	20.3				
234	3	0.57		21.1			
236	3	0.78			21.5		
241	1	-1.56	17.0				
247	4	-0.26					19.5
249	0	20.75	60.0				
252	0	5.71	31.0				

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Mo (Molybdenum) µg/L



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

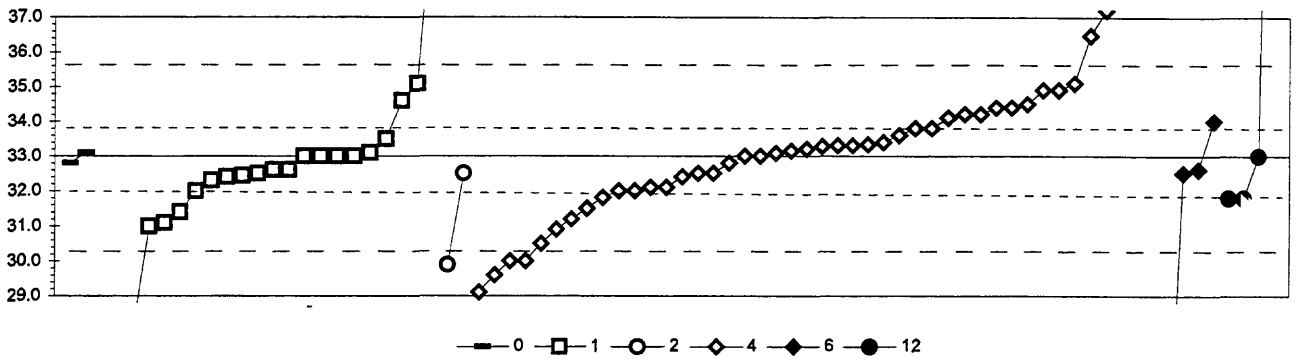
	3	4	6
N =	14	4	8
Minimum =	1.2	1.9	2.0
Maximum =	4.2	30.4	4.9
Median =	2.2		2.1
F-pseudosigma =	0.6		0.1

MPV =	2.1
F-pseudosigma =	0.5
N =	26
Hu =	2.7
HI =	2.0

Lab	Rating	Z-value	3	4	6
1	4	0.05			2.2
3	3	0.93		2.6	
4	NR			< 500	
11	4	-0.24		2.0	
13	NR			< 50	
15	NR			< 20	
16	4	-0.01			2.1
26	NR			< 7	
32	4	-0.24			2.0
48	2	1.30	2.8		
61	NR			< 5.4	
68	NR				< 5
70	NR			< 50	
80	4	-0.34	2.0		
81	NR			< 3	
85	NR			< 30	
87	2	1.11	2.7		
97	4	0.45	2.4		
100	NR			< 50	
105	4	0.09			2.2
108	4	0.34	2.3		
109	1	-1.88	1.2		
119	1	-1.59	1.3		
128	NR			< 10	
131	NR			< 10	
134	4	-0.38		1.9	
138	4	0.01			2.1
141	NR			< 10	
142	0	5.31			4.9
145	NR			< 1.1	
146	NR			< 5	
149	NR		< 2		
180	NR			< 5	
182	0	54.45		30.4	
183	2	-1.01	1.6		
196	4	-0.07			2.1
211	1	1.88	3.1		
212	NR			< 40	
215	4	-0.24	2.0		
221	4	-0.05	2.1		
224	NR			< 5	
234	0	2.42	3.4		
236	NR			< 11	
241	4	-0.05	2.1		
247	4	-0.05			2.1
252	0	4.00	4.2		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Na (Sodium) mg/L



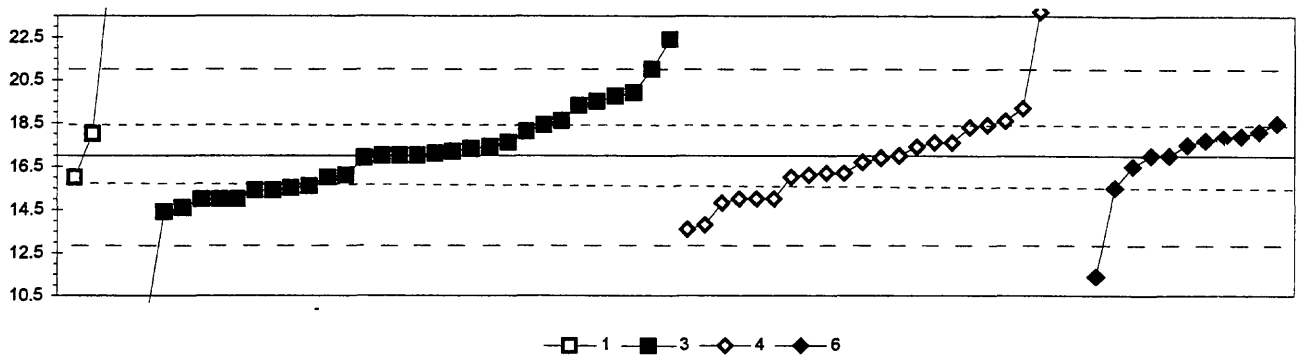
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
2. AA: direct nitrous oxide			12. Flame emission					
		N =	2	22	2	44	4	4
		Minimum =	32.8	26.5	29.9	29.1	22.0	31.8
		Maximum =	33.1	40.9	32.5	89.5	34.0	62.0
		Median =		32.6		33.2		
		F-pseudosigma =		1.2		1.7		

MPV =	33.0
F-pseudosigma =	1.3
N =	78
Hu =	33.8
HI =	32.0

Lab	Rating	Z-value	0	1	2	4	6	12
1	4	-0.37					32.5	
3	0	5.92		40.9				
4	4	-0.37				32.5		
11	2	-1.35				31.2		
12	0	-2.25				30.0		
13	0	5.92				40.9		
15	2	1.12				34.5		
16	4	0.21				33.3		
18	4	0.00				33.0		
23	4	0.00		33.0				
24	3	-0.67				32.1		
25	0	3.15				37.2		
26	3	-0.75				32.0		
32	3	0.75					34.0	
33	4	-0.15	32.8					
36	4	-0.37			32.5			
40	2	1.42				34.9		
43	4	0.00				33.0		
48	1	-1.57				30.9		
59	3	-0.75				32.0		
61	2	1.05				34.4		
68	0	-8.24					22.0	
69	3	-0.90						31.8
70	3	-0.67				32.1		
75	4	0.45				33.6		
76	4	0.00		33.0				
81	0	-2.55				29.6		
85	2	-1.20		31.4				
86	2	1.05				34.4		
87	2	-1.42		31.1				
89	4	0.07		33.1				
90	0	-2.32			29.9			
97	3	-0.52		32.3				
100	4	-0.15				32.8		
105	4	0.15				33.2		
107	4	-0.45		32.4				
109	0	-4.85		26.5				
110	1	1.57		35.1				
113	0	-2.92				29.1		
114	0	-4.72		26.7				
116	4	0.30				33.4		
119	4	0.22				33.3		
121	4	-0.37				32.5		
128	3	0.90				34.2		
129	2	-1.50		31.0				
131	0	4.12				38.5		
134	4	-0.42		32.4				
138	3	0.60				33.8		
140	4	0.37		33.5				
141	3	0.60				33.8		
142	3	0.82				34.1		
145	3	-0.90				31.8		
146	4	0.22				33.3		
149	4	0.00						33.0
154	0	42.34				89.5		
158	1	-1.87				30.5		
180	2	-1.12				31.5		
182	0	2.61				36.5		
183	3	-0.90						31.8
190	4	0.07	33.1					
191	4	-0.30					32.6	
198	3	0.90				34.2		
203	4	-0.30		32.6				
209	0	-3.75		28.0				
211	2	1.20		34.6				
212	1	1.57				35.1		
215	2	1.42				34.9		
219	0	-2.25				30.0		
220	4	-0.30		32.6				
221	3	-0.75		32.0				
224	4	0.11				33.2		
231	4	-0.37		32.5				
234	4	-0.45				32.4		
236	4	0.25				33.3		
241	4	0.00		33.0				
247	4	0.06				33.1		
249	0	21.73						62.0
252	4	0.00		33.0				

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Ni (Nickel) µg/L



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

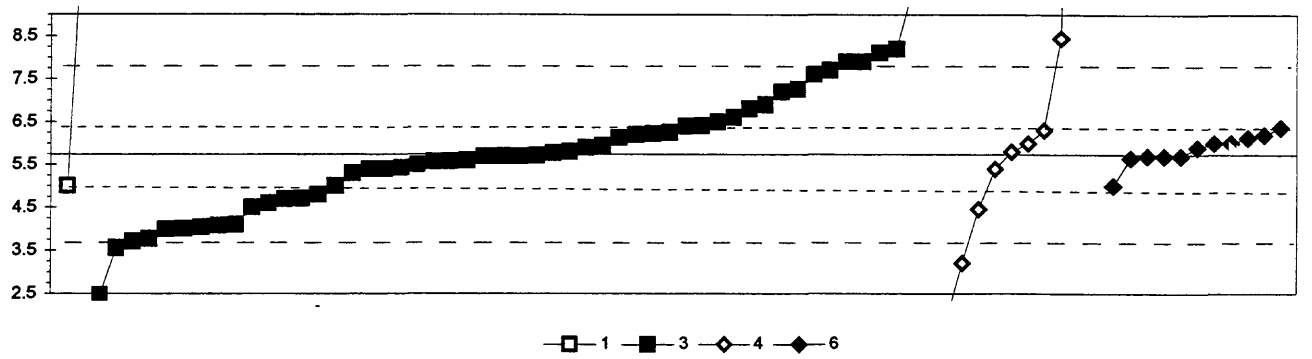
	1	3	4	6
N =	4	30	23	11
Minimum =	16.0	8.9	13.6	11.4
Maximum =	40.0	22.4	36.7	18.5
Median =		17.0	16.9	17.5
F-pseudosigma =		2.2	2.1	0.8

MPV = 17.0
F-pseudosigma = 2.1
N = 68
Hu = 18.4
Hl = 15.6

Lab	Rating	Z-value	1	3	4	6
1	4	0.43				17.9
3	4	0.19			17.4	
4	NR				< 200	
11	4	0.00			17.0	
13	NR				< 20	
15	3	0.67		18.4		
16	3	0.53				18.1
18	NR				< 25	
23	NR			< 20		
24	3	0.77			18.6	
25	NR				< 49	
26	4	-0.48		16.0		
32	4	0.34				17.7
36	4	0.05		17.1		
48	3	0.53		18.1		
59	4	0.24				17.5
60	4	0.29		17.6		
61	4	-0.39			16.2	
68	0	-2.70				11.4
69	3	-0.67		15.6		
70	NR				< 50	
73	2	-1.06			14.8	
75	4	0.19		17.4		
80	4	-0.43		16.1		
81	4	-0.48			16.0	
85	4	-0.43			16.1	
86	4	-0.14			16.7	
87	0	4.34	26.0			
89	3	-0.77		15.4		
90	3	-0.96		15.0		
96	4	0.00		17.0		
97	2	-1.16		14.6		
100	NR		< 15			
105	3	-0.72				15.5
107	3	-0.96		15.0		
108	1	1.93		21.0		
113	4	0.29			17.6	
114	4	-0.48	16.0			
118	2	1.40		19.9		
119	2	1.20		19.5		
121	3	-0.96			15.0	
128	4	0.00				17.0
131	0	4.34			26.0	
133	2	1.06			19.2	
134	4	0.15		17.3		
138	4	-0.05			16.9	
140	4	0.48	18.0			
141	1	-1.64			13.6	
142	4	-0.24				16.5
145	1	-1.54			13.8	
146	4	0.29			17.6	
149	4	0.00		17.0		
153	0	2.60		22.4		
154	3	0.63			18.3	
158	4	-0.39			16.2	
180	NR				< 13.3	
182	0	9.49			36.7	
183	3	0.77		18.6		
190	3	-0.72		15.5		
191	3	0.72				18.5
196	4	0.00				17.0
203	NR		< 20			
211	4	0.10		17.2		
212	3	-0.96			15.0	
213	4	0.00		17.0		
215	2	1.32		19.7		
219	3	-0.96			15.0	
221	3	-0.77		15.4		
224	3	0.67			18.4	
231	3	-0.96		15.0		
234	2	1.11		19.3		
236	0	3.23			23.7	
241	4	-0.05		16.9		
245	0	-3.88		8.9		
247	4	0.39				17.8
249	2	-1.25		14.4		
252	NR		< 20			
253	0	11.08	40.0			

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Pb (Lead) µg/L



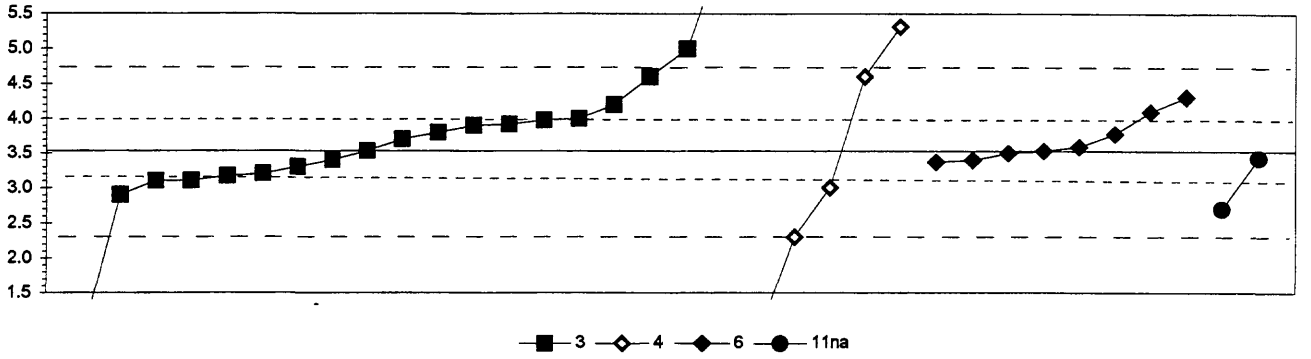
1. AA: direct air		6. ICP/MS	
3. AA: graphite furnace			
4. ICP			
N =	2	51	10	11
Minimum =	5.0	2.5	1.8	5.0
Maximum =	12.0	10.9	131.1	6.4
Median =		5.7	5.9	5.9
F-pseudosigma =		1.3	3.0	0.3

MPV = 5.7
F-pseudosigma = 1.0
N = 74
Hu = 6.4
HI = 5.0

Lab	Rating	Z-value	1	3	4	6
1	4	-0.04				5.7
3	2	-1.22			4.5	
4	NR				< 400	
11	4	-0.33			5.4	
13	NR			< 5		
15	1	-1.59		4.1		
16	3	0.60				6.4
18	2	-1.09		4.6		
23	4	-0.30		5.4		
24	1	-1.66		4.0		
25	NR				< 71	
26	3	0.63		6.4		
32	4	0.15				5.9
36	2	1.45		7.3		
48	2	1.40		7.2		
58	4	-0.42		5.3		
59	3	-0.71				5.0
60	4	-0.04		5.7		
61	3	0.54			6.3	
68	1	1.88		7.7		
69	4	0.06		5.8		
70	4	0.49		6.3		
73	0	-3.77			1.8	
75	4	-0.16		5.6		
80	1	-1.63		4.0		
81	4	0.25			6.0	
84	4	-0.15		5.6		
86	1	-1.88		3.8		
87	0	4.94		10.9		
89	0	-3.14		2.5		
90	2	-1.19		4.5		
96	4	0.44		6.2		
97	4	0.46		6.2		
100	3	0.82		6.6		
105	4	0.37				6.1
107	1	-1.57		4.1		
108	0	2.07		7.9		
109	0	-2.10		3.6		
113	4	0.03		5.8		
114	0	5.99	12.0			
118	4	-0.04		5.7		
119	1	1.78		7.6		
128	4	-0.04				5.7
131	NR				< 50	
133	NR				< 20	
134	4	0.06			5.8	
138	4	0.26				6.0
140	3	-0.71	5.0			
141	2	1.01		6.8		
142	4	-0.09				5.7
144	3	-1.00		4.7		
145	NR				< 14.8	
146	0	2.59			8.5	
149	3	-0.71		5.0		
153	0	2.07		7.9		
154	4	-0.04		5.7		
158	4	-0.33		5.4		
180	NR				< 27.2	
182	0	119.97			131.1	
183	0	2.35		8.2		
190	4	0.37		6.1		
191	4	-0.04				5.7
196	4	0.26				6.0
198	4	-0.03		5.7		
203	4	-0.13		5.6		
211	4	-0.23		5.5		
212	1	-1.95		3.7		
213	4	0.20		6.0		
215	0	3.74		9.7		
219	NR				< 10	
220	3	0.73		6.5		
221	4	0.15		5.9		
224	0	-2.43			3.2	
227	3	-0.99		4.7		
231	0	2.27		8.1		
234	3	0.64		6.4		
236	0	15.37			21.8	
241	2	1.11		6.9		
245	1	-1.67		4.0		
247	4	0.44				6.2
249	4	-0.33		5.4		
252	3	-0.90		4.8		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Sb (Antimony) µg/L



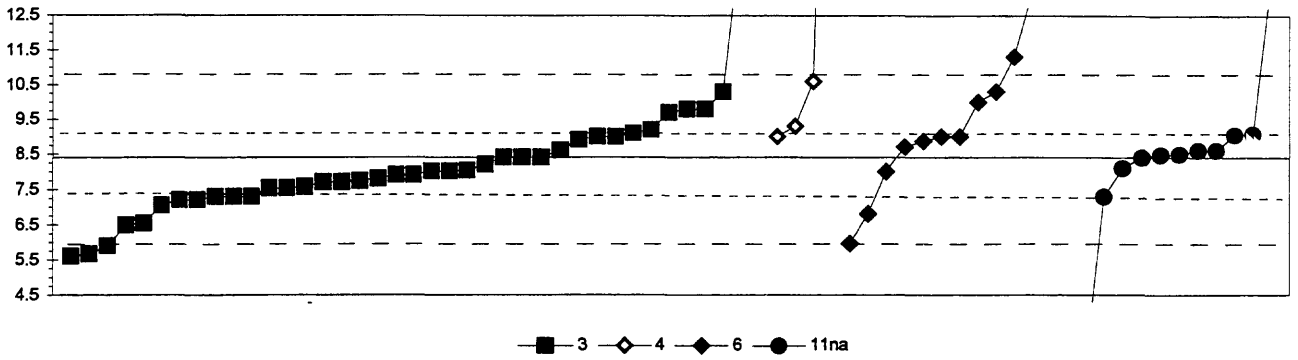
3. AA: graphite furnace				11na. AA: hydrid NaBH4		
4. ICP						
6. ICP/MS						
		N =	19	5	8	2
		Minimum =	0.9	0.9	3.4	2.7
		Maximum =	6.5	5.3	4.3	3.4
		Median =	3.7		3.6	
		F-pseudosigma =	0.6		0.4	

MPV =	3.5
F-pseudosigma =	0.6
N =	34
Hu =	4.0
HI =	3.2

Lab	Rating	Z-value	3	4	6	11na
1	4	0.44	3.8			
3	NR			< 6		
11	1	1.74		4.6		
13	NR		< 5			
15	NR		< 5			
16	4	0.00			3.5	
18	3	-0.54	3.2			
24	0	-4.21	0.9			
25	NR			< 51		
26	NR			< 20		
32	4	-0.21			3.4	
36	3	-0.59	3.2			
48	3	-0.70	3.1			
59	NR				< 10	
60	4	-0.37	3.3			
61	NR			< 3.9		
68	NR		< 2			
70	NR		< 5			
81	3	-0.86		3.0		
89	NR		< 10			
96	4	-0.21	3.4			
97	3	0.63	3.9			
100	2	1.09	4.2			
105	4	-0.26			3.4	
113	0	2.89		5.3		
119	2	-1.35				2.7
128	3	0.93			4.1	
134	4	-0.16				3.4
138	4	0.41			3.8	
141	3	0.73	4.0			
142	2	1.27			4.3	
146	NR			< 20		
149	3	0.76	4.0			
153	0	4.83	6.5			
154	4	0.28	3.7			
180	NR			< 31.4		
182	0	-4.27		0.9		
183	3	0.60	3.9			
196	4	0.10			3.6	
211	0	2.39	5.0			
212	1	1.74	4.6			
215	NR		< 5			
219	1	-2.00		2.3		
234	4	0.00	3.5			
236	NR			< 11		
241	2	-1.02	2.9			
247	4	-0.05			3.5	
252	3	-0.70	3.1			

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Se (Selenium) µg/L



3. AA: graphite furnace — 11na. AA: hydride $NaBH_4$
4. ICP — 11na. AA: hydride NaBH4
6. ICP/MS

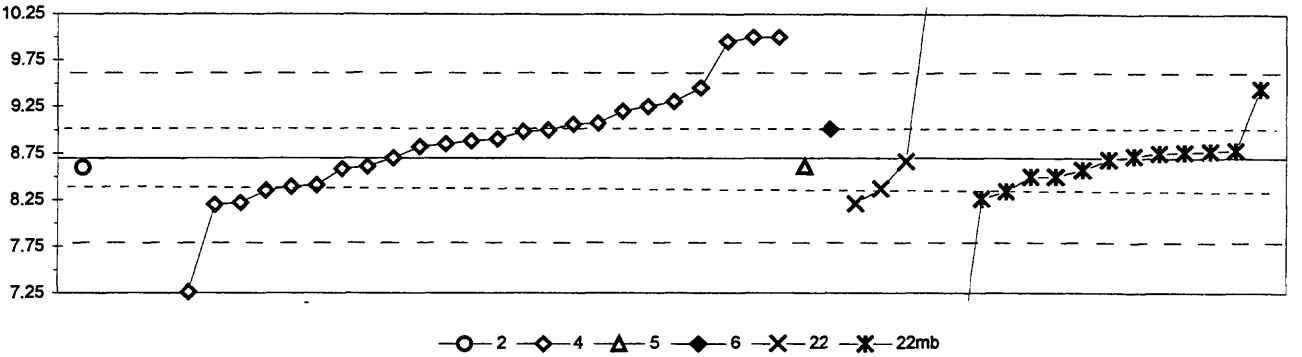
	3	4	6	11na
N =	39	4	11	13
Minimum =	5.6	9.0	6.0	0.0
Maximum =	22.0	27.7	13.2	13.5
Median =	7.9		9.0	8.5
F-pseudosigma =	1.2		1.3	1.0

MPV = 8.4
F-pseudosigma = 1.2
N = 67
Hu = 9.1
Hl = 7.4

Lab	Rating	Z-value	3	4	6	11na
1	3	-0.57	7.7			
3	1	1.55	10.3			
13	4	-0.33	8.0			
15	1	-1.52	6.5			
16	1	-2.00			6.0	
18	0	-2.29	5.6			
23	3	-0.91				7.3
24	0	-2.23	5.7			
25	NR			< 129		
26	4	0.16				8.6
32	4	0.49			9.0	
34	4	0.07				8.5
36	3	-0.68	7.6			
48	3	-0.98	7.2			
59	2	1.31			10.0	
60	4	0.00	8.4			
61	3	0.74		9.3		
68	4	0.41	8.9			
69	4	-0.49	7.8			
70	NR		< 10			
75	4	0.06				8.5
76	0	3.92			13.2	
80	3	0.57	9.1			
81	4	0.49	9.0			
85	4	-0.25				8.1
86	3	0.53				9.1
87	0	-5.23				< 2
89	0	-4.64				2.7
96	2	1.14	9.8			
97	3	-0.54	7.7			
100	3	-0.90	7.3			
105	4	0.38			8.9	
107	4	0.49	9.0			
108	0	-6.62				0.3
109	4	-0.30	8.0			
113	3	-0.57	7.7			
118	2	1.14	9.8			
119	4	0.00				8.4
121	4	0.16				8.6
128	1	1.55			10.3	
133	2	-1.10	7.1			
134	3	0.56				9.1
138	4	0.49			9.0	
141	3	-0.71	7.5			
142	0	2.37			11.3	
144	4	0.00	8.4			
146	1	1.80		10.6		
149	4	-0.33	8.0			
153	4	0.00	8.4			
154	4	-0.41	7.9			
180	NR			< 50.1		
182	0	4.15				13.5
183	3	-0.98	7.2			
190	3	-0.90	7.3			
191	4	0.25			8.7	
196	4	-0.34			8.0	
203	1	-2.04	5.9			
211	4	0.16	8.6			
212	2	1.06	9.7			
215	0	5.40	15.0			
219	4	0.49		9.0		
220	4	-0.41	7.9			
221	3	-0.71	7.5			
224	0	15.78		27.7		
227	0	-6.87				0.0
231	1	-1.56	6.5			
234	3	0.65	9.2			
236	NR			< 100		
241	4	-0.16	8.2			
247	2	-1.31			6.8	
249	0	11.12	22.0			
252	3	-0.90	7.3			

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

SiO_2 (Silica) mg/L

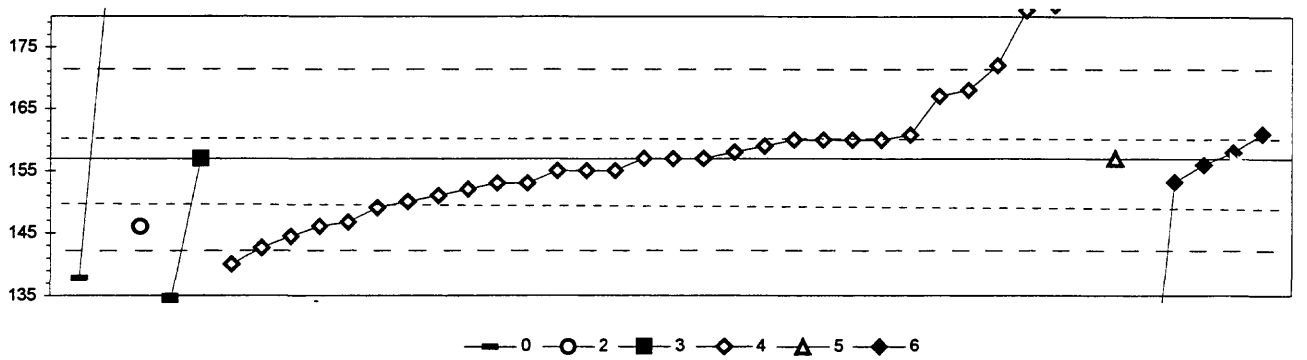


2. AA: direct nitrous oxide				6. ICP/MS				
4. ICP				22. Colorimetric				
5. DCP				22mb. Color: molydate blue				
		N =	1	27	1	1	4	13
		Minimum =	8.60	2.59	8.61	9.01	8.21	6.24
		Maximum =		10.00			10.80	9.44
		Median =		8.85				8.68
		F-pseudosigma =		0.57				0.19
Lab	Rating	Z-value	2	4	5	6	22	22mb
1	3	0.60		8.98				
3	1	1.62		9.45				
4	2	1.30		9.30				
11	0	2.70		9.95				
13	4	0.32		8.85				
15	0	4.53					10.80	
24	3	0.78		9.06				
25	0	2.81		10.00				
26	4	-0.26		8.58				
32	3	0.67				9.01		
33	4	-0.19			8.61			
43	4	0.43		8.90				
61	0	-10.14		4.00				
70	3	-0.95						8.26
87	4	0.13						8.76
89	3	-0.78						8.34
92	4	-0.09					8.66	
97	4	-0.04						8.68
100	3	0.80		9.07				
105	2	-1.04		8.22				
107	4	-0.43						8.50
110	1	1.60						9.44
111	4	0.04						8.72
113	3	-0.71					8.37	
116	3	-0.63		8.41				
118	4	0.17						8.78
119	3	0.65		9.00				
121	4	0.00		8.70				
128	2	1.19		9.25				
131	0	-3.11		7.26				
134	4	0.26		8.82				
138	4	-0.43						8.50
140	2	-1.06					8.21	
142	0	2.81		10.00				
145	4	0.39		8.88				
158	4	-0.19		8.61				
182	0	-7.38		5.28				
190	4	0.15						8.77
211	0	-5.31						6.24
212	2	1.08		9.20				
215	3	-0.67		8.39				
219	2	-1.08		8.20				
231	4	-0.28						8.57
234	3	-0.76		8.35				
236	0	-13.19		2.59				
241	4	-0.22	8.60					
247	4	0.11						8.75

MPV =	8.70
F-pseudosigma =	0.46
N =	47
Hu =	9.01
Hl =	8.38

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Sr (Strontium) µg/L

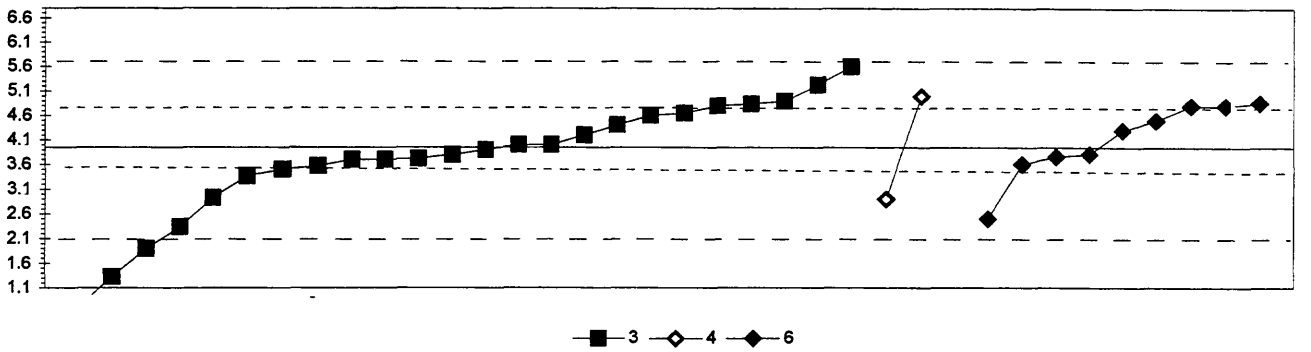


0. Other			4. ICP					
2. AA: direct nitrous oxide			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
		N =	2	1	2	30	1	5
		Minimum =	138	146	134	140	157	105
		Maximum =	190		157	188		161
		Median =				157		
		F-pseudosigma =				7		
Lab	Rating	Z-value	0	2	3	4	5	6
1	4	0.00				157		
3	1	2.02				172		
4	4	0.40				160		
11	2	1.35				167		
16	1	-1.70				144		
18	3	-0.54				153		
24	3	-0.67				152		
25	0	3.24				181		
32	3	0.54						161
33	4	0.00					157	
40	4	0.00				157		
59	4	0.40				160		
68	0	-7.01						105
70	4	0.00			157			
80	2	-1.48		146				
81	0	4.18				188		
85	2	1.48				168		
86	4	0.13				158		
97	0	-3.10			134			
100	1	-1.94				143		
105	2	-1.08				149		
109	0	-2.59	138					
113	3	-0.54				153		
116	4	-0.27				155		
121	4	-0.27				155		
131	4	0.00				157		
134	4	0.27				159		
138	3	-0.81				151		
142	4	0.40				160		
145	2	-1.39				147		
154	2	-1.48				146		
182	0	3.35				182		
190	0	4.45	190					
191	4	0.13						158
196	4	-0.13						156
211	0	-2.29				140		
212	4	0.40				160		
219	3	-0.94				150		
234	4	-0.27				155		
236	3	0.51				161		
247	3	-0.51						153

MPV =	157
F-pseudosigma =	7
N =	41
Hu =	160
Hl =	150

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

Tl (Thallium) µg/L



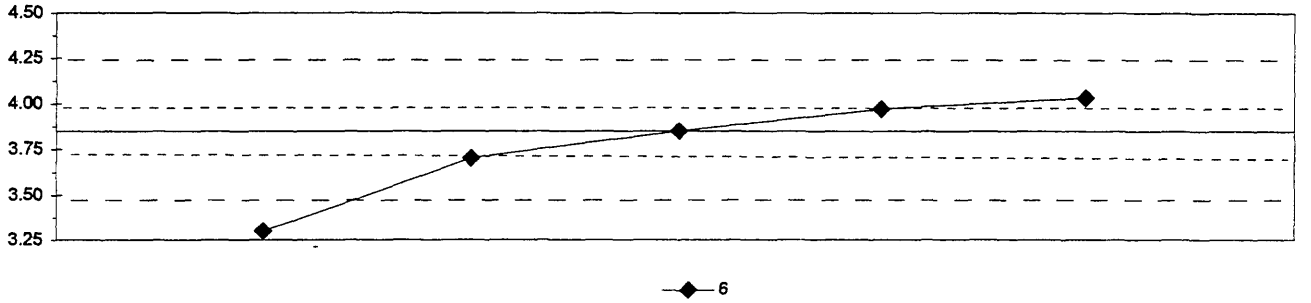
3. AA: graphite furnace				
4. ICP				
6. ICP/MS				
N =	24	3	9	
Minimum =	0.7	2.9	2.5	
Maximum =	5.6	222.4	4.9	
Median =	3.9		4.3	
F-pseudosigma =	0.9		0.8	

MPV =	4.0
F-pseudosigma =	0.9
N =	36
Hu =	4.8
HI =	3.5

Lab	Rating	Z-value	3	4	6
1	4	-0.15			3.8
3	4	-0.25	3.7		
13	NR		< 5		
15	4	0.05	4.0		
16	3	0.98			4.9
18	3	0.91	4.8		
23	2	1.36	5.2		
24	4	0.27	4.2		
32	3	0.91			4.8
36	2	-1.09	2.9		
48	4	-0.48	3.5		
59	NR				< 5
60	3	0.75	4.7		
61	2	-1.12		2.9	
69	2	1.01	4.9		
70	3	0.69	4.6		
81	2	1.12		5.0	
89	NR		< 10		
97	3	0.95	4.8		
100	4	-0.27	3.7		
113	3	-0.62	3.4		
119	4	-0.05	3.9		
128	4	0.37			4.3
134	4	0.49	4.4		
138	3	0.59			4.5
141	4	-0.16	3.8		
142	4	-0.36			3.6
146	NR			< 10	
149	4	0.05	4.0		
154	4	-0.41	3.6		
180	NR			< 32.1	
182	0	232.93		222.4	
183	1	1.76	5.6		
191	1	-1.55			2.5
196	4	-0.20			3.8
211	0	-2.19	1.9		
212	NR			< 5000	
213	0	-2.80	1.3		
215	0	-3.47	0.7		
234	1	-1.72	2.3		
241	4	-0.27	3.7		
247	3	0.91			4.8

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

U (Uranium) µg/L



6. ICP/MS

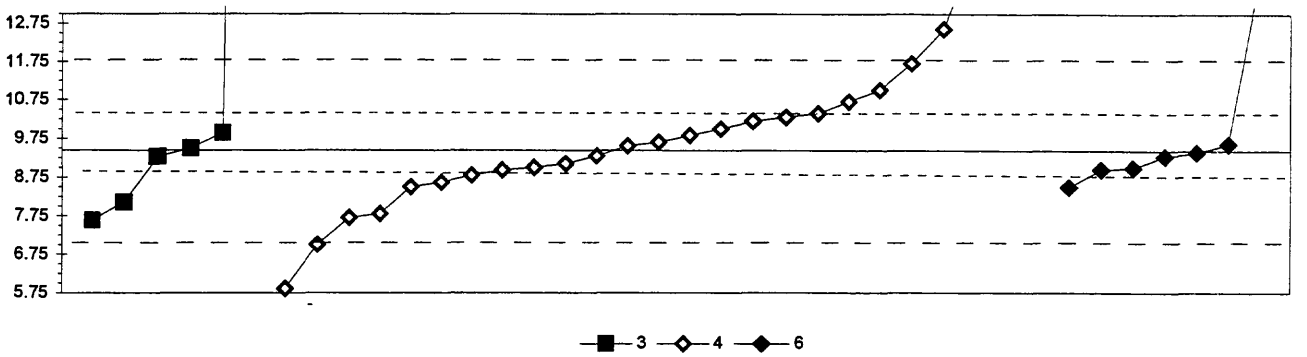
N =	5
Minimum =	3.30
Maximum =	4.03
Median =	3.85
F-pseudosigma =	0.20

Lab	Rating	Z-value	6
1	3	-0.60	3.70
16	3	0.48	3.97
32	4	0.00	3.85
142	0	-2.20	3.30
196	3	0.72	4.03

MPV =	3.85
F-pseudosigma =	0.25
N =	5
Hu =	3.97
Hl =	3.70

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)–Continued*

V (Vanadium) µg/L



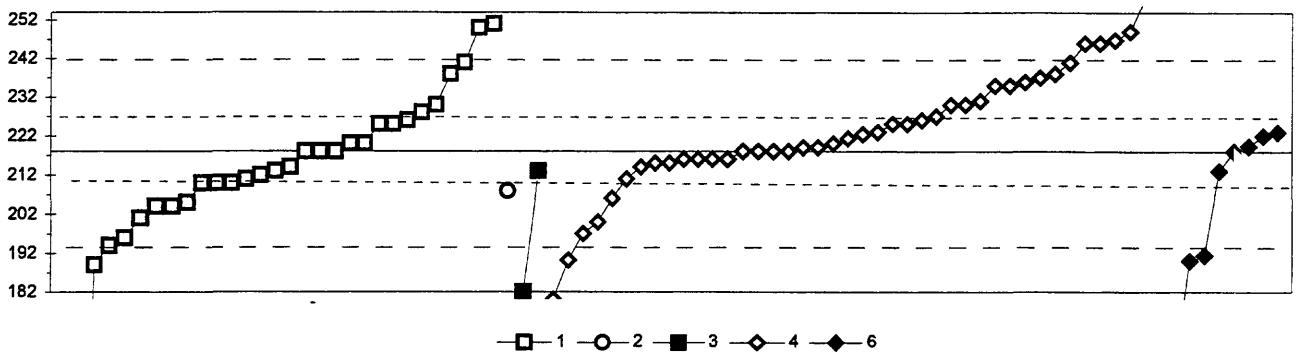
3. AA: graphite furnace			
4. ICP			
6. ICP/MS			
N =	6	25	7
Minimum =	7.63	5.86	8.50
Maximum =	66.00	20.23	14.03
Median =		9.66	9.30
F-pseudosigma =		1.41	0.39

MPV =	9.45
F-pseudosigma =	1.19
N =	38
Hu =	10.40
Hl =	8.80

Lab	Rating	Z-value	3	4	6
1	4	-0.13		9.30	
3	2	1.05		10.70	
4	NR			< 50	
11	4	-0.38		9.00	
13	0	-3.03		5.86	
15	NR			< 10	
16	0	3.86			14.03
18	2	1.31		11.00	
25	0	-4.60		< 4	
26	3	0.63		10.20	
32	4	-0.38			9.00
40	3	0.72		10.30	
48	2	-1.14	8.10		
61	3	-0.80		8.50	
68	4	-0.13			9.30
70	NR			< 50	
75	4	0.32		9.83	
81	0	-7.12		< 1	
85	NR			< 20	
86	3	0.80		10.40	
89	1	-1.53	7.63		
97	4	0.38	9.90		
100	NR			< 10	
105	3	-0.80			8.50
121	0	-2.07		7.00	
128	3	-0.55		8.80	
134	4	0.09		9.56	
138	4	-0.30		9.10	
141	4	-0.44		8.93	
142	4	-0.41			8.96
145	2	-1.48		7.70	
146	4	0.18		9.66	
154	0	2.66		12.60	
158	3	-0.70		8.62	
180	1	1.90		11.70	
182	0	9.09		20.23	
196	4	0.14			9.62
211	NR			< 20	
212	4	0.46		10.00	
219	2	-1.39		7.80	
224	0	7.21		18.00	
234	4	-0.14	9.28		
236	0	4.34		14.60	
241	4	0.04	9.50		
247	4	-0.04			9.40
252	0	47.68	66.00		

Table 13. *Statistical summary of reported data for standard reference water sample T-141 (trace constituents)--Continued*

Zn (Zinc) µg/L



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

	1	2	3	4	6
N =	30	1	2	42	8
Minimum =	5	208	182	180	160
Maximum =	251		213	260	223
Median =	214			222	216
F-pseudosigma =	16			14	22

MPV = 218
F-pseudosigma = 12
N = 83
Hu = 227
Hl = 211

Lab	Rating	Z-value	1	2	3	4	6
1	4	-0.17				216	
3	1	1.69				238	
4	NR					< 250	
10	3	0.59	225				
11	4	-0.17				216	
12	4	0.17				220	
13	0	2.36				246	
15	0	3.37				258	
16	4	0.00					218
18	4	0.00				218	
23	3	-0.51	212				
24	4	0.08				219	
25	0	-17.83				< 4	
26	4	0.00				218	
32	4	0.34					222
36	3	-0.84		208			
40	0	2.61				249	
48	0	-3.20				180	
58	0	-10.79	90				
59	3	0.59				225	
60	3	0.59	225				
61	2	-1.01				206	
68	0	-4.89					160
69	4	0.00	218				
70	3	0.59				225	
73	1	1.93				241	
75	3	0.76				227	
80	4	0.17	220				
81	1	-1.77				197	
85	0	2.70	250				
86	2	1.43				235	
87	4	0.00	218				
89	0	-3.04			182		
90	0	-18.00	5				
96	2	-1.18	204				
97	4	-0.42			213		
100	3	0.67	226				
105	0	-2.36					190
107	0	-2.45	189				
108	4	-0.34	214				
113	2	1.10				231	
114	3	-0.59	211				
116	4	0.08				219	
118	1	1.69	238				
119	4	0.00				218	
121	4	-0.25				215	
128	1	1.60				237	
131	4	-0.25				215	
133	1	1.51				236	
134	2	1.01				230	
138	4	0.42				223	
140	3	-0.67	210				
141	3	0.67				226	
142	0	-2.24					191
144	1	-2.02	194				
145	4	0.37				222	
146	4	-0.17				216	
149	3	0.84	228				
154	4	-0.17				216	
158	4	-0.34				214	
180	3	-0.59				211	
182	0	2.43				247	
183	4	-0.42	213				
190	2	-1.43	201				
191	4	-0.42					213
196	4	0.42					223
198	0	2.36				246	
203	3	-0.67	210				
211	0	3.54				260	
212	2	1.01				230	
213	4	0.17	220				
215	2	1.43				235	
219	1	-1.52				200	
220	3	-0.67	210				
221	2	-1.18	204				
224	0	-2.34				190	
227	1	1.94	241				
231	2	-1.10	205				
234	4	0.00				218	
236	4	0.28				221	
241	0	2.78	251				
247	4	0.11					219
249	4	0.00	218				
252	1	-1.85	196				
253	2	1.01	230				

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

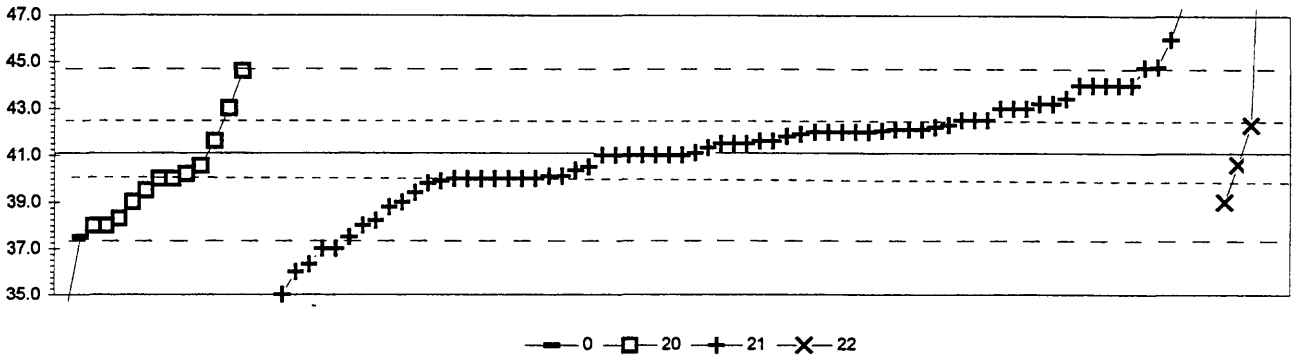
0	Other/Not reported		
1	AA: direct, air	=	atomic absorption: direct,air
2	AA: direct, N_2O	=	atomic absorption: direct,nitrous oxide
3	AA: graphite furnace	=	atomic absorption: graphite furnace
4	ICP	=	inductively coupled plasma
5	DCP	=	direct current plasma
6	ICP/MS	=	mass spectrometry/inductively coupled plasma
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 samples
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
<	=	less than

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

Alkalinity (as $CaCO_3$) mg/L



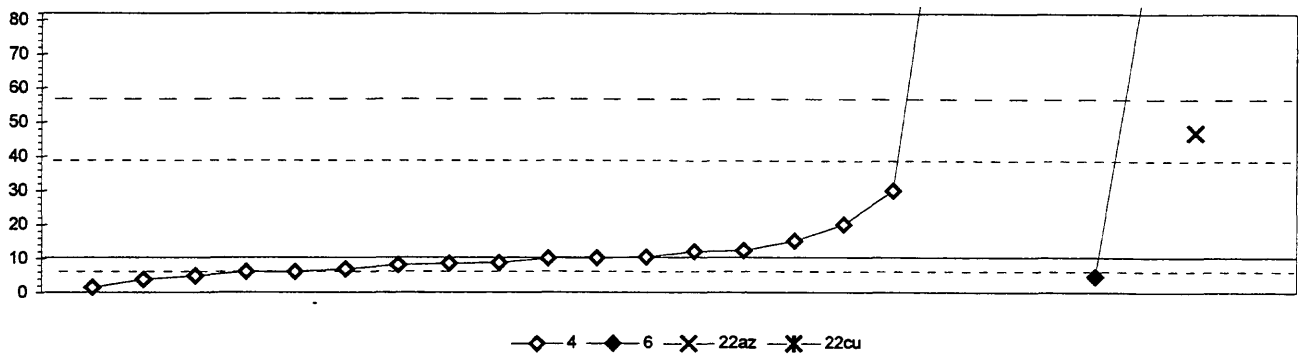
0. Other		22. Colorimetric	
20. Titrate: colorimetric		41. Direct reading	
21. Titrate: electrometric			
N =	2	12	73	5
Minimum =	34.4	38.0	30.0	39.0
Maximum =	37.5	44.6	50.0	95.0
Median =		40.0	41.5	
F-pseudosigma =		1.8	1.9	

MPV =	41.1
F-pseudosigma =	1.9
N =	92
Hu =	42.5
Hl =	40.0

Lab	Rating	Z-value	0	20	21	22
1	3	0.77			42.5	
3	4	0.29			41.6	
7	0	3.52			47.7	
9	1	-1.61			38.0	
10	3	-0.56		40.0		
11	2	1.14			43.2	
12	0	3.68			48.0	
13	3	-0.61			39.9	
15	1	1.56			44.0	
18	4	-0.24				40.6
19	4	0.50			42.0	
23	4	0.29			41.6	
24	3	0.56			42.1	
25	1	1.56			44.0	
26	0	-3.78			33.9	
32	1	1.56			44.0	
33	3	-0.66			39.8	
36	1	1.56			44.0	
38	3	0.77			42.5	
39	3	-0.56			40.0	
40	4	0.03			41.1	
43	4	-0.03			41.0	
48	0	28.54				95.0
50	3	-0.56			40.0	
51	3	-0.56			40.0	
55	0	-2.67			36.0	
56	2	1.26			43.4	
57	3	-0.56		40.0		
58	0	-2.14			37.0	
59	1	-1.51			38.2	
60	3	0.56			42.1	
61	2	-1.19			38.8	
63	2	-1.08		39.0		
68	0	7.64				55.5
69	3	0.66				42.3
70	3	-0.56			40.0	
76	1	-1.88	37.5			
80	0	-3.52	34.4			
81	4	-0.45		40.2		
83	4	-0.27		40.5		
84	0	4.73			50.0	
85	4	0.24			41.5	
87	4	-0.03			41.0	
89	4	0.40			41.8	
90	2	-1.08			39.0	
92	3	-0.87			39.4	
96	3	0.66			42.3	
97	4	-0.11		40.9		
100	4	0.24			41.5	
105	2	1.03			43.0	
107	4	-0.29			40.5	
109	1	1.96			44.8	
111	4	0.29		41.6		
113	4	0.24			41.5	
114	1	1.98			44.8	
116	4	-0.50			40.1	
118	2	-1.45		38.3		
119	4	0.50			42.0	
122	2	1.14			43.2	
128	4	0.45			41.9	
129	0	2.62			46.0	
133	2	1.03		43.0		
134	3	0.53			42.0	
138	2	1.03			43.0	
141	4	-0.03			41.0	
142	2	1.03			43.0	
143	3	-0.56			40.0	
145	2	-1.08				39.0
146	3	0.61			42.2	
149	1	-1.61		38.0		
154	3	-0.56			40.0	
155	3	-0.82		39.5		
158	4	0.50			42.0	
180	3	0.77			42.5	
182	0	-5.85			30.0	
183	1	-1.61		38.0		
190	4	-0.03			41.0	
203	0	-2.51			36.3	
212	4	-0.03			41.0	
213	4	0.50			42.0	
215	4	-0.03			41.0	
217	3	0.56			42.1	
220	4	0.14			41.3	
224	0	-2.14			37.0	
226	4	-0.37			40.4	
231	3	-0.56			40.0	
234	1	1.88		44.6		
236	1	-1.88			37.5	
241	4	-0.03			41.0	
244	1	1.56			44.0	
247	4	-0.50			40.1	
249	0	-3.20			35.0	
252	4	0.50			42.0	

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

B (Boron) µg/L



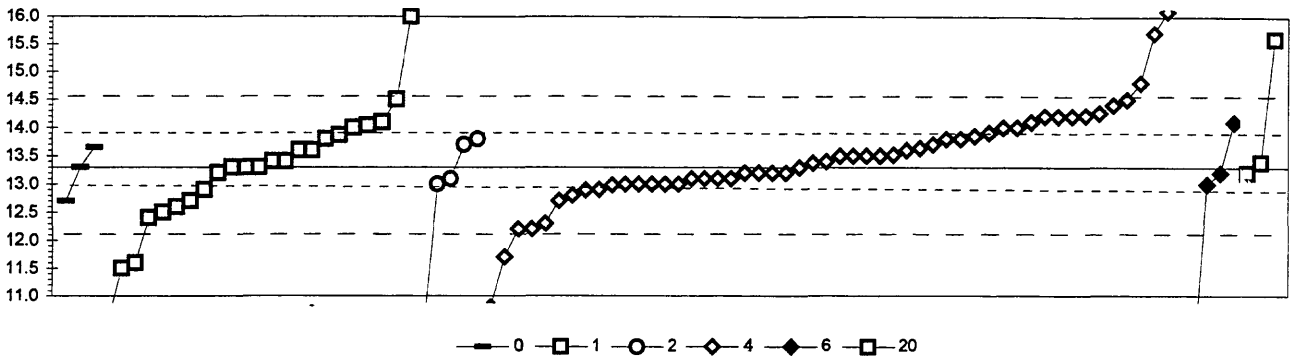
4. ICP				22cu. Color: curcumin		
6. ICP/MS						
22az. Color: azomethine						
		N =	20	2	1	1
		Minimum =	1	5	47	150
		Maximum =	1750	93		
		Median =	10			
		F-pseudosigma =	8			

MPV =	10
F-pseudosigma =	24
N =	24
Hu =	39
HI =	6

Lab	Rating	Z-value	4	6	22az	22cu
1	4	-0.23	5			
3	4	-0.37	1			
10	NR					< 50
15	NR		< 20			
16	0	5.11	132			
18	NR		< 50			
25	NR		< 23			
26	NR		< 20			
48	3	0.83	30			
50	NR				< 10	
57	NR			< 0.1		
60	0	5.88				150
63	NR		< 10			
68	0	3.46		93		
70	NR		< 50			
75	4	-0.07	8			
85	NR		< 20			
100	NR		< 50			
119	4	-0.01	10			
121	4	-0.09	8			
128	NR		< 10			
129	1	1.55			47	
131	0	73.16	1750			
134	4	-0.18	6			
141	4	0.09	12			
142	4	-0.18	6			
145	4	-0.27	4			
158	4	-0.07	9			
180	4	0.20	15			
182	0	6.35	161			
212	4	-0.15	7			
215	4	0.41	20			
219	4	0.07	12			
234	4	-0.01	10			
236	4	0.01	10			
247	4	-0.24		5		

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

Ca (Calcium) mg/L



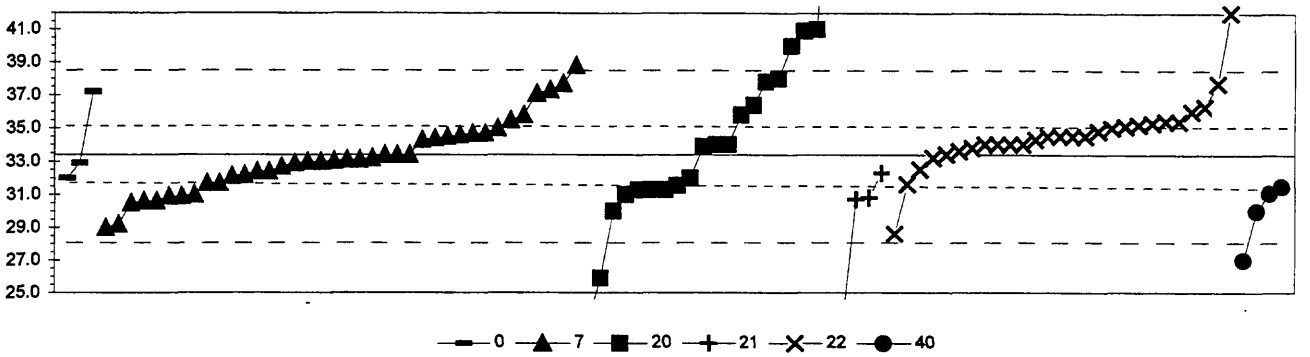
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
2. AA: direct nitrous oxide			20. Titrate: colorimetric					
		N =	3	23	5	52	4	3
		Minimum =	12.7	10.5	10.4	10.8	9.8	13.2
		Maximum =	13.7	16.0	13.8	16.7	14.1	15.6
		Median =		13.3		13.5		
		F-pseudosigma =		0.9		0.7		
Lab	Rating	Z-value	0	1	2	4	6	20
1	2	-1.15		12.6				
3	1	-1.77				12.2		
9	3	-0.53				13.0		
10	4	0.40		13.6				
11	1	1.80				14.5		
12	3	-0.53				13.0		
13	0	3.66				15.7		
15	2	1.33				14.2		
16	3	0.79				13.9		
18	4	-0.22				13.2		
19	1	-1.77				12.2		
23	2	1.18		14.1				
24	4	-0.22				13.2		
25	0	4.28				16.1		
26	2	1.02				14.0		
30.1	3	-0.53			13.0			
32	2	1.18					14.1	
33	4	-0.06	13.3					
36	4	-0.37			13.1			
38	3	0.56			13.7			
39	4	0.25				13.5		
40	3	-0.84				12.8		
43	2	1.02				14.0		
48	3	0.56				13.7		
50	3	-0.99		12.7				
55	4	0.09				13.4		
56	2	1.09		14.0				
57	3	-0.53					13.0	
58	0	-2.85		11.5				
59	3	-0.53				13.0		
61	0	2.26				14.8		
63	3	-0.53				13.0		
68	0	-5.57					9.8	
69	4	-0.06		13.3				
70	2	1.18				14.1		
75	4	-0.06		13.3				
80	2	1.02		14.0				
81	1	-1.61				12.3		
83	4	-0.37				13.1		
85	3	0.71		13.8				
86	4	-0.06				13.3		
87	3	0.71			13.8			
89	4	0.09		13.4				
90	4	-0.22						13.2
93	4	0.28				13.5		
97	4	-0.06		13.3				
100	2	1.43				14.3		
105	2	1.33				14.2		
107	0	-4.40		10.5				
109	4	-0.22		13.2				

MPV =	13.3
F-pseudosigma =	0.6
N =	90
Hu =	13.9
Hl =	13.0

Lab	Rating	Z-value	0	1	2	4	6	20
113	4	0.40				13.6		
114	0	-4.56			10.4			
116	3	-0.99				12.7		
119	4	-0.37				13.1		
121	4	-0.37				13.1		
122	4	0.40		13.6				
128	1	1.64				14.4		
129	0	4.12		16.0				
131	0	-3.94				10.8		
133	3	-0.70				12.9		
134	2	1.33				14.2		
138	4	0.25				13.5		
140	3	-0.68		12.9				
141	4	0.25				13.5		
142	3	-0.56				13.0		
145	4	0.06				13.4		
146	4	-0.37				13.1		
149	4	0.09		13.4				
153	4	0.48	13.7					
154	0	-2.54				11.7		
155	4	0.08						13.4
158	4	0.25				13.5		
180	4	-0.22				13.2		
182	0	5.13				16.7		
190	3	-0.99	12.7					
191	4	-0.22					13.2	
212	3	0.71				13.8		
215	3	0.71				13.8		
217	3	-0.68				12.9		
219	3	-0.53				13.0		
220	0	-2.70		11.6				
221	1	1.80		14.5				
224	3	0.88				13.9		
226	3	0.82		13.9				
231	2	-1.30		12.5				
234	4	-0.22				13.2		
236	2	1.35				14.2		
241	2	-1.46		12.4				
247	4	0.46				13.6		
249	0	3.50						15.6

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

Cl (Chloride) mg/L



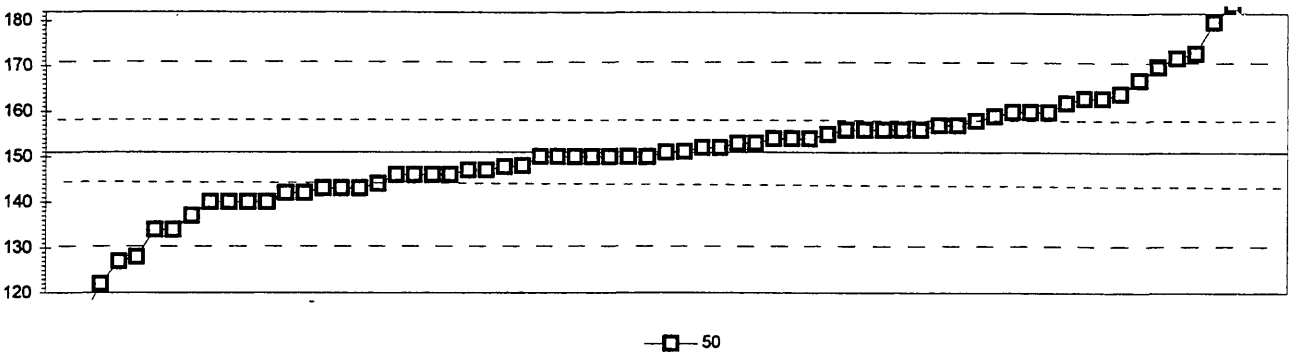
0. Other			21. Titrate: electrometric					
7. Ion chromatography			22. Colorimetric					
20. Titrate: colorimetric			40. Ion selective electrode					
		N =	3	38	20	4	27	4
		Minimum =	32.0	29.0	23.0	23.0	28.6	27.0
		Maximum =	37.2	38.8	51.0	32.3	42.0	31.5
		Median =		33.1	34.0		34.5	
		F-pseudosigma =		2.2	4.9		0.9	

MPV = 33.4
F-pseudosigma = 2.6
N = 96
Hu = 35.1
Hl = 31.6

Lab	Rating	Z-value	0	7	20	21	22	40
1	4	-0.12		33.1				
3	3	0.62					35.0	
4	3	-0.97		30.9				
7	2	-1.13		30.5				
9	4	0.23					34.0	
10	4	0.23					34.0	
11	3	0.78					35.4	
12	0	3.34					42.0	
13	4	-0.47		32.2				
15	4	-0.16		33.0				
18	3	0.54					34.8	
19	2	-1.32			30.0			
23	3	-0.74						31.5
24	4	0.00					33.4	
25	4	-0.39		32.4				
26	4	0.00		33.4				
30.1	4	0.47		34.6				
30.2	2	1.48	37.2					
32	4	0.50		34.7				
33	4	0.00		33.4				
36	4	0.23					34.0	
39	4	0.23			34.0			
40	1	1.67					37.7	
43	2	-1.32						30.0
48	3	-0.54	32.0					
50	4	0.43					34.5	
51	3	0.93		35.8				
55	3	0.70					35.2	
57	3	-0.93			31.0			
58	2	1.16			36.4			
59	4	0.50		34.7				
60	4	-0.43				32.3		
61	0	-2.91			25.9			
63	3	-0.54			32.0			
68	4	0.08					33.6	
69	3	0.78					35.4	
70	1	1.79			38.0			
75	3	0.66					35.1	
76	4	-0.27		32.7				
80	0	-4.04			23.0			
81	3	-0.82			31.3			
85	4	0.16					33.8	
86	0	-2.48						27.0
87	2	1.01					36.0	
89	1	1.71			37.8			
92	4	0.19			33.9			
96	3	0.74					35.3	
97	2	1.13					36.3	
100	4	-0.39		32.4				
105	3	-0.66		31.7				
107	2	-1.01				30.8		
109	0	-4.04				23.0		
111	1	1.67		37.7				
113	3	-0.66		31.7				
114	3	-0.89						31.1
119	3	-0.93		31.0				
121	2	-1.09		30.6				
122	3	-0.82			31.3			
128	3	-0.97		30.9				
129	3	0.62		35.0				
134	4	0.43		34.5				
138	4	0.00		33.4				
140	4	0.23					34.0	
141	4	-0.35					32.5	
142	3	-0.70					31.6	
143	4	0.35					34.3	
145	0	2.09		38.8				
146	4	0.43					34.5	
149	4	0.35		34.3				
153	1	-1.63		29.2				
154	4	0.43					34.5	
158	4	-0.08					33.2	
180	4	0.43					34.5	
182	0	2.56			40.0			
183	3	0.93			35.8			
190	1	-1.71		29.0				
191	4	-0.12		33.1				
196	4	-0.19		32.9				
203	2	-1.05				30.7		
212	4	0.39		34.4				
213	3	-0.82			31.3			
215	0	6.83			51.0			
217	2	1.44		37.1				
219	4	-0.16		33.0				
220	1	-1.87					28.6	
221	3	-0.72			31.6			
224	4	-0.14		33.0				
226	4	-0.49		32.1				
227	4	-0.08		33.2				
231	0	2.95			41.0			
234	2	-1.09		30.6				
236	1	1.52		37.3				
241	4	0.23			34.0			
247	3	0.82		35.5				
249	0	2.91			40.9			
252	4	-0.19	32.9					

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

DSRD (Dissolved solids) mg/L



50. Gravimetric

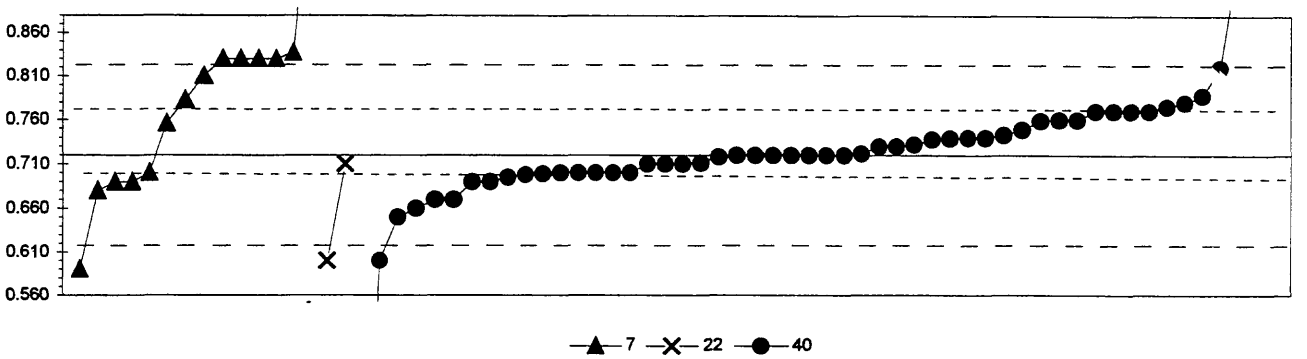
N =	67
Minimum =	15
Maximum =	193
Median =	151
F-pseudosigma =	10

MPV =	151
F-pseudosigma =	10
N =	67
Hu =	158
Hl =	144

Lab	Rating	Z-value	50
1	4	-0.10	150
3	4	-0.10	150
9	3	-0.87	142
10	4	-0.10	150
11	2	-1.06	140
12	3	-0.67	144
13	0	-2.79	122
15	4	-0.10	150
18	4	0.39	155
19	4	-0.48	146
23	4	0.00	151
25	0	3.76	190
26	4	-0.48	146
32	3	0.87	160
36	0	4.05	193
39	1	1.83	170
40	3	-0.77	143
43	4	0.48	156
48	4	0.48	156
50	2	-1.35	137
55	4	0.48	156
57	4	-0.10	150
59	4	0.10	152
63	0	2.79	180
69	1	2.02	172
70	4	0.29	154
75	4	0.19	153
80	3	0.87	160
81	0	-13.10	15
85	3	-0.77	143
87	0	-2.22	128
89	4	-0.10	150
90	2	-1.06	140
92	0	-3.57	114
96	3	0.87	160
97	3	0.58	157
100	4	0.48	156
105	2	1.25	164
109	4	-0.29	148
113	3	0.77	159
114	0	2.12	173
118	4	-0.39	147
119	3	-0.87	142
122	4	0.29	154
129	3	0.67	158
134	3	0.58	157
138	2	-1.06	140
140	0	-2.31	127
141	4	-0.48	146
142	1	1.54	167
143	2	1.16	163
146	4	0.19	153
149	3	-0.77	143
154	1	-1.64	134
155	4	0.01	151
158	4	0.29	154
182	4	-0.10	150
190	0	3.18	184
212	2	1.16	163
215	4	0.10	152
217	4	-0.48	146
224	4	-0.31	148
234	2	-1.06	140
236	2	1.06	162
241	1	-1.64	134
247	4	0.48	156
253	4	-0.39	147

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

F (Fluoride) mg/L



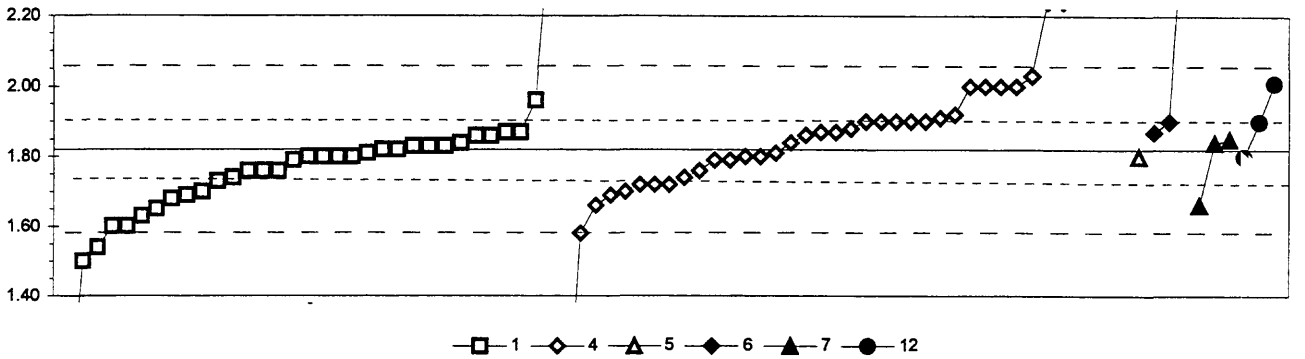
7. Ion chromatography			
22. Colorimetric			
40. Ion selective electrode			
N =	14	2	52
Minimum =	0.590	0.600	0.190
Maximum =	1.040	0.710	1.230
Median =	0.797		0.720
F-pseudosigma =	0.104		0.044

MPV =	0.720
F-pseudosigma =	0.052
N =	68
Hu =	0.770
HI =	0.700

Lab	Rating	Z-value	7	22	40
1	3	0.96			0.770
3	1	1.93			0.820
7	0	2.12	0.830		
9	4	0.00			0.720
10	4	0.00			0.720
11	4	-0.48			0.695
13	4	-0.39			0.700
15	4	-0.40			0.699
18	4	0.19			0.730
23	3	-0.96			0.670
24	2	1.16			0.780
25	4	0.00			0.720
26	0	2.12	0.830		
32	3	0.69	0.756		
36	2	-1.16			0.660
39	4	0.39			0.740
40	4	-0.39			0.700
48	0	-10.21			0.190
50	4	-0.39			0.700
55	0	6.55			1.060
57	3	0.77			0.760
58	4	0.00			0.720
61	0	4.43			0.950
63	4	-0.19			0.710
69	4	-0.19			0.710
70	4	0.39			0.740
80	3	-0.96			0.670
81	4	0.04			0.722
85	4	0.00			0.720
89	4	0.44			0.743
93	0	9.83			1.230
96	2	1.06			0.775
97	4	0.35			0.738
100	3	0.96			0.770
105	4	-0.39	0.700		
107	4	-0.39			0.700
109	4	0.00			0.720
113	3	0.75			0.759
114	4	-0.19			0.710
119	4	-0.39			0.700
122	4	-0.17			0.711
128	0	-2.51	0.590		
129	0	2.25	0.837		
134	4	0.00			0.720
138	2	1.21	0.783		
140	4	-0.04			0.718
141	4	0.37			0.739
142	3	0.96			0.770
145	0	6.17	1.040		
146	4	0.23			0.732
149	3	-0.77	0.680		
153	0	2.12	0.830		
154	4	-0.19		0.710	
158	4	0.19			0.730
180	2	-1.35			0.650
182	0	-2.31		0.600	
183	3	0.96			0.770
190	3	0.56			0.749
196	4	-0.42			0.698
212	3	-0.58			0.690
215	3	-0.58			0.690
217	0	-2.31			0.600
224	0	2.12	0.830		
234	3	-0.58	0.690		
236	3	-0.58	0.690		
241	2	1.31			0.788
247	1	1.73	0.810		
253	3	0.77			0.760

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

K (Potassium) mg/L



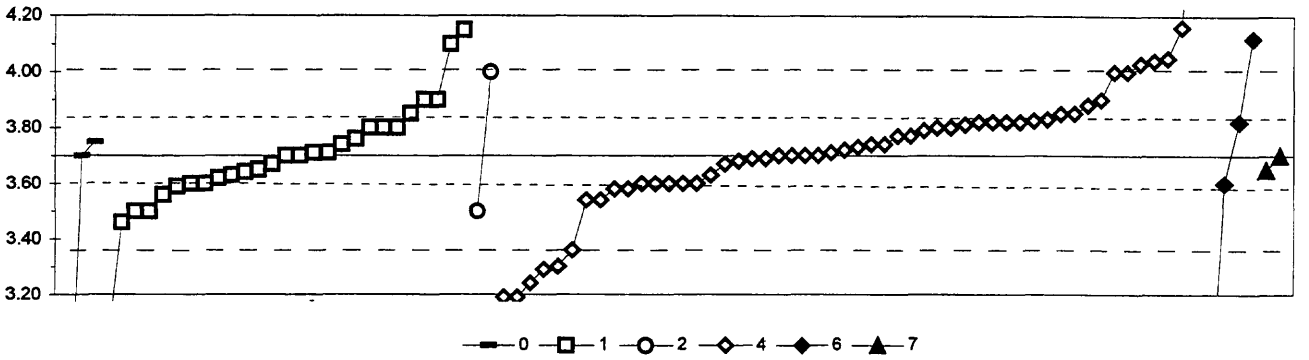
1. AA: direct air				6. ICP/MS				
4. ICP				7. Ion chromatography				
5. DCP				12. Flame emission				
		N =	33	38	1	3	3	3
		Minimum =	1.00	0.88	1.80	1.87	1.66	1.80
		Maximum =	2.50	37.00		2.55	1.85	2.01
		Median =	1.80	1.88				
		F-pseudosigma =	0.10	0.18				

MPV = 1.82
F-pseudosigma = 0.12
N = 81
Hu = 1.90
HI = 1.74

Lab	Rating	Z-value	1	4	5	6	7	12
1	4	0.00	1.82					
3	3	-0.51	1.76					
9	1	1.52		2.00				
10	4	-0.17	1.80					
11	3	0.84		1.92				
12	1	1.52		2.00				
13	0	3.54		2.24				
15	4	0.42		1.87				
16	4	0.34	1.86					
18	1	1.52		2.00				
23	4	-0.17	1.80					
24	3	-0.84		1.72				
25	0	-5.14		< 1.21				
26	4	0.17					1.84	
32	3	0.67				1.90		
33	4	-0.17			1.80			
36	0	-2.36	1.54					
38	4	0.08	1.83					
40	0	21.75		4.40				
43	3	0.67		1.90				
48	3	-0.84		1.72				
50	4	-0.17	1.80					
55	2	-1.43	1.65					
56	3	-0.51	1.76					
57	0	5.73	2.50					
58	1	-1.85	1.60					
59	4	-0.17		1.80				
61	3	-0.84		1.72				
63	0	296.61		37.00				
68	0	6.15				2.55		
69	3	0.67						1.90
70	4	-0.08		1.81				
75	3	-0.51	1.76					
76	4	0.34	1.86					
80	0	-6.91	1.00					
81	4	-0.25		1.79				
83	4	0.42	1.87					
85	2	-1.18	1.68					
86	1	1.77		2.03				
87	2	-1.10	1.69					
89	4	0.08	1.83					
93	1	1.60						2.01
97	3	-0.67	1.74					
100	3	-0.67		1.74				
105	3	0.67		1.90				
107	4	-0.25	1.79					
109	4	0.42	1.87					
113	2	-1.35		1.66				
114	0	-2.70	1.50					
119	4	-0.17		1.80				
121	4	0.17	1.84					
122	2	1.18	1.96					
128	0	-7.93		0.88				
129	4	-0.17	1.80					
131	4	0.17		1.84				
134	3	-0.76	1.73					
138	3	0.51		1.88				
140	1	-1.60	1.63					
141	4	0.42		1.87				
142	2	-1.10		1.69				
145	3	-0.51		1.76				
146	1	1.52		2.00				
149	4	-0.17						1.80
153	2	-1.35					1.66	
154	0	7.42		2.70				
158	3	0.67		1.90				
180	1	-2.02		1.58				
182	3	0.76		1.91				
190	4	0.25					1.85	
191	4	0.42				1.87		
212	3	0.67		1.90				
215	0	14.16		3.50				
219	2	-1.01		1.70				
220	2	-1.01	1.70					
221	4	0.00	1.82					
224	4	-0.25		1.79				
226	4	-0.08	1.81					
231	4	0.08	1.83					
234	3	0.67		1.90				
236	0	3.54		2.24				
241	1	-1.85	1.60					
247	4	0.35		1.86				

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

Mg (Magnesium) mg/L



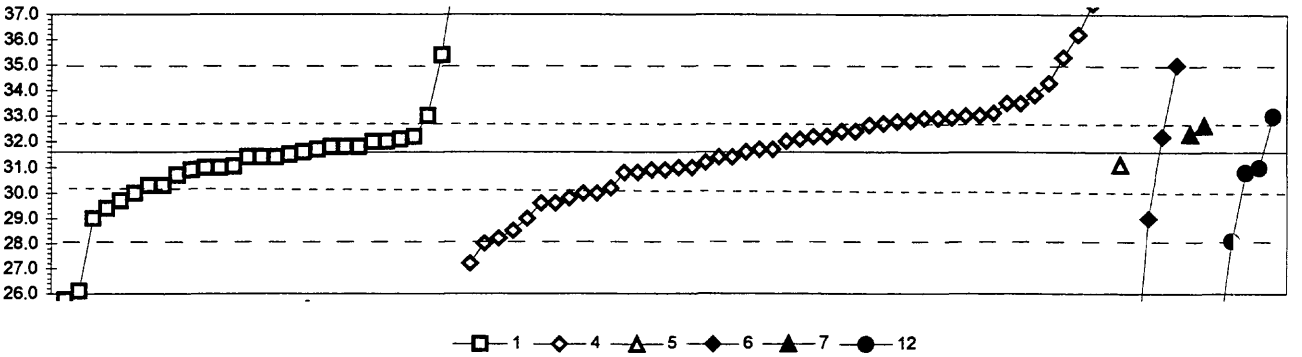
0. Other			4. ICP					
1. AA: direct air			6. ICP/MS					
2. AA: direct nitrous oxide			7. Ion chromatography					
		N =	3	27	2	52	4	2
		Minimum =	2.50	3.00	3.50	3.19	2.70	3.65
		Maximum =	3.75	4.15	4.00	4.74	4.12	3.70
		Median =		3.70		3.73		
		F-pseudosigma =		0.15		0.16		

MPV = 3.70
F-pseudosigma = 0.16
N = 90
Hu = 3.82
HI = 3.60

Lab	Rating	Z-value	0	1	2	4	6	7
1	4	-0.49		3.62				
3	0	-3.13				3.19		
9	4	0.00				3.70		
10	4	0.00		3.70				
11	3	0.74				3.82		
12	3	0.61				3.80		
13	3	0.92				3.85		
15	3	0.80				3.83		
16	3	0.74				3.82		
18	4	0.00				3.70		
19	0	-2.82				3.24		
23	4	-0.31		3.65				
24	3	-0.61				3.60		
25	0	2.15				4.05		
26	3	0.67				3.81		
30.1	1	1.84			4.00			
32	0	2.58					4.12	
33	4	0.31	3.75					
36	0	2.76		4.15				
38	4	0.00		3.70				
39	4	-0.18				3.67		
40	4	-0.12				3.68		
43	3	0.61				3.80		
48	3	-0.74				3.58		
50	2	1.23		3.90				
55	1	2.02				4.03		
56	3	0.92		3.85				
57	3	-0.61					3.60	
59	4	0.00				3.70		
61	0	2.08				4.04		
63	3	-0.61				3.60		
68	0	-6.13					2.70	
69	3	-0.86		3.56				
70	4	0.25				3.74		
75	4	-0.18		3.67				
76	3	0.61		3.80				
80	0	-4.29		3.00				
81	0	-2.08				3.36		
83	3	-0.74				3.58		
85	4	0.06		3.71				
86	3	0.74				3.82		
87	2	-1.47		3.46				
89	2	1.23		3.90				
93	3	0.74				3.82		
97	3	-0.67		3.59				
100	0	2.82				4.16		
105	3	0.55				3.79		
107	4	0.25		3.74				
109	2	-1.23		3.50				
113	4	0.06				3.71		
114	2	-1.23			3.50			
116	4	0.43				3.77		
119	4	0.00				3.70		
121	4	-0.06				3.69		
122	4	-0.37		3.64				
128	0	-3.13				3.19		
129	3	0.61		3.80				
131	3	-0.98				3.54		
133	3	0.77				3.83		
134	4	0.43				3.77		
138	4	0.18				3.73		
140	3	-0.61		3.60				
141	4	0.25				3.74		
142	0	-2.51				3.29		
145	3	-0.61				3.60		
146	3	-0.61				3.60		
149	3	0.61		3.80				
153	4	0.00						3.70
154	3	-0.98				3.54		
155	4	-0.02	3.70					
158	4	-0.06				3.69		
180	4	-0.43				3.63		
182	0	6.38				4.74		
190	4	-0.31						3.65
191	3	0.74					3 82	
212	1	1.84				4.00		
215	2	1.23				3.90		
217	3	-0.61				3.60		
219	0	-2.45				3.30		
220	3	-0.61		3.60				
221	4	0.37		3.76				
224	2	1.10				3.88		
226	4	0.06		3.71				
231	4	-0.43		3.63				
234	4	0.12				3.72		
236	1	1.84				4.00		
241	2	-1.23		3.50				
247	3	0.93				3.85		
249	0	-7.36	2.50					
252	0	2.45		4.10				

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

Na (Sodium) mg/L



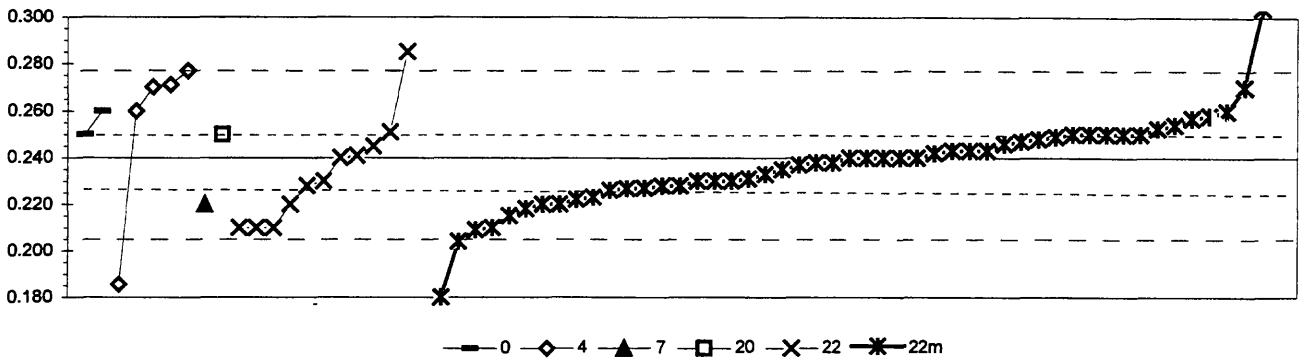
1. AA: direct air			6. ICP/MS					
4. ICP			7. Ion chromatography					
5. DCP			12. Flame emission					
		N =	29	47	1	4	2	5
		Minimum =	25.8	27.2	31.1	22.0	32.3	23.9
		Maximum =	39.0	38.4		35.0	32.6	33.0
		Median =	31.4	32.0				
		F-pseudosigma =	1.1	1.6				

MPV = 31.6
F-pseudosigma = 1.8
N = 88
Hu = 32.7
HI = 30.3

Lab	Rating	Z-value	1	4	5	6	7	12
1	4	-0.09	31.4					
3	0	4.24	39.0					
9	3	0.83		33.0				
10	4	0.09	31.7					
11	4	-0.37		30.9				
12	1	-2.02		28.0				
13	0	3.90		38.4				
15	4	0.37		32.2				
16	4	0.38		32.2				
18	3	0.65		32.7				
19	0	-2.48		27.2				
23	2	-1.05	29.7					
24	4	-0.31		31.0				
25	0	2.65		36.2				
26	4	-0.37		30.9				
32	1	1.96				35.0		
33	4	-0.26			31.1			
36	3	-0.88	30.0					
38	2	-1.22	29.4					
39	4	-0.09		31.4				
40	4	-0.20		31.2				
43	4	0.26		32.0				
48	2	-1.11		29.6				
50	4	-0.09	31.4					
55	4	-0.31	31.0					
56	4	-0.29	31.0					
57	2	-1.45				29.0		
59	3	-0.88		30.0				
61	0	2.13		35.3				
63	3	-0.88		30.0				
68	0	-5.44				22.0		
69	4	-0.31						31.0
70	4	-0.09		31.4				
75	3	-0.71	30.3					
76	4	0.31	32.1					
80	4	-0.31	31.0					
81	1	-1.91		28.2				
83	4	-0.43		30.8				
85	4	-0.48	30.7					
86	3	0.88		33.1				
87	4	-0.37	30.9					
89	4	0.37	32.2					
90	1	-1.96						28.1
93	0	-4.37						23.9
97	4	0.14	31.8					
100	3	0.84		33.0				
105	4	0.31		32.1				
107	4	-0.09	31.4					
109	0	-3.30	25.8					
113	1	-1.74		28.5				
114	0	-3.10	26.1					
116	3	0.77		32.9				
119	3	0.77		32.9				
121	4	0.03		31.6				
122	3	-0.71	30.3					
128	2	1.11		33.5				
129	2	-1.45	29.0					
131	3	-0.77		30.2				
134	4	0.14	31.8					
138	4	0.48		32.4				
140	4	0.26	32.0					
141	3	0.71		32.8				
142	2	1.29		33.8				
145	4	-0.43		30.8				
146	4	0.48		32.4				
149	3	0.83						33.0
153	3	0.61					32.6	
154	4	0.09		31.7				
158	2	-1.11		29.6				
180	4	-0.31		31.0				
182	0	3.34		37.4				
183	4	-0.43						30.8
190	4	0.43					32.3	
191	4	0.37				32.2		
212	1	1.57		34.3				
215	2	1.11		33.5				
217	3	-1.00		29.8				
219	2	-1.45		29.0				
220	4	-0.03	31.5					
221	4	0.14	31.8					
224	3	0.62		32.6				
226	4	0.25	32.0					
231	0	2.19	35.4					
234	4	0.09		31.7				
236	3	0.79		32.9				
241	3	0.83	33.0					
247	3	0.70		32.8				
252	4	0.03	31.6					

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

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



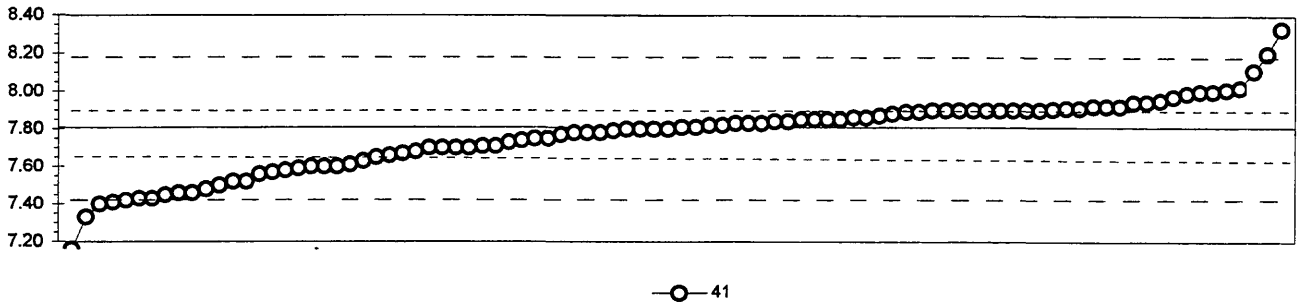
0. Other			20. Titrate: colorimetric					
4. ICP			22. Colorimetric					
7. Ion chromatography			22m. Color:phosphomolybdate					
		N =	2	5	1	1	11	51
		Minimum =	0.250	0.186	0.220	0.250	0.210	0.152
		Maximum =	0.260	0.277			0.285	0.670
		Median =					0.230	0.240
		F-pseudosigma =					0.021	0.017

MPV = 0.240
F-pseudosigma = 0.017
N = 71
Hu = 0.250
Hl = 0.226

Lab	Rating	Z-value	0	4	7	20	22	22m
1	3	-0.97						0.223
3	4	0.00					0.240	
7	2	1.14						0.260
11	4	0.00						0.240
12	0	24.57						0.670
13	0	-2.06						0.204
15	3	-0.57						0.230
18	3	-0.69						0.228
23	0	3.66						0.304
25	0	-6.80		< 0.121				
36	4	-0.17						0.237
38	3	0.80						0.254
39	3	0.63					0.251	
48	4	0.00						0.240
55	4	-0.11						0.238
57	3	0.57						0.250
59	3	0.57						0.250
60	3	0.71						0.253
61	3	0.57	0.250					
63	3	-0.57						0.230
68	0	2.57					0.285	
70	4	-0.40						0.233
81	3	-0.69					0.228	
83	1	1.77		0.271				
85	3	-0.57						0.230
86	0	2.11		0.277				
87	2	1.03						0.258
89	4	0.17						0.243
92	2	-1.14						0.220
97	0	-5.03						0.152
100	3	-0.74						0.227
105	1	-1.71					0.210	
107	4	0.34						0.246
111	3	-0.69						0.228
113	3	-0.80						0.226
114	2	-1.03						0.222
118	4	0.00						0.240
119	4	0.00						0.240
122	2	1.14	0.260					
129	2	-1.43						0.215
131	2	1.14		0.260				
133	3	0.57				0.250		
134	2	-1.14						0.220
138	4	0.17						0.243
140	2	-1.14					0.220	
141	3	0.57						0.250
142	4	-0.11						0.238
143	4	-0.29						0.235
145	3	0.57						0.250
149	3	-0.51						0.231
153	2	-1.14			0.220			
154	1	-1.71					0.210	
155	3	-0.75						0.227
158	3	0.51						0.249
180	4	0.46						0.248
182	4	0.29					0 245	
190	1	-1.77						0.209
212	0	-3.43						0.180
213	1	-1.71					0 210	
215	3	0.57						0.250
217	3	-0.57					0 230	
219	1	1.71		0.270				
220	4	0.06					0 241	
224	4	0.00						0.240
226	4	0.40						0.247
227	4	0.17						0.243
234	3	0.97						0.257
236	0	-3.11		0.186				
241	4	0.11						0.242
243	1	-1.71						0.210
247	2	-1.26						0.218
249	1	1.71						0.270

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

pH



41. Direct reading

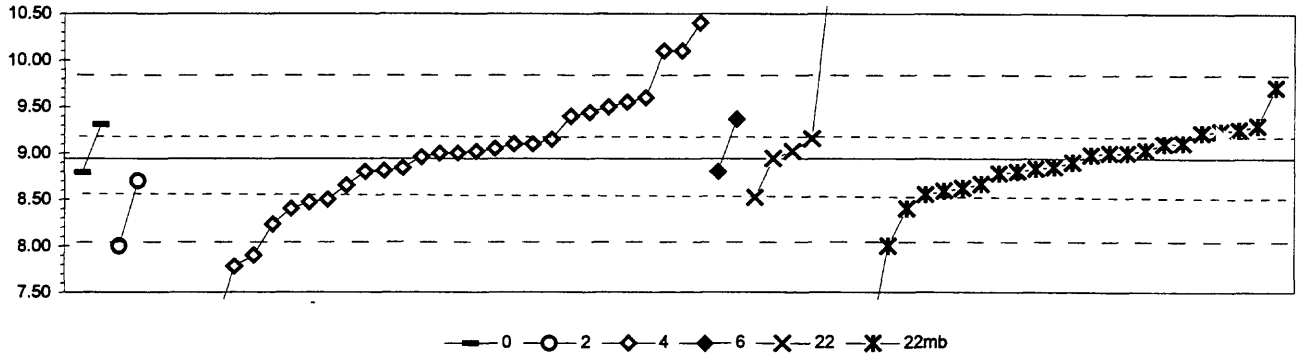
N =	92
Minimum =	7.16
Maximum =	8.33
Median =	7.81
F-pseudosigma =	0.19

MPV =	7.81
F-pseudosigma =	0.19
N =	92
Hu =	7.90
HI =	7.64

Lab	Rating	Z-value	41
1	4	0.13	7.83
3	4	-0.39	7.73
7	1	1.58	8.11
10	4	-0.18	7.77
11	1	-1.84	7.45
12	3	-0.54	7.70
13	3	0.60	7.92
15	4	0.08	7.82
18	4	0.03	7.81
19	3	0.70	7.94
23	2	1.12	8.02
24	4	-0.29	7.75
25	4	0.29	7.86
26	4	0.18	7.84
30.1	4	-0.03	7.80
32	2	1.01	8.00
33	3	-0.54	7.70
36	4	0.39	7.88
38	4	0.49	7.90
39	4	0.49	7.90
40	4	0.44	7.89
43	2	-1.06	7.60
48	2	-1.06	7.60
50	0	-2.10	7.40
51	3	-0.91	7.63
55	1	-1.95	7.43
56	1	2.05	8.20
57	4	0.49	7.90
59	4	-0.29	7.75
60	4	-0.49	7.71
61	1	-1.95	7.43
63	0	2.72	8.33
68	4	0.49	7.90
69	4	0.13	7.83
70	4	0.08	7.82
76	2	1.01	8.00
80	3	-0.54	7.70
81	4	0.49	7.90
84	3	0.96	7.99
85	3	0.60	7.92
86	3	-0.70	7.67
87	0	-2.46	7.33
89	4	0.23	7.85
90	4	0.49	7.90
92	3	-0.80	7.65
93	2	-1.01	7.61
96	4	-0.13	7.78
97	4	-0.08	7.79
100	3	0.54	7.91
105	4	0.34	7.87
107	4	-0.13	7.78
109	4	0.29	7.86
113	4	-0.13	7.78
114	2	-1.22	7.57
118	4	0.49	7.90
119	3	0.60	7.92
122	3	-0.65	7.68
128	2	1.06	8.01
129	1	-1.79	7.46
134	3	0.52	7.91
138	3	0.71	7.94
140	2	-1.48	7.52
141	4	-0.34	7.74
142	3	0.86	7.97
143	4	0.13	7.83
145	4	-0.03	7.80
146	2	-1.27	7.56
154	4	0.23	7.85
155	1	-2.00	7.42
158	1	-1.79	7.46
180	4	0.23	7.85
182	2	-1.48	7.52
183	2	-1.12	7.59
190	4	-0.03	7.80
203	2	-1.17	7.58
212	4	0.49	7.90
213	4	0.23	7.85
215	0	-3.35	7.16
217	4	0.49	7.90
220	2	-1.06	7.60
221	1	-1.58	7.50
224	3	-0.75	7.66
227	4	0.18	7.84
234	4	-0.03	7.80
236	3	-0.54	7.70
241	4	-0.49	7.71
243	1	-1.69	7.48
244	4	0.03	7.81
247	4	0.44	7.89
249	1	-2.05	7.41
252	3	0.75	7.95
253	3	0.54	7.91

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

SiO_2 (Silica) mg/L



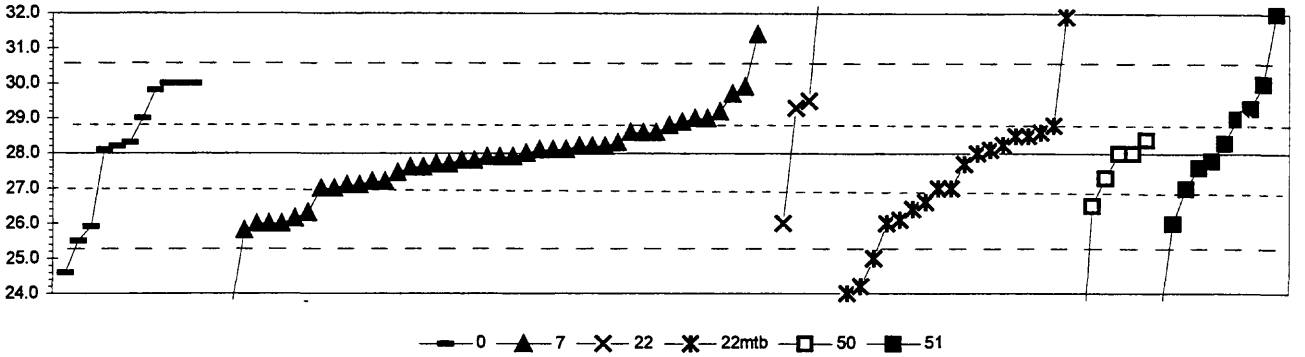
0. Other			6. ICP/MS				
2. AA: direct nitrous oxide			22. Colorimetric				
4. ICP			22mb. Color: molybdate blue				
	N =	2	2	30	2	5	24
	Minimum =	8.79	8.00	2.69	8.80	8.52	2.22
	Maximum =	8.79	8.70	10.40	9.37	11.10	9.71
	Median =			8.98			8.88
	F-pseudosigma =			0.74			0.37

MPV = 8.94
F-pseudosigma = 0.45
N = 65
Hu = 9.16
Hl = 8.55

Lab	Rating	Z-value	0	2	4	6	22	22mb
1	4	-0.09						8.90
3	2	1.46			9.60			
9	0	-2.08						8.00
10	4	0.13						9.00
11	0	2.57			10.10			
13	2	1.02			9.40			
15	0	4.78					11.10	
18	1	1.70						9.71
23	0	-14.86						2.22
24	3	0.82	9.31					
25	0	2.57			10.10			
26	4	0.18			9.02			
32	3	0.95				9.37		
33	4	-0.33	8.79					
38	4	0.38						9.11
39	4	-0.31			8.80			
40	0	-2.30			7.90			
43	4	0.35			9.10			
50	3	0.80						9.30
55	4	0.24			9.05			
57	4	-0.31				8.80		
59	3	0.71						9.26
61	0	-10.53			4.18			
63	4	0.35			9.10			
68	4	0.18					9.02	
70	3	-0.71						8.62
80	0	-2.08		8.00				
81	4	0.00					8.94	
83	2	-1.04			8.47			
85	4	0.35						9.10
87	2	-1.19						8.40
89	3	-0.86						8.55
92	4	-0.35						8.78
97	4	-0.24						8.83
100	2	1.35			9.55			
105	3	-0.97			8.50			
107	0	-4.38						6.96
111	4	0.20						9.03
113	4	0.49					9.16	
116	4	-0.29			8.81			
118	3	0.66						9.24
119	4	0.13			9.00			
121	4	0.13			9.00			
128	2	1.11			9.44			
131	0	-2.57			7.78			
134	4	0.04			8.96			
138	3	-0.77						8.59
140	3	-0.93					8.52	
142	0	3.23			10.40			
145	4	0.46			9.15			
155	3	-0.60						8.67
158	4	-0.22			8.84			
182	0	-7.45			5.57			
190	4	0.09						8.98
203	4	0.13						9.00
212	2	1.24			9.50			
215	0	-4.00			7.13			
217	2	-1.19			8.40			
219	1	-1.57			8.23			
226	4	-0.31						8.80
231	4	-0.20						8.85
234	3	-0.64			8.65			
236	0	-13.82			2.69			
241	3	-0.53		8.70				
247	3	0.62						9.22

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

SO_4 (Sulfate) mg/L



0. Other				22mtb. Color: methyl thymol blue				
7. Ion chromatography				50. Gravimetric				
22. Colorimetric				51. Turbidimetric				
		N =	11	45	5	18	6	11
		Minimum =	24.6	22.3	26.0	24.0	19.7	23.0
		Maximum =	30.0	275.0	36.4	31.9	28.4	34.0
		Median =	28.3	27.9		27.4		28.3
		F-pseudosigma =	2.1	1.1		1.8		1.7

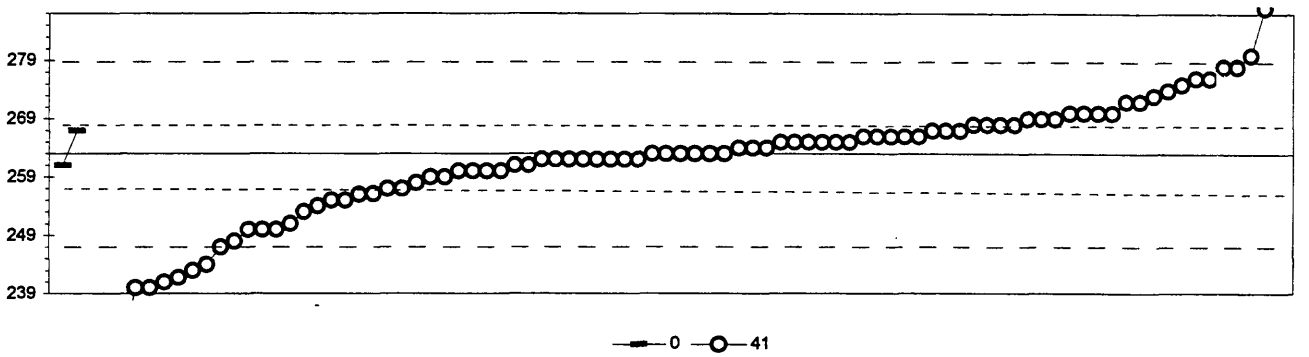
Lab	Rating	Z-value	0	7	22	22mtb	50	51
1	3	-0.75		27.0				
3	3	0.60		28.8				
4	0	-4.29		22.3				
7	3	-0.67		27.1				
9	3	-0.75				27.0		
10	4	0.22						28.3
11	2	-1.27		26.3				
12	0	-3.00				24.0		
13	4	-0.22		27.7				
15	3	-0.60		27.2				
18	4	0.00				28.0		
19	0	-2.85				24.2		
23	4	0.45				28.6		
24	3	-0.75				27.0		
25	4	-0.15		27.8				
26	4	-0.22		27.7				
30.1	4	0.45		28.6				
30.2	2	1.35	29.8					
32	4	0.45		28.6				
33	4	0.15		28.2				
36	3	0.75	29.0					
39	3	0.75		29.0				
40	1	-1.65		25.8				
43	4	0.00					28.0	
48	2	-1.50						26.0
50	4	0.37				28.5		
51	3	0.90		29.2				
55	2	-1.20				26.4		
56	2	1.12			29.5			
57	0	3.00						32.0
58	0	-6.22					19.7	
59	4	0.07		28.1				
61	1	-1.57	25.9					
63	4	0.00					28.0	
69	3	0.60				28.8		
70	3	0.75		29.0				
75	4	0.07				28.1		
76	3	-0.60		27.2				
80	2	1.50	30.0					
81	2	-1.50			26.0			
83	4	0.15	28.2					
85	4	0.15		28.2				
86	0	2.55		31.4				
87	0	-2.25				25.0		
89	0	2.92				31.9		
92	0	-2.55	24.6					
96	4	-0.30						27.6
97	4	0.37				28.5		
100	0	185.11		275.0				
105	4	-0.07		27.9				

MPV =	28.0
F-pseudosigma =	1.3
N =	95
Hu =	28.8
Hl =	27.0

Lab	Rating	Z-value	0	7	22	22mtb	50	51
107	2	-1.05				26.6		
109	4	0.30					28.4	
111	4	0.22		28.3				
113	2	-1.50		26.0				
114	4	-0.15						27.8
119	2	-1.50		26.0				
121	4	-0.30		27.6				
122	3	-0.52					27.3	
128	0	-3.37		23.5				
129	3	-0.75		27.0				
131	4	0.07	28.1					
134	4	-0.15		27.8				
138	4	0.07		28.1				
140	2	1.50	30.0					
141	3	-0.75						27.0
142	2	-1.42				26.1		
145	2	1.27		29.7				
146	2	1.50						30.0
149	3	0.67		28.9				
153	4	-0.07		27.9				
154	3	0.97			29.3			
158	4	-0.22				27.7		
180	2	-1.50				26.0		
182	0	4.12			33.5			
183	1	-1.87	25.5					
190	2	1.42		29.9				
191	4	-0.30		27.6				
196	4	-0.41		27.5				
203	4	0.18				28.2		
212	4	0.45		28.6				
215	3	0.75						29.0
217	4	0.07		28.1				
219	4	0.00		28.0				
220	0	6.30			36.4			
221	2	-1.12					26.5	
224	4	-0.07		27.9				
226	2	-1.39		26.1				
227	3	-0.67		27.1				
231	4	0.22	28.3					
234	2	-1.50		26.0				
236	0	-3.84		22.9				
241	0	-3.75						23.0
247	4	0.15		28.2				
249	2	1.50	30.0					
252	0	4.50						34.0
253	3	0.97						29.3

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)--Continued*

Sp Cond (Specific Conductance) µS/cm



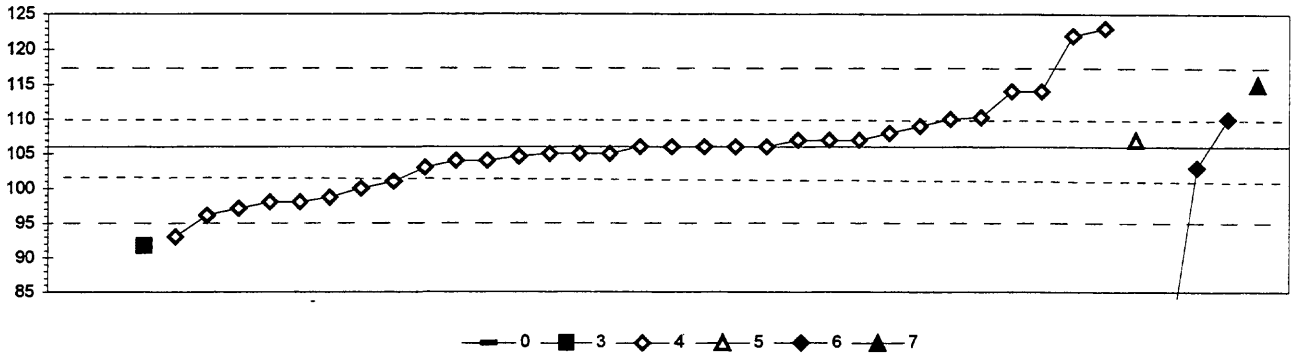
0. Other		
41. Direct reading		
N =	2	86
Minimum =	261	187
Maximum =	267	297
Median =		263
F-pseudosigma =		8

MPV =	263
F-pseudosigma =	8
N =	88
Hu =	268
Hl =	257

Lab	Rating	Z-value	0	41
1	4	0.00		263
3	4	0.00		263
10	4	0.00		263
11	4	-0.12		262
12	4	0.25		265
13	4	0.37		266
15	4	0.25		265
18	0	-2.45		243
19	0	3.07		288
23	0	-4.41		227
24	4	-0.37		260
25	4	0.00		263
26	4	0.25		265
32	3	-0.86		256
33	2	-1.10		254
36	4	0.00		263
38	4	0.37		266
39	4	-0.37		260
40	3	0.74		269
43	4	-0.25		261
48	2	-1.47		251
50	4	0.25		265
51	3	-0.74		257
55	1	1.59		276
56	3	0.86		270
57	3	0.86		270
59	3	0.74		269
60	0	-4.41		227
61	0	-2.70		241
63	2	1.10		272
68	3	0.61		268
70	3	-0.61		258
75	2	1.10		272
80	4	-0.12		262
81	2	1.47		275
84	4	0.25		265
85	4	0.37		266
86	3	0.61		268
87	0	-9.32		187
89	3	-0.85		256
90	4	0.49		267
92	4	-0.25	261	
96	2	1.34		274
97	3	0.74		269
100	2	-1.23		253
105	4	0.49	267	
107	4	-0.49		259
109	4	0.12		264
111	1	-1.59		250
113	4	-0.12		262
114	4	-0.49		259
118	1	-1.59		250
119	3	-0.74		257
122	4	-0.25		261
128	2	1.23		273
129	3	-0.98		255
134	4	0.37		266
138	1	-1.59		250
140	4	-0.12		262
141	4	0.12		264
142	4	0.49		267
143	4	0.12		264
145	1	1.59		276
146	1	-1.96		247
149	0	-2.82		240
153	3	0.61		268
154	4	0.00		263
155	4	-0.12		262
158	4	0.37		266
180	1	-1.84		248
182	0	-2.61		242
190	4	-0.12		262
203	4	-0.37		260
212	1	1.84		278
215	4	-0.12		262
217	1	1.84		278
220	0	-2.82		240
224	3	0.86		270
227	4	0.25		265
234	4	0.49		267
236	0	4.17		297
241	4	-0.37		260
243	3	-0.98		255
244	4	-0.12		262
247	3	0.86		270
249	0	2.08		280
252	0	-2.33		244
253	3	0.61		268

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

Sr (Strontium) µg/L

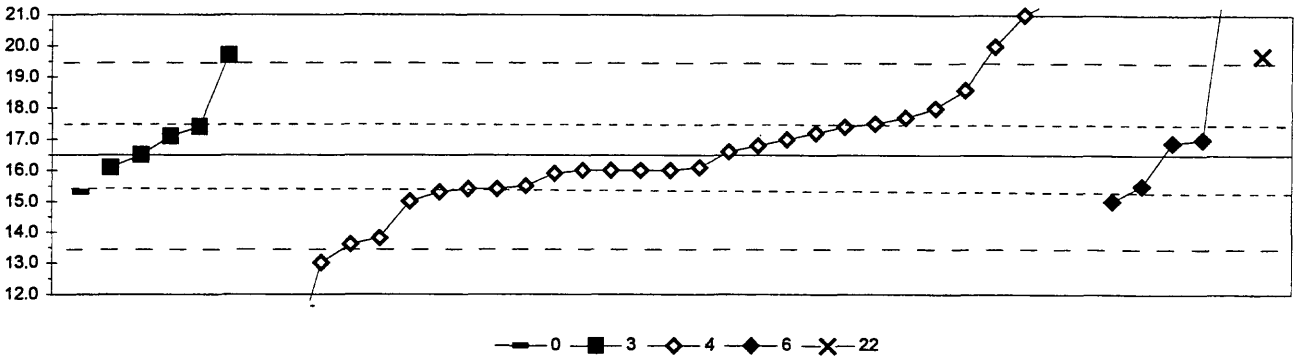


0. Other			5. DCP					
3. AA: graphite furnace			6. ICP/MS					
4. ICP			7. Ion chromatography					
		N =	2	1	31	1	3	1
		Minimum =	127	92	93	107	73	115
		Maximum =	127		123		110	
		Median =			106			
		F-pseudosigma =			4			
Lab	Rating	Z-value	0	3	4	5	6	7
1	3	0.54			109			
3	4	-0.18			105			
9	3	-0.54			103			
11	2	1.44			114			
16	1	-1.79			96			
18	4	-0.18			105			
23	0	3.78	127					
24	0	3.78	127					
25	0	3.06			123			
32	3	0.72					110	
33	4	0.18				107		
39	4	-0.36			104			
40	1	-1.60			97			
68	0	-6.03					73	
70	4	0.00			106			
81	0	-2.34			93			
85	2	1.44			114			
86	4	0.00			106			
97	0	-2.57		92				
100	4	-0.25			105			
105	4	0.18			107			
113	4	0.00			106			
116	4	-0.18			105			
121	4	0.00			106			
131	4	0.18			107			
134	4	0.00			106			
138	3	-0.90			101			
142	4	-0.36			104			
145	2	-1.31			99			
154	2	-1.44			98			
182	0	2.86			122			
190	1	1.62						115
191	3	-0.54					103	
212	3	0.72			110			
217	2	-1.08			100			
219	2	-1.44			98			
234	4	0.36			108			
236	3	0.77			110			
247	4	0.18			107			

MPV =	106
F-pseudosigma =	6
N =	39
Hu =	110
HI =	102

Table 14. *Statistical summary of reported data for standard reference water sample M-138 (major constituents)–Continued*

V (Vanadium) µg/L



0. Other				6. ICP/MS			
3. AA: graphite furnace				22. Colorimetric			
4. ICP							
		N =	1	6	29	5	1
		Minimum =	15.3	16.1	7.0	15.0	19.7
		Maximum =		22.0	21.6	24.2	
		Median =			16.0		
		F-pseudosigma =			1.6		

MPV =	16.5
F-pseudosigma =	1.5
N =	41
Hu =	17.5
HI =	15.5

Lab	Rating	Z-value	0	3	4	6	22
1	0	2.16					19.7
3	1	-1.82			13.8		
11	4	-0.34			16.0		
13	NR				< 50		
15	2	1.01			18.0		
16	0	5.19				24.2	
18	4	0.34			17.0		
23	4	0.40		17.1			
24	3	-0.81	15.3				
25	0	3.04			21.0		
26	4	0.47			17.2		
32	2	-1.01				15.0	
39	4	0.20			16.8		
48	NR				< 200		
57	0	-10.45				< 0.1	
61	3	-0.67			15.5		
63	0	2.36			20.0		
68	3	-0.67				15.5	
70	NR				< 50		
81	0	-6.41			7.0		
85	0	3.37			21.5		
86	3	0.67			17.5		
89	3	0.61		17.4			
97	4	0.00		16.5			
100	3	0.61			17.4		
105	3	-0.81			15.3		
121	4	-0.34			16.0		
128	4	-0.34			16.0		
134	4	0.07			16.6		
138	4	-0.40			15.9		
141	3	-0.74			15.4		
142	4	0.26				16.9	
145	3	0.81			17.7		
146	4	-0.27			16.1		
154	2	1.42			18.6		
158	3	-0.74			15.4		
180	1	-1.96			13.6		
182	0	-4.62			9.7		
212	4	-0.34			16.0		
217	2	-1.01			15.0		
219	0	-2.36			13.0		
234	0	2.16		19.7			
236	0	3.44			21.6		
241	4	-0.27		16.1			
247	4	0.34				17.0	

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrients)*

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: electrometric	=	titration: electrmetric
22. Color:	=	colorimetric [color reagent specified]
40. Ion electrode	=	ion selective electrode

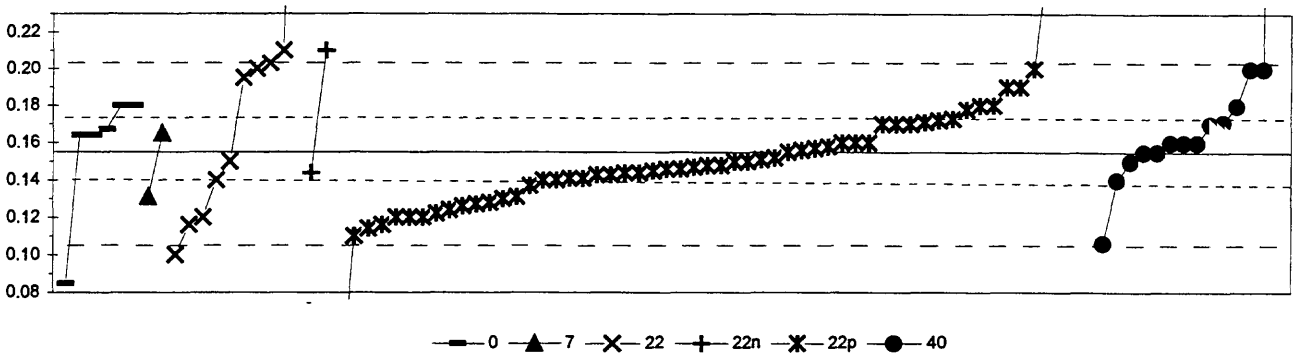
Abbreviations and symbols

N	=	number of samples
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
<	=	less than

Constituent		page
NH_3 as N	Ammonia as nitrogen	118
NH_3+Org N as N	Ammonia plus organic nitrogen	119
NO_3+NO_2 as N	Nitrate plus nitrite as nitrogen	120
Total P as P	Total Phosphorus as phosphorus	121
PO_4 as P	Orthophosphate as phosphorus	122

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrient constituents)–Continued*

NH_3 as N (Ammonia as nitrogen) mg/L



0. Other
7. Ion chromatography
22. Colorimetric
22n. Color: Nesslerization
22p. Color: phenate
40. Ion selective electrode

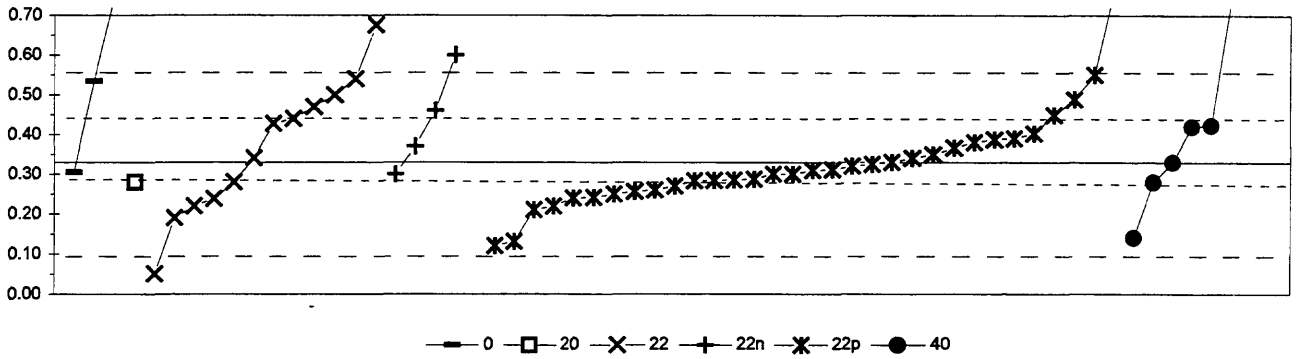
	0	7	22	22n	22p	40
N =	6	2	10	2	56	14
Minimum =	0.085	0.131	0.100	0.144	0.015	0.106
Maximum =	0.180	0.165	0.480	0.210	0.769	0.908
Median =			0.173		0.148	0.160
F-pseudosigma =			0.062		0.030	0.019

MPV = 0.155
F-pseudosigma = 0.024
N = 90
Hu = 0.173
Hl = 0.140

Lab	Rating	Z-value	0	7	22	22n	22p	40
1	3	0.94					0.178	
7	4	0.20					0.160	
9	3	0.61					0.170	
10	4	0.20						0.160
11	3	-0.61					0.140	
13	4	-0.29					0.148	
15	2	-1.27					0.124	
18	4	-0.29					0.148	
19	4	0.20					0.160	
21	3	-0.57					0.141	
23	0	25.10					0.769	
25	0	2.25			0.210			
26	3	-0.98		0.131				
32	4	0.41		0.165				
33	4	-0.20					0.150	
36	3	-0.61						0.140
38	0	5.36					0.286	
39	2	-1.43					0.120	
48	2	-1.43					0.120	
55	4	-0.12					0.152	
57	4	-0.20						0.150
59	3	0.61					0.170	
60	3	0.69					0.172	
61	4	0.37	0.164					
68	1	1.84			0.200			
70	4	-0.41					0.145	
76	4	-0.33					0.147	
81	1	-1.59			0.116			
83	0	13.29			0.480			
85	4	0.20					0.160	
86	4	-0.49					0.143	
87	1	-1.84					0.110	
88	0	4.29					0.260	
89	4	0.00					0.155	
90	4	-0.49					0.143	
91	4	-0.20					0.150	
93	2	1.02	0.180					
96	3	-0.98					0.131	
97	4	-0.45					0.144	
100	1	-1.68					0.114	
104	4	0.12					0.158	
105	4	-0.20			0.150			
107	4	-0.45					0.144	
110	0	4.66					0.269	
111	0	-5.72					0.015	
113	3	-0.57					0.141	
114	3	0.61						0.170
118	2	1.43					0.190	
119	1	1.84						0.200
122	4	-0.37					0.146	
128	0	-2.86	0.085					
129	4	-0.45				0.144		
133	4	0.20						0.160
134	3	0.61					0.170	
138	1	-1.59					0.116	
140	2	-1.43			0.120			
141	2	-1.10					0.128	
142	2	-1.14					0.127	
145	2	1.02					0.180	
146	3	-0.74					0.137	
149	1	1.84					0.200	
154	2	-1.19					0.126	
155	3	-0.60					0.140	
158	2	1.02					0.180	
180	4	-0.37					0.146	
183	1	1.84						0.200
190	4	0.08					0.157	
197	1	1.96			0.203			
203	3	0.74					0.173	
209	4	0.49	0.167					
211	3	0.65						0.171
212	2	-1.43					0.120	
213	2	1.02	0.180					
215	2	-1.02					0.130	
217	3	-0.61			0.140			
220	1	1.64			0.195			
221	4	0.20						0.160
224	2	1.43					0.190	
226	4	-0.16					0.151	
227	0	2.25				0.210		
231	0	-2.25			0.100			
234	4	0.00						0.155
240	1	-2.00						0.106
241	4	0.00						0.155
243	4	0.04					0.156	
247	2	-1.35					0.122	
248	0	30.78						0.908
249	2	1.02						0.180
252	3	0.65					0.171	
253	4	0.37	0.164					

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrient constituents)--Continued*

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



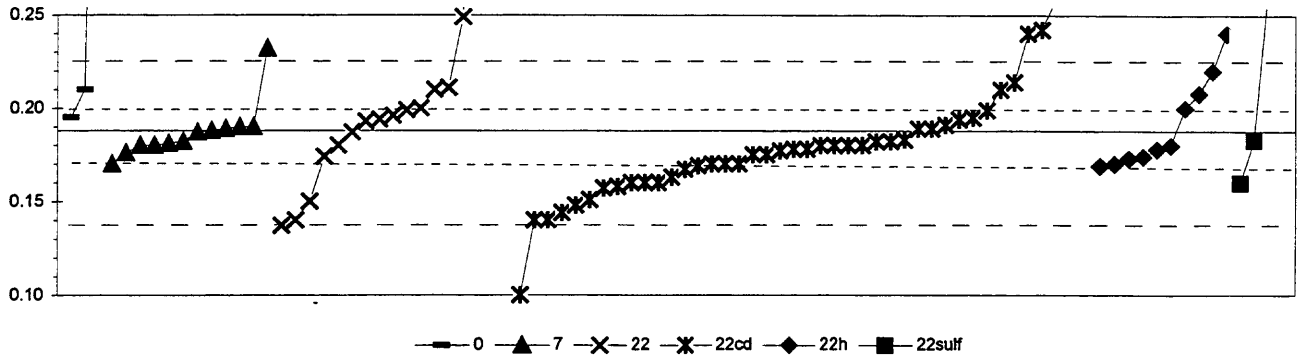
0. Other				22n. Color: Nesslerization				
20. Titrate: colorimetric				22p. Color: phenate				
22. Colorimetric				40. Ion selective electrode				
		N =	3	1	12	4	32	7
		Minimum =	0.31	0.28	0.05	0.30	0.12	0.14
		Maximum =	0.75		0.68	0.60	0.77	1.05
		Median =			0.38		0.31	0.42
		F-pseudosigma =			0.17		0.09	0.20

MPV =	0.33
F-pseudosigma =	0.12
N =	59
Hu =	0.43
HI =	0.28

Lab	Rating	Z-value	0	20	22	22n	22p	40
1	4	0.47					0.37	
9	4	0.04					0.33	
10	4	-0.21					0.29	
11	4	0.38				0.37		
15	NR						< 1	
18	3	-0.71					0.24	
21	4	-0.36					0.27	
25	1	1.83			0.54			
38	4	-0.21				0.30		
39	1	-1.74						
48	3	-0.98					0.13	
55	4	-0.38			0.28			
56	2	1.23			0.47			
57	0	6.17						0.74
59	4	-0.21					0.30	
60	0	-2.34			0.05			
61	4	-0.17	0.31					
68	2	1.49			0.50			
70	3	-0.89					0.21	
81	3	0.87			0.43			
85	4	0.13					0.33	
87	3	-0.72					0.22	
89	4	0.00					0.32	
90	3	-0.59					0.25	
91	4	-0.13					0.30	
96	4	0.20					0.34	
97	4	-0.12					0.31	
100	0	3.62	0.75					
104	3	-0.55					0.26	
105	4	0.13			0.34			
113	NR						0.77	
118	3	-0.64					0.24	
119	3	0.81						0.33
122	2	1.39					0.45	
128	NR			< 0.3				
129	0	2.34				0.60		
133	4	-0.38						0.14
134	4	-0.04					0.31	
138	3	0.54					0.38	
140	3	-0.89			0.22			
141	NR						< 0.5	
142	4	-0.32					0.29	
145	4	-0.47					0.26	
154	1	-1.66					0.12	
155	4	-0.33					0.28	
158	0	3.53						0.42
180	4	-0.35					0.28	
190	3	0.55					0.39	
209	3	-0.74			0.24			
211	2	1.06					0.40	
212	NR						< 0.5	
215	1	1.91					0.49	
217	3	0.98			0.44			
220	0	2.98			0.68			
221	4	-0.38		0.28				
224	0	3.79					0.55	
226	3	0.66					0.3[illegible]	
227	2	1.15				0.46		
231	2	-1.15			0.19			
240	3	0.83						0.42
241	NR						< 0.5	
247	4	0.35					0.3[illegible]	
249	4	0.04						0.28
253	1	1.78	0.53					

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrient constituents)–Continued*

$NO_3 + NO_2$ as N (Nitrate + nitrite as nitrogen) mg/L



0. Other
7. Ion chromatography
22. Colorimetric

22cd. Cd diazotization
22h. Color: hydrazine diazotization
22sulf. Color: sulfanilamide

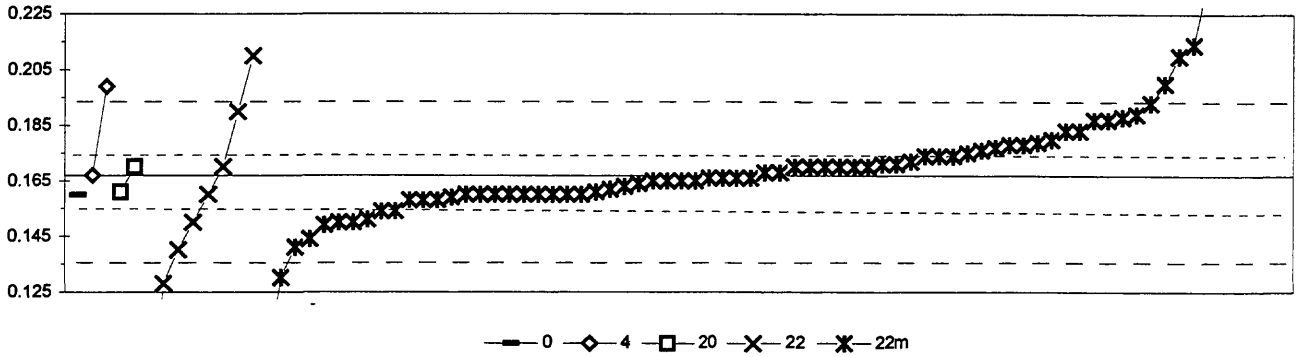
MPV = 0.182
F-pseudosigma = 0.022
N = 88
Hu = 0.200
Hl = 0.170

	0	7	22	22cd	22h	22sulf
N =	3	12	16	43	10	4
Minimum =	0.195	0.170	0.137	0.065	0.169	0.160
Maximum =	0.571	0.232	0.402	0.420	0.240	0.840
Median =		0.185	0.195	0.178	0.179	
F-pseudosigma =		0.007	0.025	0.022	0.260	

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
1	2	1.49				0.214		
7	3	0.85					0.200	
9	3	0.80				0.199		
10	4	-0.07				0.180		
11	3	-0.98						0.160
12	2	1.30				0.210		
13	4	0.39		0.190				
15	4	-0.16				0.178		
18	4	-0.16				0.178		
19	2	1.30			0.210			
21	1	1.76					0.220	
25	3	0.53			0.193			
32	4	0.39		0.190				
36	1	-1.71				0.144		
38	4	-0.21				0.177		
39	1	-1.53				0.148		
48	0	2.68					0.240	
53	3	0.57				0.194		
55	4	0.43				0.191		
56	2	-1.44			0.150			
57	3	-0.98				0.160		
59	3	-0.53				0.170		
61	3	0.62	0.195					
68	3	0.85			0.200			
69	4	-0.07				0.180		
70	3	-0.98				0.160		
75	0	2.77				0.242		
81	3	0.66			0.196			
84	3	-0.66				0.167		
85	3	-0.98				0.160		
86	0	4.18				0.273		
87	4	-0.07				0.180		
88	0	10.91				0.420		
89	3	-0.85				0.163		
90	4	-0.16					0.178	
91	3	-0.53					0.170	
92	4	0.34				0.189		
96	3	-0.57					0.169	
97	4	0.07				0.183		
100	0	3.68						0.262
104	4	0.02				0.182		
105	3	0.57			0.194			
107	4	-0.30				0.175		
113	3	-0.57				0.169		
114	0	2.68				0.240		
118	4	-0.07					0.180	
119	4	-0.07		0.180				
122	2	-1.12				0.157		
128	4	0.25		0.187				
129	4	0.30		0.188				
133	2	1.30	0.210					
134	4	-0.07				0.180		
138	4	0.02				0.182		
140	1	-2.03			0.137			
141	2	-1.07				0.158		
142	2	1.35			0.211			
145	1	-1.90				0.140		
146	4	-0.30				0.175		
149	4	-0.07		0.180				
154	3	-0.53				0.170		
155	2	-1.40				0.151		
158	2	1.21					0.208	
180	4	0.34				0.189		
190	3	0.62				0.195		
191	3	-0.53		0.170				
196	4	0.02		0.182				
197	4	-0.34			0.174			
203	4	0.07						0.183
209	4	-0.39					0.173	
211	4	-0.34					0.174	
212	1	-1.90				0.140		
215	0	-3.73				0.100		
217	4	-0.07			0.180			
220	0	10.08			0.402			
221	0	3.09			0.249			
224	0	30.11						0.840
226	0	3.54				0.259		
227	0	2.31		0.232				
231	1	-1.90			0.140			
234	4	-0.25		0.176				
240	4	-0.02		0.181				
241	0	-5.33				0.065		
243	3	-0.53				0.170		
247	4	0.34		0.189				
248	0	17.82	0.571					
249	0	8.62			0.370			
252	4	0.25			0.187			
253	3	0.80			0.199			

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrient constituents)–Continued*

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



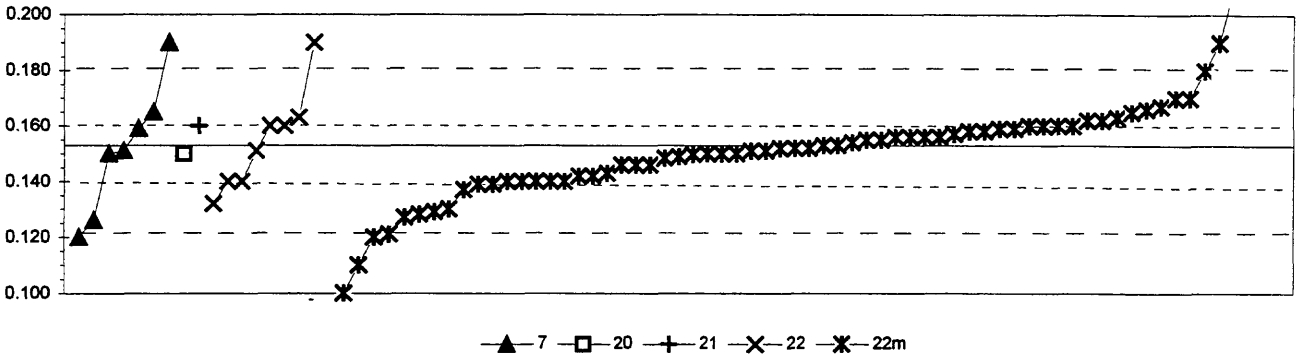
0. Other			22. Colorimetric				
4. ICP			22m. Color:phosphomolybdate				
20. Titrate: colorimetric							
		N =	1	2	2	8	72
		Minimum =	0.16	0.17	0.16	0.08	0.10
		Maximum =	0.00	0.20	0.17	0.21	0.70
		Median =	0.16	0.18	0.17	0.16	0.17
		F-pseudosigma =	0.00	0.00	0.00	0.00	0.00

MPV = 0.167
F-pseudosigma = 0.013
N = 85
Hu = 0.178
Hl = 0.160

Lab	Rating	Z-value	0	4	20	22	22m
1	0	3.52					0.214
7	2	-1.27					0.150
9	3	0.52					0.174
10	4	-0.15					0.165
11	3	0.97					0.180
12	0	9.22					0.290
13	1	-1.95					0.141
15	3	0.82					0.178
18	4	-0.07					0.166
19	4	0.22					0.170
21	3	0.52					0.174
22	3	0.82					0.178
23	4	-0.07					0.166
25	0	-3.45		< 0.121			
36	4	-0.45					0.161
38	3	0.67					0.176
39	4	0.22					0.170
48	3	-0.52					0.160
55	3	0.52					0.174
56	3	-0.52				0.160	
57	4	0.22					0.170
59	3	-0.52					0.160
60	3	0.88					0.179
61	3	-0.52	0.160				
68	1	1.72				0.190	
70	3	-0.67					0.158
81	0	-2.92				0.128	
83	4	0.00		0.167			
85	3	-0.52					0.160
86	0	2.40		0.199			
87	0	5.32					0.238
89	4	-0.15					0.165
90	3	0.75					0.177
91	3	-0.52					0.160
92	3	-0.52					0.160
96	3	-0.67					0.158
97	3	-0.97					0.154
100	4	-0.30					0.163
104	4	0.07					0.168
105	1	-2.02				0.140	
107	4	0.37					0.172
111	3	-0.97					0.154
113	4	0.07					0.168
114	3	0.60					0.175
118	0	-5.02					0.100
119	3	-0.52					0.160
122	4	-0.22					0.164
128	4	-0.45			0.161		
129	2	-1.20					0.151
133	4	0.22			0.170		
134	2	-1.27					0.150
138	4	0.22					0.170
140	2	-1.27				0.150	
141	4	-0.15					0.165
142	4	-0.07					0.166
143	2	1.50					0.187
145	4	0.22					0.170
146	3	-0.60					0.159
149	3	-0.52					0.160
154	1	-1.72					0.144
155	4	-0.38					0.162
158	1	1.57					0.188
180	1	1.65					0.189
182	0	25.33					0.505
190	4	0.30					0.171
203	3	-0.52					0.160
211	1	1.95					0.193
212	0	-2.77					0.130
213	0	2.47					0.200
215	0	35.45					0.640
217	4	0.22				0.170	
220	0	3.22				0.210	
221	2	1.20					0.183
224	4	0.22					0.170
226	4	-0.15					0.165
227	4	0.30					0.171
231	0	-6.52				0.080	
234	2	1.50					0.187
240	4	-0.07					0.166
241	2	1.20					0.183
243	3	-0.52					0.160
247	2	-1.35					0.149
248	0	39.99					0.701
249	0	3.22					0.210
252	3	-0.67					0.158
253	0	13.12					0.342

Table 15. *Statistical summary of reported data for standard reference water sample N-49 (nutrient constituents)–Continued*

PO_4 as P (orthophosphate as phosphorus) mg/L



7. Ion chromatography			22. Colorimetric				
20. Titrate: colorimetric			22m. Color:phosphomolybdate				
21. Titrate: electrometric							
		N =	7	1	1	8	66
		Minimum =	0.120	0.150	0.160	0.132	0.049
		Maximum =	0.190			0.190	1.540
		Median =	0.151			0.156	0.152
		F-pseudosigma =	0.018			0.016	0.015

MPV = 0.152
F-pseudosigma = 0.015
N = 83
Hu = 0.160
HI = 0.140

Lab	Rating	Z-value	7	20	21	22	22m
1	4	0.07					0.153
9	4	0.20					0.155
10	4	0.00					0.152
11	3	-0.81					0.140
12	0	2.56					0.190
13	0	-2.16	0.120				
15	4	0.47					0.159
18	4	0.00					0.152
19	4	-0.13					0.150
21	4	-0.07					0.151
23	0	-6.95					0.049
25	4	-0.20					0.149
32	4	-0.07	0.151				
33	4	-0.13	0.150				
36	3	-0.61					0.143
38	4	-0.40					0.146
39	3	0.54					0.160
53	0	-2.09					0.121
55	2	1.01					0.167
56	3	0.54				0.160	
57	2	1.21					0.170
59	3	-0.81					0.140
60	4	-0.24					0.148
61	3	0.54			0.160		
70	3	-0.88					0.139
81	2	-1.35				0.132	
83	3	0.74				0.163	
85	3	0.54					0.160
87	4	0.47					0.159
88	0	3.98					0.211
89	4	0.00					0.152
90	4	0.40					0.158
92	4	0.27					0.156
96	4	0.34					0.157
97	1	-1.55					0.129
100	4	-0.07					0.151
104	4	0.27					0.156
105	0	2.56				0.190	
107	3	0.94					0.166
111	3	-0.81					0.140
113	4	-0.40					0.146
118	3	-0.81					0.140
119	2	-1.48					0.130
122	3	-0.88					0.139
128	1	-1.75	0.126				
129	2	-1.01					0.137
133	4	-0.13		0.150			
134	0	-3.51					0.100
138	4	-0.40					0.146
140	3	-0.81				0.140	
141	2	1.21					0.170
142	4	-0.13					0.150
143	4	0.40					0.158
145	3	-0.81					0.140
146	3	0.74					0.163
149	0	-2.16					0.120
154	3	-0.67					0.142
155	4	-0.15					0.150
158	1	-1.69					0.127
180	1	-1.62					0.128
182	0	93.62					1.540
190	4	0.20					0.155
191	0	2.56	0.190				
196	3	0.88	0.165				
203	4	0.07					0.153
211	3	0.67					0.162
212	0	-2.83					0.110
213	4	-0.13					0.150
215	0	23.47					0.500
217	3	0.54				0.160	
220	4	-0.07				0.151	
221	3	-0.67					0.142
224	3	0.54					0.160
227	4	0.13					0.154
231	3	-0.81				0.140	
234	4	0.27					0.156
240	3	0.88					0.165
241	3	0.67					0.162
247	4	0.47	0.159				
248	0	34.77					0.668
249	1	1.89					0.180
252	4	0.27					0.156
253	3	0.54					0.160

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrients)*

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

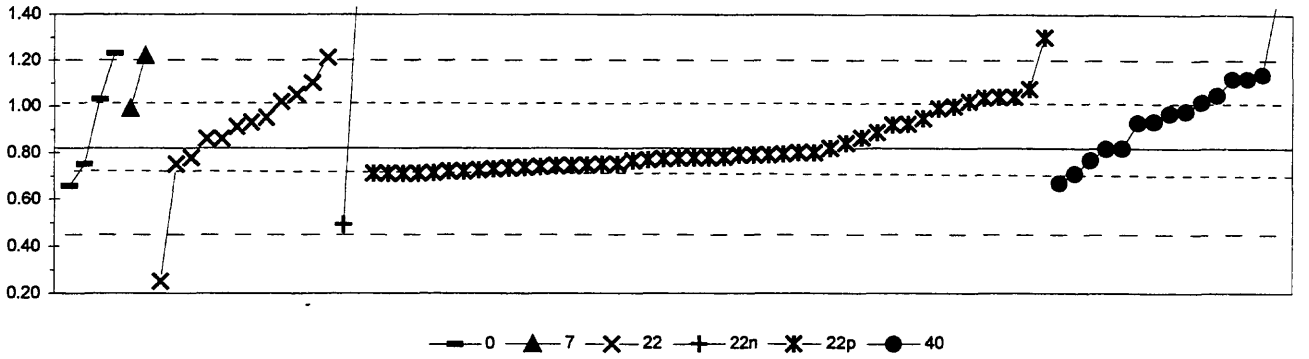
Abbreviations and symbols

N	=	number of samples
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
<	=	less than

Constituent		page
NH_3 as N	Ammonia as nitrogen	124
NH_3+Org N as N	Ammonia plus organic nitrogen	125
NO_3+NO_2 as N	Nitrate plus nitrite as nitrogen	126
Total P as P	Total Phosphorus as phosphorus	127
PO_4 as P	Orthophosphate as phosphorus	128

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrient constituents)--Continued*

NH_3 as N (Ammonia as nitrogen) mg/L



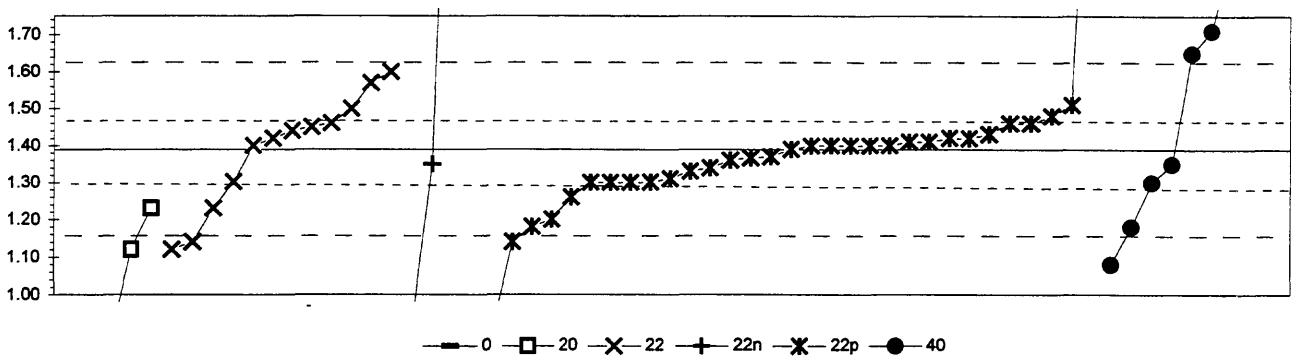
0. Other			22n. Color: Nesslerization					
7. Ion chromatography			22p. Color: phenate					
22. Colorimetric			40. Ion selective electrode					
		N =	4	2	12	2	45	15
		Minimum =	0.66	0.99	0.25	0.49	0.71	0.67
		Maximum =	1.23	1.22	1.21	1.64	1.30	1.48
		Median =			0.92		0.78	0.97
		F-pseudosigma =			0.16		0.11	0.20

MPV = 0.82
F-pseudosigma = 0.19
N = 80
Hu = 1.01
HI = 0.75

Lab	Rating	Z-value	0	7	22	22n	22p	40
1	2	1.12					1.04	
3	2	1.04			0.95			
7	3	0.57			0.93			
10	2	1.19						1.05
11	3	-0.52					0.92	
13	3	-0.56					0.71	
15	3	-0.55					0.71	
18	4	-0.22					0.78	
19	4	-0.41					0.74	
23	4	-0.36					0.75	
25	0	-2.94			0.25			
26	3	0.88		0.99				
32	0	2.07		1.22				
33	4	-0.25					0.77	
36	1	1.55						1.12
38	4	-0.21					0.78	
39	0	2.48					1.30	
48	3	-0.56					0.71	
51	4	-0.25						0.77
55	4	-0.48					0.73	
57	1	1.55						1.12
58	3	-0.77						0.67
59	4	-0.20					0.78	
60	2	1.32					1.08	
61	2	1.09	0.75					
68	2	1.45			1.05			
70	4	-0.38					0.75	
81	4	-0.22			0.78			
83	4	0.47			0.91			
85	2	1.14					1.04	
86	4	0.11					0.84	
87	3	-0.56					0.71	
88	4	-0.15					0.79	
90	4	-0.10					0.80	
91	3	-0.51					0.72	
93	3	0.68			1.21			
97	4	-0.38					0.75	
100	4	-0.15					0.79	
104	3	0.93					1.00	
105	4	-0.36			0.75			
107	4	-0.27					0.77	
108	3	-0.56						0.71
111	4	0.01					0.82	
114	4	-0.01						0.82
118	4	-0.46					0.73	
119	3	0.78						0.97
122	4	0.23					0.86	
128	3	-0.84	1.23					
129	1	-1.68				0.49		
133	3	0.57						0.93
134	4	-0.15					0.79	
138	4	-0.44					0.73	
140	4	0.21			0.86			
141	3	0.67					0.95	
142	4	-0.39					0.74	
143	4	-0.36					0.75	
145	4	-0.10					0.80	
146	4	-0.21					0.78	
154	3	-0.56					0.71	
158	4	-0.13					0.79	
180	4	-0.43					0.74	
183	3	0.60						0.94
190	4	0.34					0.89	
197	1	2.02			1.10			
203	3	0.54					0.92	
209	0	2.12	1.03					
212	3	-0.51					0.72	
213	4	-0.36	0.66					
215	2	1.04					1.02	
220	2	1.19			1.02			
221	4	0.01						0.82
224	2	1.14					1.04	
227	0	4.24				1.64		
231	4	0.21			0.86			
234	2	1.04						1.02
240	1	1.66						1.14
241	3	0.83						0.98
243	4	-0.23					0.77	
247	3	0.88					0.99	
249	0	3.41						1.48
252	4	-0.40					0.74	

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrient constituents)–Continued*

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



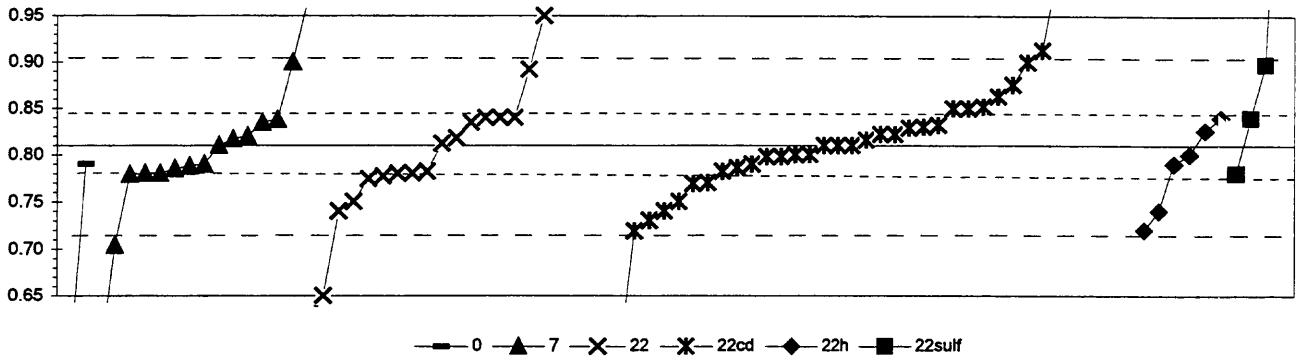
0. Other				22n. Color: Nesslerization				
20. Titrate: colorimetric				22p. Color: phenate				
22. Colorimetric				40. Ion selective electrode				
		N =	2	3	12	3	32	9
		Minimum =	2.04	0.90	1.12	0.90	0.56	1.08
		Maximum =	2.43	1.23	1.60	2.99	2.60	4.13
		Median =			1.43		1.38	1.65
		F-pseudosigma =			0.12		0.09	0.46

MPV =	1.39
F-pseudosigma =	0.12
N =	60
Hu =	1.46
HI =	1.30

Lab	Rating	Z-value	0	20	22	22n	22p	40
1	4	0.31					1.43	
3	2	-1.39			1.23			
10	4	-0.29					1.36	
11	4	0.47			1.45			
15	3	-0.54					1.33	
18	3	-0.80					1.30	
23	3	0.97					1.51	
25	3	0.89			1.50			
38	4	-0.38				1.35		
39	3	-0.80					1.30	
48	4	0.05					1.40	
51	3	-0.80						1.30
55	3	-0.80					1.30	
56	4	0.38			1.44			
57	0	4.43						1.92
58	0	8.98						2.46
59	4	0.05					1.40	
60	0	-7.04					0.56	
61	0	5.44	2.04					
68	3	0.55			1.46			
70	4	-0.21					1.37	
81	2	1.48			1.57			
85	3	0.55					1.46	
87	1	-1.81					1.18	
90	0	-4.08					0.91	
91	4	0.13					1.41	
97	4	0.21					1.42	
100	0	8.73	2.43					
104	4	0.04					1.40	
105	4	0.21			1.42			
108	2	-1.39		1.23				
113	0	-2.15					1.14	
118	2	-1.13					1.26	
119	4	-0.38						1.35
122	4	-0.46					1.34	
128	0	-4.19		0.90				
129	0	-4.19				0.90		
133	1	-1.81						1.18
134	4	0.05					1.40	
138	4	-0.04					1.39	
140	0	-2.31			1.12			
141	4	0.05					1.40	
142	3	0.55					1.46	
143	1	-1.64					1.20	
145	3	-0.71					1.31	
149	0	2.19						1.65
154	1	1.73			1.60			
158	0	2.66						1.71
180	4	0.21					1.42	
190	3	0.72					1.48	
209	3	-0.78			1.30			
212	3	-0.80					1.30	
215	4	0.13					1.41	
220	4	0.05			1.40			
221	0	-2.31		1.12				
224	0	10.16					2.60	
227	0	13.45				2.99		
231	0	-2.15			1.14			
240	0	23.06						4.13
241	0	-2.65						1.08
247	4	-0.24					1.37	
249	0	2.15						1.65

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrient constituents)--Continued*

$NO_3 + NO_2$ as N (Nitrate + nitrite as nitrogen) mg/L



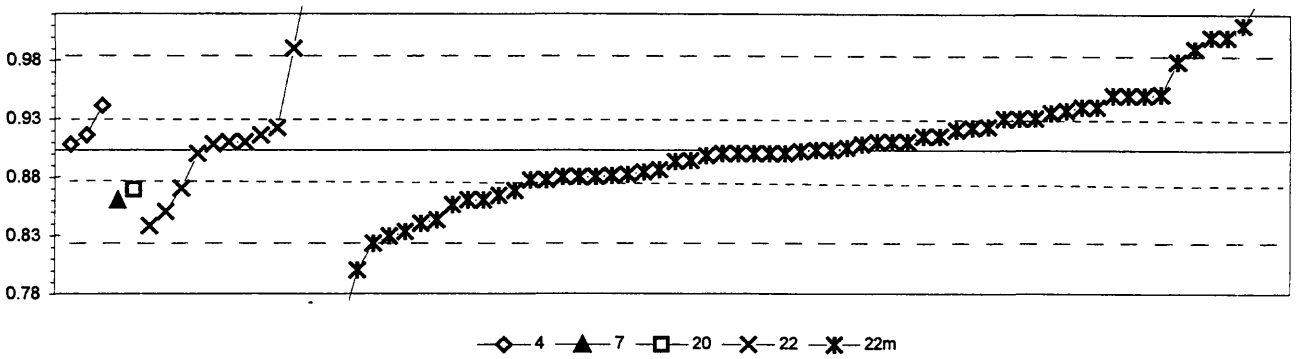
0. Other			22cd. Cd diazotization				
7. Ion chromatography			22h. Color: hydrazine diazotization				
22. Colorimetric			22s. Color: SPADNS				
	N =	2	15	18	38	6	4
	Minimum =	0.595	0.579	0.650	0.460	0.720	0.780
	Maximum =	0.790	0.970	1.920	1.300	0.840	1.200
	Median =		0.790	0.815	0.813		
	F-pseudosigma =		0.035	0.047	0.060		

MPV = 0.810
F-pseudosigma = 0.048
N = 83
Hu = 0.845
HI = 0.780

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
1	3	0.87				0.852		
3	0	2.91			0.950			
7	3	-0.62			0.780			
10	4	0.42				0.830		
11	3	-0.62						0.780
13	4	0.00		0.810				
15	4	0.25				0.822		
18	3	-0.85				0.769		
19	3	0.62			0.840			
23	0	-4.77				0.580		
25	0	-4.79		0.579				
26	4	-0.46		0.788				
30.1	3	-0.52		0.785				
30.2	4	0.15		0.817				
32	3	0.58		0.838				
36	0	2.14				0.913		
38	4	-0.25				0.798		
39	4	-0.25				0.798		
48	4	-0.21					0.800	
51	3	-0.62		0.780				
53	0	-4.46	0.595					
55	3	0.83				0.850		
56	3	0.62			0.840			
57	1	1.87				0.900		
59	4	0.00				0.810		
61	4	-0.42	0.790					
68	3	0.62			0.840			
69	4	0.00				0.810		
70	3	-0.58				0.782		
75	0	3.86				0.996		
81	3	-0.68			0.777			
83	2	-1.45			0.740			
84	4	-0.50				0.786		
85	4	-0.21				0.800		
86	0	5.81				1.090		
87	4	0.00				0.810		
88	0	10.17				1.300		
90	2	-1.45					0.740	
91	1	-1.87					0.720	
92	2	1.10				0.863		
97	3	0.52			0.835			
100	0	8.09						1.200
104	4	0.25				0.822		
105	3	-0.58			0.782			
107	4	0.46				0.832		
108	3	-0.62			0.780			
114	0	6.43				1.120		
118	4	-0.42					0.790	
119	3	-0.62		0.780				
122	1	-1.89				0.719		
128	0	-2.20		0.704				
129	3	0.52		0.835				
133	0	3.94				1.000		
134	3	0.83				0.850		
138	3	-0.83				0.770		
140	0	-3.32			0.650			
141	4	0.39				0.829		
142	1	1.70			0.892			
143	2	1.37				0.876		
145	1	-1.66				0.730		
146	4	-0.21				0.800		
154	2	-1.45				0.740		
158	3	0.62					0.840	
180	4	0.12				0.816		
190	0	4.57				1.030		
191	4	-0.42		0.790				
197	4	0.17			0.818			
203	1	1.83						0.898
209	4	0.33					0.826	
212	2	-1.25				0.750		
215	0	-7.26				0.460		
220	4	0.04			0.812			
221	0	3.36			0.972			
224	3	0.62						0.840
227	0	3.32		0.970				
231	2	-1.25			0.750			
234	3	-0.64		0.779				
240	4	0.21		0.820				
241	0	-6.06				0.518		
243	4	-0.42				0.790		
247	1	1.87		0.900				
249	0	23.04			1.920			
252	3	-0.75			0.774			

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrient constituents)–Continued*

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



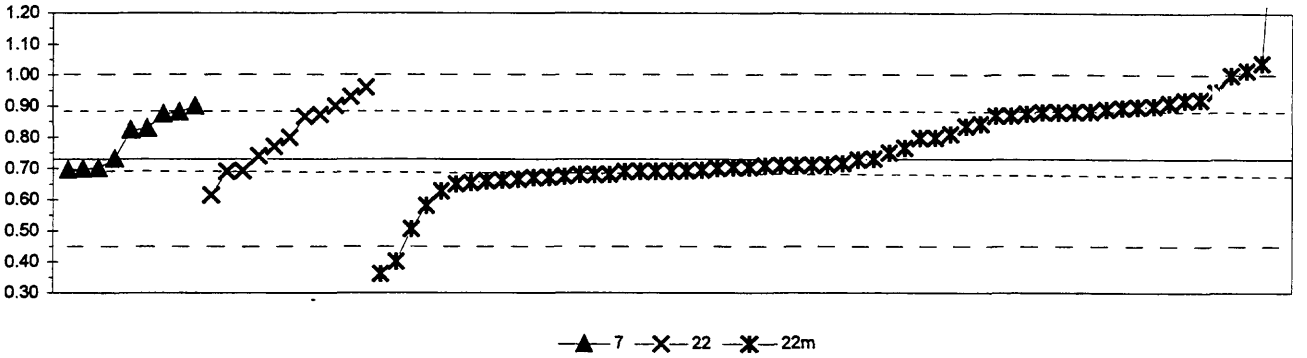
4. ICP			22. Colorimetric				
7. Ion chromatography			22m. Color:phosphomolybdate				
20. Titrate: colorimetric							
		N =	3	1	1	11	61
		Minimum =	0.908	0.860	0.869	0.838	0.178
		Maximum =	0.941			1.060	1.040
		Median =				0.910	0.902
		F-pseudosigma =				0.025	0.037

MPV = 0.903
F-pseudosigma = 0.039
N = 77
Hu = 0.930
Hl = 0.877

Lab	Rating	Z-value	4	7	20	22	22m
1	0	3.33					1.034
3	4	0.48				0.922	
7	0	2.21				0.990	
10	4	-0.13					0.898
11	4	-0.08					0.900
13	1	-2.04					0.823
15	4	-0.03					0.902
18	4	0.00					0.903
19	4	-0.08					0.900
22	3	0.51					0.923
23	2	-1.09					0.860
25	4	0.13	0.908				
36	0	-3.95					0.748
38	4	0.31					0.915
39	2	1.20					0.950
48	0	-2.62					0.800
51	3	-0.99					0.864
55	3	0.87					0.937
56	4	0.18				0.910	
57	0	2.47					1.000
58	0	4.00				1.060	
59	0	2.47					1.000
60	3	0.70					0.930
61	3	0.69					0.930
68	4	0.13				0.908	
70	4	-0.43					0.886
81	4	0.33				0.916	
83	4	0.33	0.916				
85	3	-0.59					0.880
86	3	0.97	0.941				
87	0	3.49					1.040
90	0	2.72					1.010
91	4	-0.08					0.900
92	4	-0.23					0.894
97	4	0.00					0.903
100	4	0.48					0.922
104	4	0.18					0.910
105	2	-1.35				0.850	
107	4	0.13					0.908
111	3	-0.86					0.877
113	4	-0.25					0.893
114	3	-0.89					0.868
118	0	2.21					0.990
119	4	-0.08					0.900
128	3	-0.87			0.869		
129	1	-1.88					0.829
133	3	0.69					0.930
134	4	0.18					0.910
138	3	-0.66					0.877
140	4	0.18				0.910	
141	3	0.81					0.93[illegible]
142	4	0.05					0.90[illegible]
143	4	-0.48					0.884
145	3	0.94					0.940
146	1	1.93					0.973
154	1	-1.65				0.838	
158	4	0.31					0.915
180	3	-0.56					0.881
182	0	-18.45					0.17[illegible]
190	2	-1.20					0.85[illegible]
191	2	-1.09		0.860			
203	4	-0.08					0.900
212	2	-1.09					0.860
213	3	-0.59					0.880
215	2	1.20					0.950
220	4	-0.08				0.900	
221	4	0.43					0.920
224	3	-0.59					0.880
227	4	0.18					0.910
231	3	-0.84				0.870	
234	1	-1.78					0.833
240	2	1.20					0.950
241	2	1.22					0.951
243	1	-1.60					0.840
247	1	-1.53					0.843
249	3	0.94					0.940
252	3	-0.53					0.882

Table 16. *Statistical summary of reported data for standard reference water sample N-50 (nutrient constituents)–Continued*

PO_4 as P (orthophosphate as phosphorus) mg/L



7. Ion chromatography			
22. Colorimetric			
22m. Color:phosphomolybdate			
N =	9	11	59
Minimum =	0.70	0.62	0.36
Maximum =	0.90	0.96	1.70
Median =	0.82	0.80	0.71
F-pseudosigma =	0.13	0.13	0.15

MPV = 0.73
F-pseudosigma = 0.14
N = 79
Hu = 0.88
HI = 0.69

Lab	Rating	Z-value	7	22	22m
1	2	1.37			0.92
3	3	0.97		0.87	
7	2	1.07	0.88		
10	2	1.18			0.90
11	3	0.57			0.81
13	4	-0.21	0.70		
15	4	-0.35			0.68
18	4	-0.10			0.72
19	4	-0.50			0.66
23	4	-0.43			0.67
25	4	-0.42			0.67
26	2	1.03	0.87		
30.1	3	0.66	0.82		
30.2	3	0.70	0.83		
32	4	-0.23	0.70		
33	4	0.00	0.73		
36	4	-0.19			0.70
38	4	-0.49			0.66
39	2	1.07			0.88
48	4	0.49			0.80
51	3	-0.54			0.65
53	4	-0.28			0.69
55	1	1.56			0.95
56	2	1.43		0.93	
57	2	1.21			0.90
58	4	0.07		0.74	
59	4	-0.36			0.68
60	2	1.08			0.88
61	3	1.00			0.87
70	3	-0.74			0.63
81	4	-0.27		0.69	
83	4	0.49		0.80	
85	2	1.14			0.89
87	4	-0.19			0.70
88	4	-0.14			0.71
92	4	-0.27			0.69
97	3	0.75			0.84
100	4	-0.15			0.71
104	2	1.08			0.88
105	1	1.64		0.96	
107	0	6.92			1.70
108	4	0.29		0.77	
111	3	0.81			0.84
113	2	1.04			0.88
118	2	-1.07			0.58
119	4	-0.29			0.69
122	0	-2.63			0.36
128	4	-0.25	0.70		
129	4	-0.46			0.67
133	4	-0.14			0.71
134	4	-0.21			0.70
138	4	-0.28			0.69
140	4	-0.29		0.69	
141	1	1.93			1.00
142	4	-0.27			0.69
143	4	-0.40			0.67
145	4	-0.36			0.68
146	1	-1.60			0.51
154	3	-0.82		0.62	
158	4	-0.25			0.70
180	4	-0.13			0.71
182	0	-2.36			0.40
183	1	2.04			1.02
190	4	0.49			0.80
203	4	0.14			0.75
212	4	-0.14			0.71
213	3	-0.57			0.65
215	2	1.28			0.91
220	2	1.01		0.87	
221	3	1.00			0.87
224	4	0.00			0.73
227	2	1.07			0.88
231	2	1.21		0.90	
234	2	1.20			0.90
240	2	1.36			0.92
241	4	0.26			0.77
247	2	1.21	0.90		
249	0	2.21			1.04
252	4	-0.02			0.73

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

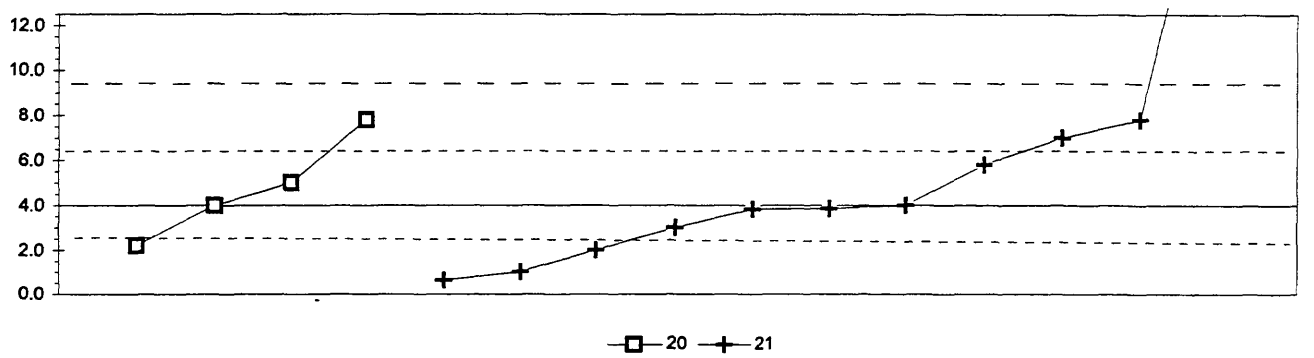
0	Other/Not reported		
1	AA: direct, air	=	atomic absorption: direct,air
2	AA: direct, N_2O	=	atomic absorption: direct,nitrous oxide
3	AA: graphite furnace	=	atomic absorption: graphite furnace
4	ICP	=	inductively coupled plasma
5	DCP	=	direct current plasma
6	ICP/MS	=	mass spectrometry/inductively coupled plasma
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 samples
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° C
Lab	=	laboratory code number
NR	=	not rated, less than value reported
<	=	less than

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

Acidity (as $CaCO_3$) mg/L



20. Titrate: colorimetric
21. Titrate: electrometric

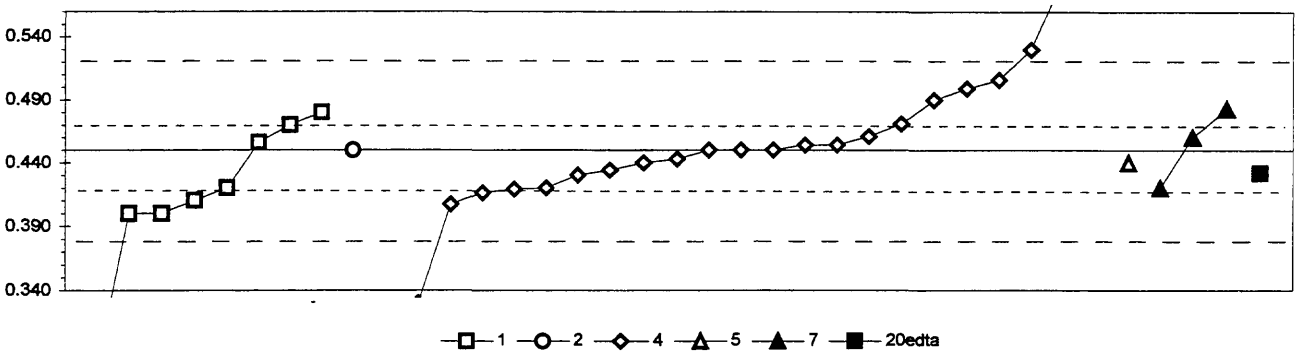
	20	21
N =	4	11
Minimum =	2.2	0.6
Maximum =	7.8	22.0
Median =		3.9
F-pseudosigma =		2.9

Lab	Rating	Z-value	20	21
1	2	-1.05		1.0
3	3	-0.71		2.0
7	2	1.35		7.8
15	4	-0.06		3.8
38	2	-1.19		0.6
39	2	1.07		7.0
61	4	-0.35		3.0
81	3	-0.64	2.2	
89	3	0.64		5.8
92	4	0.00		4.0
105	2	1.35	7.8	
141	4	-0.05		3.9
146	NR			< 10
215	4	0.36	5.0	
224	4	0.00	4.0	
247	0	6.39		22.0

MPV =	4.0
F-pseudosigma =	2.8
N =	15
Hu =	6.4
HI =	2.6

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strengtht constituents)–Continued*

Ca (Calcium) mg/L

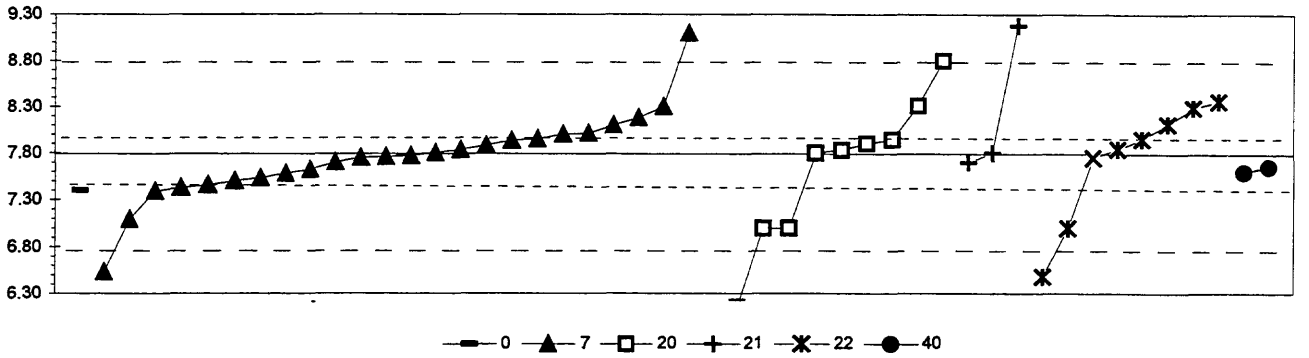


1. AA: direct air				5. DCP				
2. AA: direct nitrous oxide				7. Ion chromatography				
4. ICP				20ag: Titrate: silver				
		N =	8	1	23	1	3	1
		Minimum =	0.280	0.450	0.220	0.440	0.420	0.432
		Maximum =	0.480		0.692		0.483	
		Median =	0.415		0.450			
		F-pseudosigma =	0.047		0.041			
Lab	Rating	Z-value	1	2	4	5	7	20edta
1	4	0.30			0.461			
2	4	0.89					0.483	
3	4	-0.92			0.416			
15	2	1.32			0.499			
23	NR		< 2					
25	0	-11.33			< 0.03			
26	4	-0.81			0.420			
33	4	-0.27				0.440		
36	NR			<0.5				
38	4	0.00		0.450				
39	4	0.11			0.454			
48	0	-3.24			0.330			
58	4	0.81	0.480					
61	0	2.16			0.530			
81	4	-0.84			0.419			
86	4	-0.43			0.434			
89	2	-1.35	0.400					
93	0	3.78			0.590			
100	2	1.08			0.490			
105	1	1.51			0.506			
107	4	-0.81	0.420					
110	0	-4.59	0.280					
113	4	0.00			0.450			
119	4	-0.54			0.430			
134	4	0.11			0.454			
138	4	0.00			0.450			
140	2	-1.35	0.400					
141	2	-1.16			0.407			
145	4	-0.27			0.440			
155	4	-0.48						0.432
180	0	6.53			0.692			
190	4	-0.81					0.420	
209	4	0.57			0.471			
215	0	-6.21			0.220			
221	2	-1.08	0.410					
224	4	0.00			0.450			
226	4	0.16	0.456					
238	4	0.27					0.460	
241	4	0.54	0.470					
247	4	-0.19			0.443			

MPV =	0.450
F-pseudosigma =	0.037
N =	37
Hu =	0.470
Hl =	0.420

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

Cl (Chloride) mg/L

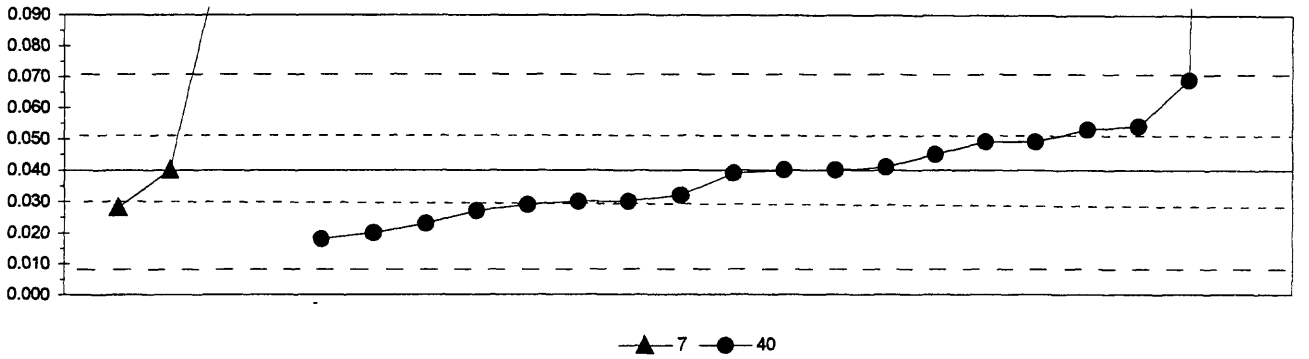


0. Other				21. Titrate: electrometric				
7. Ion chromatography				22. Colorimetric				
20. Titrate: colorimetric				40. Ion selective electrode				
		N =	1	24	10	3	8	2
		Minimum =	7.40	6.53	4.15	7.70	6.48	7.60
		Maximum =		9.10	8.80	9.18	8.36	7.66
		Median =		7.77	7.82		7.90	
		F-pseudosigma =		0.34	0.10		0.17	
Lab	Rating	Z-value	0	7	20	21	22	40
1	4	0.29		7.93				
3	3	1.01					8.29	
7	3	-0.52		7.53				
15	3	-0.80		7.39				
23	4	-0.26						7.66
25	4	0.02		7.80				
26	4	0.32		7.95				
33	4	-0.08		7.75				
36	3	-0.78	7.40					
39	4	0.22			7.90			
48	1	-1.58					7.00	
58	4	0.30			7.94			
59	3	0.62		8.10				
60	0	2.78				9.18		
61	0	-7.28			4.15			
81	4	0.02			7.80			
86	4	-0.38						7.60
89	0	2.02			8.80			
92	2	1.04			8.31			
100	4	-0.34		7.62				
105	4	0.18		7.88				
107	4	0.02				7.80		
110	3	-0.67		7.46				
111	4	0.44		8.01				
113	2	-1.40		7.09				
119	2	1.02		8.30				
134	4	0.42		8.00				
138	4	-0.18		7.70				
140	0	-2.62					6.48	
141	4	-0.08					7.75	
143	3	0.64					8.11	
145	0	2.62		9.10				
146	4	0.10					7.84	
180	4	0.32					7.95	
183	0	-3.28			6.15			
190	0	-2.52		6.53				
196	4	-0.04		7.77				
197	3	-0.73		7.43				
203	4	-0.18				7.70		
209	3	0.78		8.18				
215	1	-1.58			7.00			
221	4	0.08			7.83			
224	4	0.08		7.83				
226	4	-0.06		7.76				
227	3	-0.58		7.50				
241	1	-1.58			7.00			
247	4	-0.42		7.58				
252	2	1.14					8.36	

MPV =	7.79
F-pseudosigma =	0.50
N =	48
Hu =	7.98
Hl =	7.48

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)--Continued*

F (Fluoride) mg/L

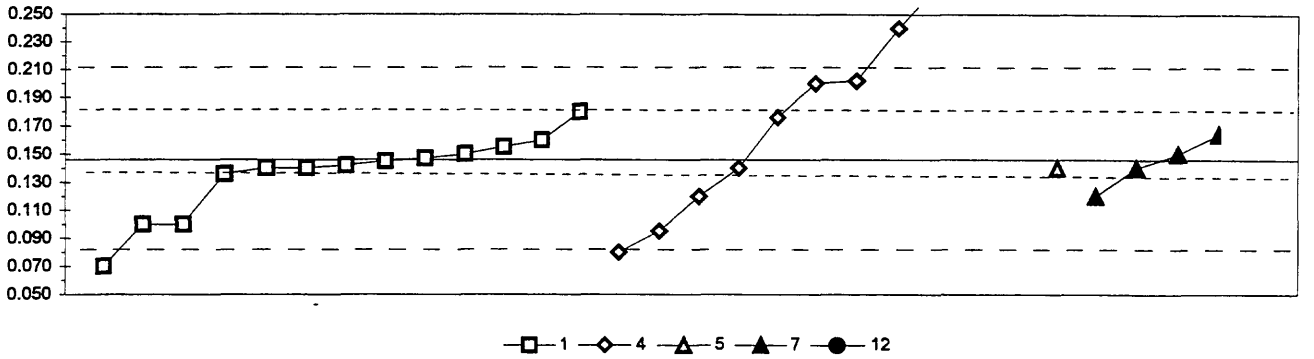


7. Ion chromatography				
40. Ion selective electrode				
		N =	4	19
		Minimum =	0.028	0.018
		Maximum =	0.140	0.870
		Median =		0.040
		F-pseudosigma =		0.014
Lab	Rating	Z-value	7	40
1	4	0.31		0.045
3	NR			< 0.1
7	NR		< 0.5	
15	NR			< 0.1
23	NR			< 0.5
25	4	0.00		0.040
26	4	0.00	0.040	
36	NR			< 0.05
39	3	-0.63		0.030
48	0	52.08		0.870
61	NR			< 0.1
81	4	-0.50		0.032
89	4	-0.06		0.039
93	2	-1.25		0.020
100	3	0.56		0.049
105	NR		< 0.2	
107	NR			< 0.1
110	3	-0.82		0.027
113	4	0.06		0.041
119	4	0.00		0.040
134	3	-0.63		0.030
138	3	-0.75	0.028	
140	2	-1.38		0.018
141	1	1.82		0.069
145	0	4.39	0.110	
146	NR			< 0.2
180	NR			< 0.1
183	3	0.88		0.054
190	3	-0.69		0.029
196	3	0.56		0.049
215	2	-1.07		0.023
224	0	6.27	0.140	
241	3	0.82		0.053
247	NR		< 0.05	

MPV =	0.040
F-pseudosigma =	0.016
N =	23
Hu =	0.051
Hl =	0.030

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

K (Potassium) mg/L



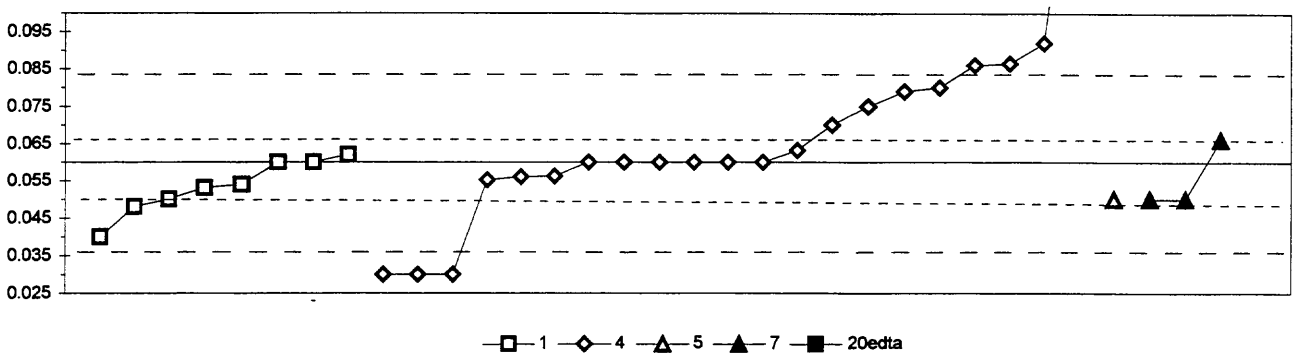
1. AA: direct air				7. Ion chromatography			
4. ICP				12. Flame emission			
5. DCP				0. Other			
		N =	13	11	1	4	1
		Minimum =	0.070	0.080	0.140	0.120	0.310
		Maximum =	0.180	2.200		0.164	
		Median =	0.142	0.200			
		F-pseudosigma =	0.010	0.093			

MPV = 0.146
F-pseudosigma = 0.033
N = 30
Hu = 0.180
HI = 0.136

Lab	Rating	Z-value	1	4	5	7	12
1	4	-0.03	0.145				
2	3	0.55				0.164	
3	2	1.04	0.180				
15	NR			< 0.5			
23	NR		< 0.2				
25	NR			< 1.21			
26	4	-0.18				0.140	
33	4	-0.18			0.140		
36	NR		<0.5				
38	4	0.12	0.150				
48	0	2.88		0.240			
58	4	-0.18	0.140				
61	0	9.01		0.440			
81	1	-1.56		0.095			
86	1	1.72		0.202			
89	4	0.28	0.155				
93	0	5.03					0.310
100	NR			< 1			
105	NR			< 0.5			
107	0	-2.33	0.070				
110	4	0.43	0.160				
113	3	-0.80		0.120			
134	4	-0.18	0.140				
138	1	1.66		0.200			
140	4	-0.12	0.142				
141	3	0.92		0.176			
145	1	-2.02		0.080			
180	NR			< 1.26			
190	4	0.12				0.150	
209	2	-1.41	0.100				
215	0	62.97		2.200			
221	4	-0.31	0.136				
224	4	-0.18		0.140			
226	4	0.03	0.147				
238	3	-0.80				0.120	
241	2	-1.41	0.100				
247	0	3.86		0.272			

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

Mg (Magnesium) mg/L

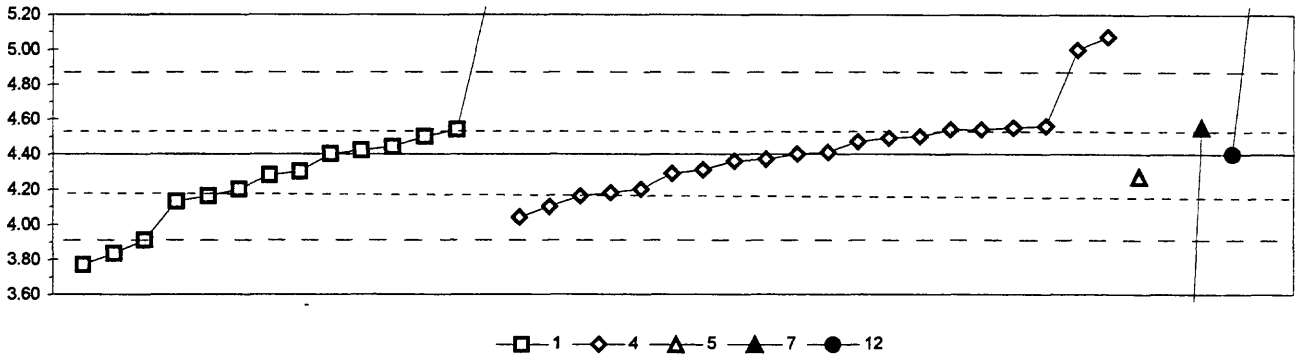


1. AA: direct air				7. Ion chromatography			
4. ICP				20edta: Titrate: edta			
5. DCP							
		N =	8	21	1	3	1
		Minimum =	0.040	0.030	0.050	0.050	0.015
		Maximum =	0.062	0.160		0.066	
		Median =	0.054	0.060			
		F-pseudosigma =	0.008	0.017			
Lab	Rating	Z-value	1	4	5	7	20edta
1	4	-0.34		0.056			
2	3	0.51				0.066	
3	0	2.19		0.086			
15	NR			< 0.1			
23	NR		< 0.5				
25	NR			< 0.03			
26	4	0.00		0.060			
33	3	-0.84			0.050		
36	NR		< 0.5				
38	4	0.00	0.060				
39	4	0.27		0.063			
48	0	-2.53		0.030			
61	2	1.26		0.075			
81	0	-4.58		< 0.005			
86	4	-0.32		0.056			
89	3	-0.51	0.054				
93	0	8.43		0.160			
100	3	0.84		0.070			
105	4	0.00		0.060			
107	1	-1.69	0.040				
110	3	-0.84	0.050				
113	4	0.00		0.060			
119	1	1.69		0.080			
134	4	-0.40		0.055			
138	4	0.00		0.060			
140	4	0.17	0.062				
141	0	-2.53		0.030			
145	0	-2.53		0.030			
155	0	-3.80					0.015
180	0	2.23		0.087			
190	3	-0.84				0.050	
209	0	2.70		0.092			
215	4	0.00		0.060			
221	3	-0.59	0.053				
224	4	0.00		0.060			
226	2	-1.01	0.048				
238	3	-0.84				0.050	
241	4	0.00	0.060				
247	1	1.60		0.079			
252	NR		< 0.5				

MPV =	0.060
F-pseudosigma =	0.012
N =	34
Hu =	0.066
Hl =	0.050

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)--Continued*

Na (Sodium) mg/L

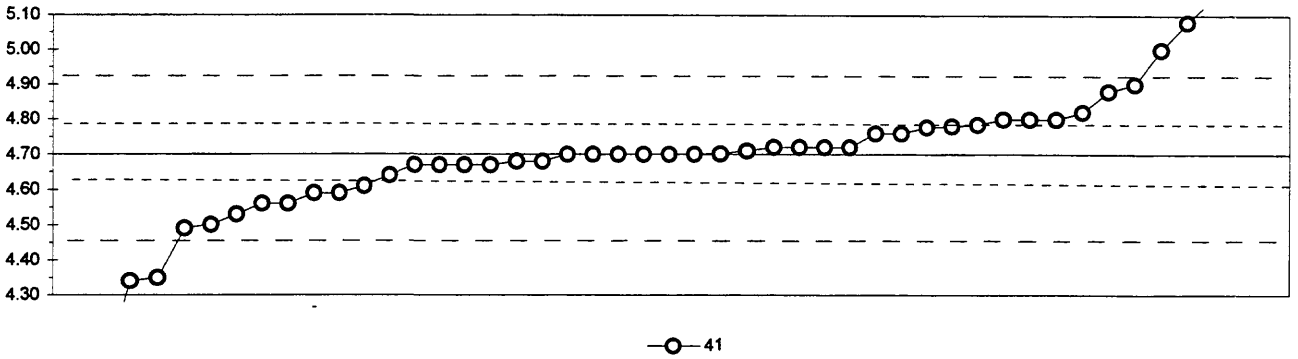


1. AA: direct air				7. Ion chromatography			
4. ICP				12. Flame emission			
5. DCP							
		N =	14	20	1	2	2
		Minimum =	3.77	4.04	4.27	0.50	4.40
		Maximum =	5.33	5.07		4.55	6.00
		Median =	4.29	4.41			
		F-pseudosigma =	0.23	0.22			
Lab	Rating	Z-value	1	4	5	7	12
1	4	0.37		4.49			
3	0	3.80	5.33				
15	3	0.61		4.55			
23	0	-2.58	3.77				
25	3	0.57		4.54			
26	2	-1.47		4.04			
33	3	-0.53			4.27		
36	1	-2.00	3.91				
38	2	-1.10	4.13				
39	3	-0.90		4.18			
48	2	-1.23		4.10			
61	4	-0.16		4.36			
81	4	0.00		4.40			
86	4	0.29		4.47			
89	4	0.16	4.44				
93	0	6.54					6.00
100	3	0.57		4.54			
105	4	0.04		4.41			
107	4	-0.41	4.30				
110	4	-0.49	4.28				
113	3	-0.82		4.20			
119	4	-0.37		4.31			
134	4	0.41	4.50				
138	4	-0.12		4.37			
140	3	-0.98	4.16				
141	3	0.65		4.56			
145	3	-0.98		4.16			
180	4	-0.45		4.29			
183	4	0.00					4.40
190	3	0.61				4.55	
209	0	-2.31	3.83				
215	0	2.45		5.00			
221	3	0.57	4.54				
224	4	0.41		4.50			
226	4	0.08	4.42				
238	0	-15.94				0.50	
241	4	0.00	4.40				
247	0	2.75		5.07			
252	3	-0.82	4.20				

MPV =	4.40
F-pseudosigma =	0.24
N =	39
Hu =	4.52
Hl =	4.19

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

pH



41. Direct reading

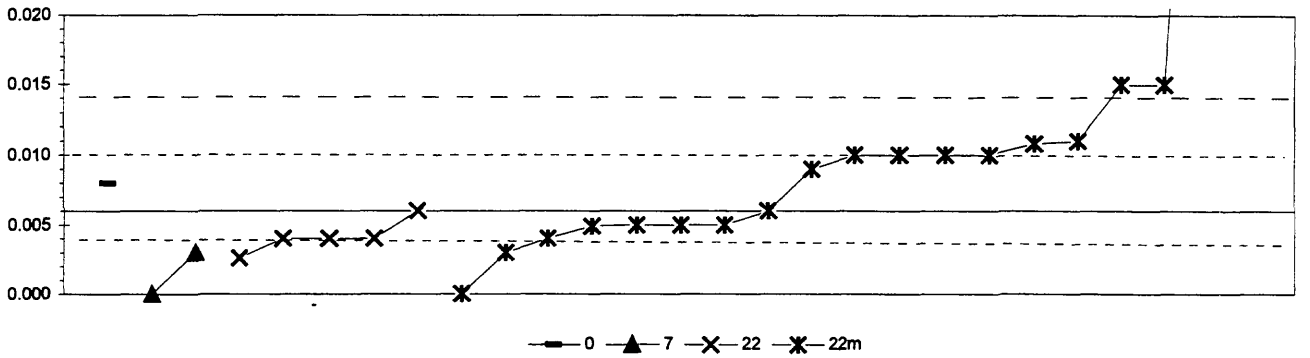
N =	47
Minimum =	3.85
Maximum =	5.80
Median =	4.70
F-pseudosigma =	0.12

MPV =	4.70
F-pseudosigma =	0.12
N =	47
Hu =	4.78
Hl =	4.63

Lab	Rating	Z-value	41
1	3	-0.51	4.64
2	4	-0.17	4.68
3	3	0.51	4.76
7	3	-0.94	4.59
15	0	-3.08	4.34
23	4	0.17	4.72
25	4	0.09	4.71
26	4	-0.26	4.67
33	4	0.17	4.72
36	0	3.25	5.08
38	4	0.00	4.70
39	3	0.86	4.80
48	0	2.57	5.00
58	4	-0.26	4.67
59	3	-0.94	4.59
60	4	-0.26	4.67
61	2	-1.20	4.56
81	3	0.86	4.80
86	2	-1.46	4.53
89	2	1.03	4.82
92	1	1.54	4.88
93	4	0.00	4.70
100	4	0.00	4.70
105	1	1.71	4.90
107	4	-0.17	4.68
110	3	0.66	4.78
113	4	-0.26	4.67
119	3	0.69	4.78
134	4	0.02	4.70
138	3	0.73	4.79
140	0	6.17	5.42
141	4	0.00	4.70
143	4	0.00	4.70
145	3	0.86	4.80
146	0	-3.00	4.35
155	0	-7.28	3.85
180	3	-0.77	4.61
190	3	0.51	4.76
203	1	-1.80	4.49
209	4	0.17	4.72
215	2	-1.20	4.56
221	0	-5.48	4.06
224	0	9.42	5.80
227	1	-1.71	4.50
241	4	0.00	4.70
243	0	3.85	5.15
247	4	0.17	4.72

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

PO_4 as P (orthophosphate as phosphorus) mg/L



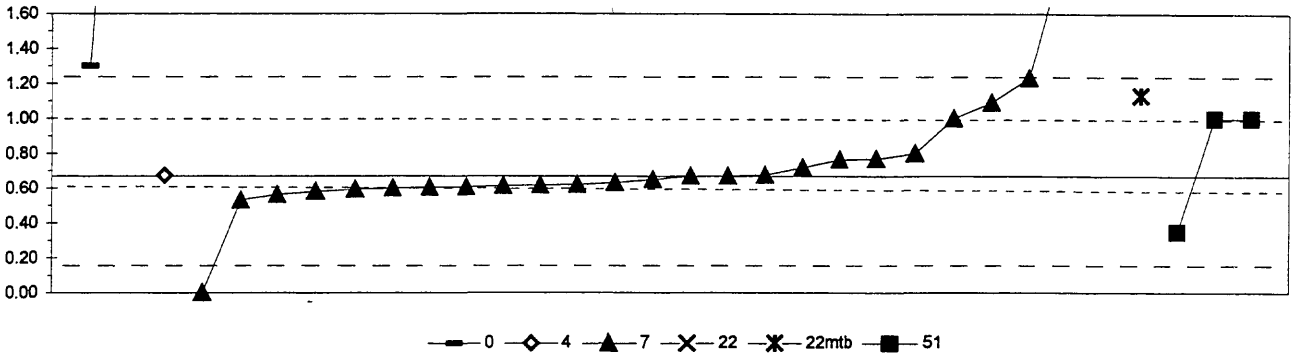
0. Other				22m. Color:phosphomolybdate		
7. Ion chromatography						
22. Colorimetric						
		N =	1	2	5	19
		Minimum =	0.008	0.000	0.003	0.000
		Maximum =		0.003	0.006	0.100
		Median =				0.010
		F-pseudosigma =				0.004

MPV =	0.006
F-pseudosigma =	0.004
N =	27
Hu =	0.010
HI =	0.004

Lab	Rating	Z-value	0	7	22	22m
1	4	-0.45			0.004	
3	NR				< 0.01	
7	NR			< 0.16		
15	NR					< 0.02
23	NR					< 0.01
25	3	0.67				0.009
33	NR	-1.35		0.000		
36	NR				<0.025	
38	4	-0.22				0.005
39	4	-0.22				0.005
48	NR					< 0.005
59	3	0.90				0.010
60	2	1.08				0.011
61	NR					< 0.04
81	4	0.00			0.006	
89	1	2.02				0.015
92	4	-0.45			0.004	
100	1	2.02				0.015
105	4	-0.45			0.004	
107	4	-0.22				0.005
111	3	-0.67				0.003
113	NR					< 0.004
119	NR	-1.35				0.000
134	4	-0.45				0.004
138	3	-0.76			0.003	
140	3	0.90				0.010
141	NR					< 0.05
143	4	0.00				0.006
145	3	0.90				0.010
146	NR					< 0.05
155	4	-0.25				0.005
180	NR					< 0.01
190	3	0.90				0.010
196	NR			< 0.1		
203	0	12.59				0.062
215	0	21.13				0.100
224	NR					< 0.001
227	4	0.45	0.008			
241	2	1.12				0.011
247	3	-0.67		0.003		

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

SO_4 (Sulfate) mg/L



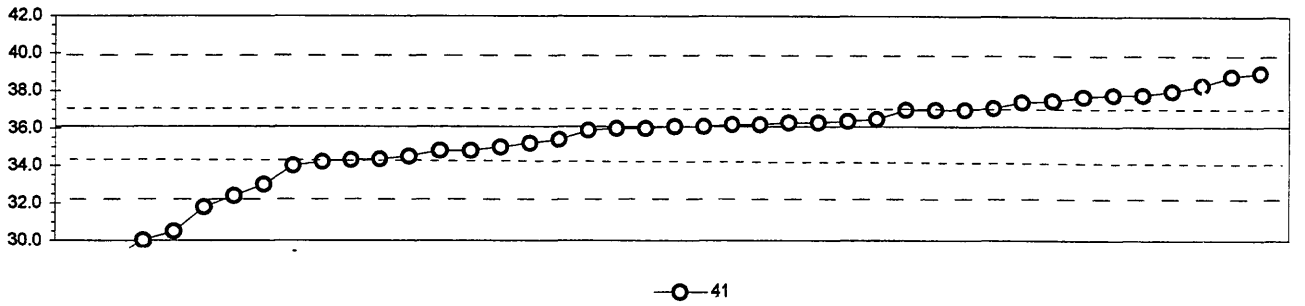
0. Other			22. Colorimetric				
4. ICP			22mtb. Color: methyl thymol blue				
7. Ion chromatography			51. Turbidimetric				
	N =	2	1	24	0	1	3
	Minimum =	1.30	0.67	0.00	< 2.5	1.13	0.35
	Maximum =	4.00		2.00	< 5		1.00
	Median =			0.64			
	F-pseudosigma =			0.12			

MPV =	0.67
F-pseudosigma =	0.29
N =	31
Hu =	1.00
HI =	0.60

Lab	Rating	Z-value	0	4	7	22	22mtb	51
1	4	-0.14			0.63			
3	NR				< 0.1			
7	4	0.17			0.72			
15	4	0.33			0.77			
23	NR					< 2.5		
25	NR				< 5			
26	4	-0.17			0.62			
33	4	-0.31			0.58			
36	NR		< 5					
48	NR							< 1
59	0	4.54			2.00			
61	NR		< 3					
81	NR					< 5		
86	4	0.32			0.77			
89	1	1.57					1.13	
92	2	-1.10						0.35
100	4	-0.20			0.61			
105	2	1.43			1.09			
110	4	0.02			0.68			
111	4	-0.27			0.59			
113	NR				< 1			
119	4	-0.07			0.65			
134	4	0.44			0.80			
138	4	-0.23			0.60			
140	0	11.36	4.00					
141	4	0.01		0.67				
145	4	-0.38			0.56			
146	NR							< 5
180	NR						< 2.5	
183	0	2.15	1.30					
190	1	1.91			1.23			
196	4	-0.18			0.62			
197	4	-0.22			0.61			
203	NR						< 2.5	
209	4	0.00			0.67			
215	2	1.13						1.00
224	4	0.00			0.67			
226	2	1.13			1.00			
227	NR	-2.29			0.00			
238	4	-0.24			0.60			
247	4	-0.48			0.53			
252	2	1.13						1.00

Table 17. *Statistical summary of reported data for standard reference water sample P-26 (low ionic strength constituents)–Continued*

Sp Cond (Specific Conductance) µS/cm



41. Direct reading

N =	41
Minimum =	23.3
Maximum =	39.0
Median =	36.1
F-pseudosigma =	2.0

MPV =	36.1
F-pseudosigma =	2.0
N =	41
Hu =	37.0
Hl =	34.3

Lab	Rating	Z-value	41
1	2	1.12	38.3
2	3	-0.89	34.3
3	4	0.15	36.4
15	4	0.10	36.3
23	0	-2.84	30.5
25	4	0.46	37.0
26	0	-2.18	31.8
33	4	0.05	36.2
36	0	-18.05	< 5
38	3	-0.91	34.3
39	4	-0.05	36.0
48	0	-6.49	23.3
59	3	0.86	37.8
60	1	-1.88	32.4
61	4	-0.36	35.4
81	2	1.37	38.8
86	3	0.66	37.4
89	4	-0.10	35.9
100	1	-1.57	33.0
105	3	-0.66	34.8
107	4	0.20	36.5
111	3	-0.96	34.2
113	4	0.10	36.3
119	4	0.46	37.0
134	3	0.70	37.5
138	4	-0.46	35.2
140	0	-3.50	29.2
141	3	0.86	37.8
143	4	-0.05	36.0
145	4	0.46	37.0
146	3	0.51	37.1
155	3	-0.66	34.8
180	3	-0.56	35.0
190	3	-0.81	34.5
203	4	0.00	36.1
215	4	0.00	36.1
224	2	-1.07	34.0
227	3	0.81	37.7
241	0	-3.09	30.0
243	3	0.96	38.0
247	2	1.47	39.0
252	4	0.05	36.2

Table 18. *Statistical summary of reported data for standard reference water sample Hg-22 (mercury)*

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported
8. AA: cold vapor = atomic absorption: cold vapor

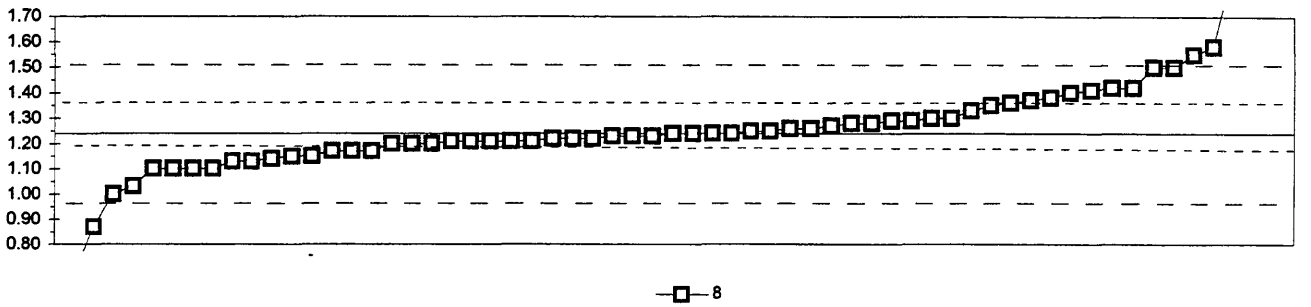
Abbreviations and symbols

N	=	number of samples
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
<	=	less than

Constituent		page
Hg	Mercury	142

Table 18. *Statistical summary of reported data for standard reference water sample Hg-22 (mercury)–Continued*

Hg (Mercury) µg/L



8. AA: cold vapor

N =	64
Minimum =	0.68
Maximum =	3.00
Median =	1.24
F-pseudosigma =	0.13

MPV =	1.24
F-pseudosigma =	0.13
N =	64
Hu =	1.37
Hl =	1.19

Lab	Rating	Z-value	8
1	4	0.22	1.27
3	3	-0.82	1.13
11	4	-0.30	1.20
12	2	1.20	1.40
13	3	-0.75	1.14
15	4	0.00	1.24
16	2	-1.05	1.10
18	4	0.00	1.24
24	0	4.95	1.90
26	4	0.30	1.28
32	4	-0.22	1.21
34	4	-0.07	1.23
36	0	2.55	1.58
39	4	0.15	1.26
48	0	-2.77	0.87
50	4	0.00	1.24
55	3	-0.52	1.17
58	0	8.62	2.39
60	3	-0.82	1.13
61	0	-4.20	0.68
68	3	0.82	1.35
69	4	0.00	1.24
70	2	-1.05	1.10
75	3	-0.67	1.15
76	4	-0.07	1.23
81	2	-1.05	1.10
86	4	-0.22	1.21
87	0	2.32	1.55
89	2	-1.05	1.10
96	4	0.45	1.30
97	2	1.05	1.38
100	1	-1.57	1.03
105	3	0.90	1.36
108	2	1.35	1.42
113	4	0.07	1.25
114	0	13.19	3.00
118	4	0.45	1.30
119	4	-0.30	1.20
128	1	1.95	1.50
133	4	0.37	1.29
134	4	-0.22	1.21
138	3	-0.52	1.17
141	3	0.67	1.33
142	4	0.07	1.25
144	2	1.27	1.41
145	4	0.30	1.28
146	4	-0.15	1.22
149	4	-0.30	1.20
182	0	7.87	2.29
198	3	-0.52	1.17
203	2	1.35	1.42
211	3	0.97	1.37
212	1	-1.80	1.00
213	1	1.95	1.50
215	0	10.19	2.60
219	4	-0.07	1.23
220	0	5.70	2.00
221	4	-0.15	1.22
231	4	0.37	1.29
234	4	-0.15	1.22
241	4	-0.22	1.21
245	4	-0.22	1.21
247	3	-0.68	1.15
252	4	0.15	1.26

Table 19. *—Most probable values for constituents and properties in standard reference samples distributed in April 1996*

[MPV, most probable value; ug/L, microgram per liter; mg/L, milligram per liter; uS/cm, microsiemen per centimeter at 25 degrees Celsius]

T-139 (trace constituents)

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Ag	2.26 µg/L	0.68	Mg	10.00 mg/L	0.43
Al	22.4 µg/L	4.6	Mn	2.4 µg/L	1.0
As	5.55 µg/L	0.97	Mo	14.9 µg/L	2.2
B	36 µg/L	9	Na	90.9 mg/L	3.6
Ba	44.0 µg/L	3.6	Ni	13.1 µg/L	1.4
Be	10.1 µg/L	1.2	Pb	4.47 µg/L	0.87
Ca	50.3 mg/L	2.1	Sb	9.39 µg/L	1.56
Cd	7.50 µg/L	0.71	Se	4.83 µg/L	1.31
Co	6.7 µg/L	1.4	SiO_2	9.31 mg/L	0.42
Cr	7.75 µg/L	1.02	Sr	401 µg/L	20
Cu	13.0 µg/L	1.5	Tl	3.10 µg/L	0.76
Fe	7.5 µg/L	6.8	U	5.00 µg/L	0.21
K	2.73 mg/L	0.23	V	5.0 µg/L	2.1
Li	18.7 µg/L	2.2	Zn	11 µg/L	7

T-141 (trace constituents)

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Ag	5.91 µg/L	0.88	Mg	5.48 mg/L	0.27
Al	75.4 µg/L	9.8	Mn	20.0 µg/L	1.9
As	7.50 µg/L	0.80	Mo	2.1 µg/L	0.5
B	29 µg/L	10	Na	33.0 mg/L	1.3
Ba	33.0 µg/L	1.9	Ni	17.0 µg/L	2.1
Be	8.60 µg/L	0.79	Pb	5.7 µg/L	1.0
Ca	19.1 mg/L	1.0	Sb	3.5 µg/L	0.6
Cd	8.20 µg/L	0.52	Se	8.4 µg/L	1.2
Co	6.50 µg/L	0.95	SiO_2	8.70 mg/L	0.46
Cr	15.4 µg/L	1.6	Sr	157 µg/L	7
Cu	18.0 µg/L	1.6	Tl	4.0 µg/L	0.9
Fe	4.3 µg/L	6.3	U	3.85 µg/L	0.20
K	2.32 mg/L	0.19	V	9.45 µg/L	1.19
Li	21.4 µg/L	2.0	Zn	218 µg/L	12

M-138 (major constituents)

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Alkalinity	41.1 mg/L	1.9	Na	31.6 mg/L	1.8
B	10 mg/L	24	total P	0.240 mg/L	0.017
Ca	13.3 mg/L	0.6	pH	7.81	0.19
Cl	33.4 mg/L	2.6	SiO_2	8.94 mg/L	0.45
DSRD	151 mg/L	10	SO_4	28.0 mg/L	1.3
F	0.720 mg/L	0.052	Sp Cond	263 µS/cm	8
K	1.82 mg/L	0.12	Sr	106 µg/L	6
Mg	3.70 mg/L	0.16	V	16.5 µg/L	1.5

N-49 (nutrients)

Analyte	MPV	F-pseudosigma
NH_3 as N	0.155 mg/L	0.024
NH_3+OrgN as N	0.33 mg/L	0.12
NO_3+NO_2 as N	0.182 mg/L	0.022
total P as P	0.167 mg/L	0.013
PO_4 as P	0.152 mg/L	0.015

N-50 (nutrients)

Analyte	MPV	F-pseudosigma
NH_3 as N	0.82 mg/L	0.19
NH_3+OrgN as N	1.39 mg/L	0.12
NO_3+NO_2 as N	0.810 mg/L	0.048
Total P as P	0.903 mg/L	0.039
PO_4 as P	0.73 mg/L	0.14

P-26 (low ionic strength constituents)

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Acidity	4.0 mg/L	2.8	Na	4.40 mg/L	0.24
Ca	0.450 mg/L	0.037	pH	4.70	0.12
Cl	7.79 mg/L	0.50	PO_4 as P	0.006 mg/L	0.004
F	0.040 mg/L	0.016	SO_4	0.67 mg/L	0.29
K	0.146 mg/L	0.033	Sp Cond	36.1 µS/cm	2.0
Mg	0.060 mg/L	0.012			

Hg-22 (mercury)

Analyte	MPV	F-pseudosigma
Hg	1.24 µg/L	0.13