

REPORT OF
ANALYTICAL EVALUATION PROGRAM
STANDARD REFERENCE WATER SAMPLES NUMBERS 44 AND 45

SLC=32

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
Lakewood, Colorado
May 1974

STANDARD REFERENCE WATER SAMPLES NUMBERS 44 AND 45

PURPOSE AND PLAN

As a means of providing an independent and objective evaluation of the water-quality data published by the U.S. Geological Survey and other cooperating laboratories, standard reference water samples are prepared and distributed at regular intervals. This report summarizes the analytical results submitted by 32 laboratories for Standard Reference Water Samples numbers 44 and 45 distributed on April 5, 1974.

The "Instructions for Analysis and Reporting Results" did not specify any particular order for performing the determinations, nor were any restrictions placed on methods or instruments. Presumably, each laboratory made only those determinations which it routinely makes in the course of its normal operations. This program operates as a quality-control tool to enable the participating laboratories to detect deficiencies in their analytical programs. Laboratories are identified in this report only by a preassigned code number.

PREPARATION OF SAMPLES

Approximately 150 gallons of each sample was collected. The samples were acidified to a pH of about 1.5 with nitric acid and then the minor elements were added. Thymol was added to both samples and each sample was then filtered through a 0.45- μ m membrane filter into a large polyethylene drum. Each sample was mixed overnight with a motor-driven stirrer, pumped through an ultraviolet (2537A) sterilizer and packaged in sterile teflon bottles under ultraviolet radiation.

DETERMINATIONS

Aluminum (Al)	Copper (Cu)
Iron (Fe)	Lead (Pb)
Manganese (Mn)	Mercury (Hg)
Cadmium (Cd)	Nickel (Ni)
Chromium, total (Cr)	Zinc (Zn)
Cobalt (Co)	

STATISTICAL EVALUATION

A statistical evaluation of the data has established the most reliable estimate of the true value for each of the various constituents determined. Reported values of "less than" and "zero" were considered as "not determined" and hence do not enter into the computation of the means, standard deviations, etc. Mathematical computations are the same as those used previously for similar Standard Reference Water Samples of this type.

The mean, average deviation, percent deviation from the mean, standard deviation, and total range were calculated for each determination. Confidence limits about the mean were also calculated in order to define the concentration range within which the true value may be expected to fall with a confidence level of 95 percent. Outlying values were rejected on the basis of statistical tests as outlined in ASTM Recommended Practice for Dealing with Outlying Observations (1969 Book of ASTM Standards, Part 30, p. 429-445).

REPORTED VALUES

The following section shows the reported value for each determination by each participating laboratory, and a graphical presentation of each reported value and the frequency of its occurrence. Each reported value has been rounded off, when necessary, to conform to official USGS policy on reporting analytical data. A few extreme values are not shown on the scale.

A summary shows the number of laboratories reporting values for each determination and the percentage of values rejected. The percentages of unrejected values falling within the 95-percent confidence interval, within one standard deviation ($X \pm \text{STD}$), and within two standard deviations ($X \pm 2 \text{ STD}$) are also given.

PARTICIPATING LABORATORIES

U.S. Geological Survey

CALIFORNIA, Menlo Park; Barnes
CALIFORNIA, Menlo Park; Hem
CALIFORNIA, Menlo Park; Kennedy
COLORADO, Lakewood: Barnett

GEORGIA, Doraville
NEW YORK, Albany
UTAH, Salt Lake City

Other

ALABAMA, University: Geological Survey of Alabama
ARKANSAS, Little Rock: State Department of Pollution
Control and Ecology
BRAZIL: Companhia de Pesquisa de Recursos Minerais-
CPRM
COLORADO, Denver: Denver Board of Water Commissioners
COLORADO, Golden: Colorado School of Mines, Chemistry
Department
GEORGIA, Athens: State Soil Testing and Plant Analysis
Laboratory
GEORGIA, Atlanta: State Department of Natural Resources,
EPD

Other.--Continued

GEORGIA, Atlanta: State Department of Natural Re-
sources, Earth & Water Division
KANSAS, Lawrence: Kansas Geological Survey
KANSAS, Topeka: Kansas State Health Department
MISSOURI, Columbia: Environmental Trace Substances
Center, Prof. Koirtyohann, University of Missouri
MISSOURI, Jefferson City: Missouri Clean Water
Commission
MISSOURI, St. Louis: St. Louis Metro Sewer District
MONTANA, Butte: Montana Bureau of Mines and Geology
NEW MEXICO, Gallup: U.S. Bureau of Indian Affairs
NORTH DAKOTA, Bismarck: North Dakota State Labora-
tories
OHIO, Dayton: The Miami Conservancy District
OKLAHOMA, Oklahoma City: Oklahoma Water Resources
Board
PENNSYLVANIA, West Chester: Chester Co. Health
Department
SOUTH DAKOTA, Brookings: State WQ Laboratory
TENNESSEE, Chattanooga: Tennessee Valley Authority
VIRGINIA, Richmond: State Consolidated Laboratories
WASHINGTON, Olympia: State Department of Ecology
WEST VIRGINIA, Morgantown: West Virginia Geological
Survey
WYOMING, Laramie: State Department of Agriculture

DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	270	9.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	5			NOT DETERMINED
5-74	6			NOT DETERMINED
5-74	7	320	29.7	FERRON-ORTHOPHENANTHROLINE: USGS TWRI BKS CH A1
5-74	8			NOT DETERMINED
4-74	10	180	27.0	OTHER
5-74	11			NOT DETERMINED
5-74	13			NOT DETERMINED
4-74	14	350	41.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	15	240	2.7	OTHER
4-74	16	90	63.5	ERIOCHROME CYANINE R: APHA STD METH, 13ED
5-74	18	280	13.5	OTHER
5-74	19			NOT DETERMINED
5-74	20	190	23.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
4-74	21			NOT DETERMINED
5-74	23			NOT DETERMINED
5-74	24			NOT DETERMINED
4-74	25	180	27.0	8-QUINOLINOL, EXTRACTION: 1973 ASTM PT23 D857-69
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	460	86.5	ERIOCHROME CYANINE R: APHA STD METH, 13ED
4-74	31	1900	670.3	REJECT ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	32	200	18.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	200	18.9	OTHER
4-74	36			NOT DETERMINED

TOTAL RANGE 90

- 1900

SAMPLE 44

MEAN 246.6664

AVERAGE DEVIATION

74.4442

STANDARD DEVIATION 97.3589

95 PCT.CONF. INTVL OF MEAN

246.6664 +OR-

61.8593

AL

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN		METHOD
4-74	1	840	71.9	REJECT	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	2	490	0.3		PHENANTHROLINE: APHA STD METH, 13ED
5-74	3	460	5.8		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	450	7.9		OTHER
5-74	5	510	4.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	500	2.3		ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	490	0.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	500	2.3		OTHER
4-74	10	500	2.3		OTHER
5-74	11	570	16.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	500	2.3		PHENANTHROLINE: APHA STD METH, 13ED
4-74	14	710	45.3	REJECT	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	15	650	53.0		OTHER
4-74	16	460	5.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	560	14.6		OTHER
5-74	19	490	0.3		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	470	3.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	510	4.4		ORTHOPHENANTHROLINE: 1973 ASTM PT23 D1068-68
5-74	23	500	2.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	440	9.9		PHENANTHROLINE: APHA STD METH, 13ED
4-74	25	500	2.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	26	480	1.8		OTHER
4-74	27	500	2.3		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28			NOT DETERMINED	
4-74	29	450	7.9		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	340	30.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	390	20.2		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	480	1.8		BIPYRIDINE: USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED	
5-74	34	600	22.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	510	4.4		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	380	22.2		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE 340 - 840

MEAN 488.5686
STANDARD DEVIATION 61.9267

AVERAGE DEVIATION 41.0210
95 PCT.CONF.INTVL OF MEAN 24.0146

41.0210
488.5686 +OR- 24.0146

SAMPLE 44

FE

DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN		METHOD
4-74	1				NOT DETERMINED
4-74	2	100	11.6		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	3	110	2.7		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	100	11.6		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	5	100	11.6		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	110	2.7		ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	110	2.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	120	6.1		OTHER
4-74	10	110	2.7		OTHER
5-74	11	130	14.9		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	130	14.9		PERSULFATE: APHA STD METH, 13ED
4-74	14	250	121.0	REJECT	OTHER
5-74	15	140	23.8		OTHER
4-74	16	120	6.1		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	130	14.9		OTHER
5-74	19	110	2.7		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	100	11.6		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	150	32.6		PERSULFATE: APHA STD METH, 13ED
5-74	23	120	6.1		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	170	50.3		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	25	120	6.1		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	26	110	2.7		OTHER
4-74	27	100	11.6		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28	110	2.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	29	110	2.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	90	20.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	90	20.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	130	14.9		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	33	90	20.4		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	34	370	227.1	REJECT	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	110	2.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	60	47.0		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE	60	-	370				SAMPLE 44
MEAN		113.1032	AVERAGE DEVIATION		14.8869		
STANDARD DEVIATION		20.7198	95 PCT.CONF.INTVL OF MEAN		113.1032 +OR-	7.8798	MN

DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	10	63.0	OTHER
5-74	4	10	63.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	5	6	2.2	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	6	5	18.5	OTHER
5-74	7	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	8	6	2.2	OTHER
4-74	10	6	2.2	OTHER
5-74	11	11	79.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	13	18	193.3	REJECT ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	14	6	2.2	OTHER
5-74	15	6	2.2	OTHER
4-74	16	19	209.6	REJECT OTHER
5-74	18			NOT DETERMINED
5-74	19	6	2.2	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	20	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	21			NOT DETERMINED
5-74	23	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	24			NOT DETERMINED
4-74	25	6	2.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	26	6	2.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	27			NOT DETERMINED
5-74	28	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	29			NOT DETERMINED
5-74	30	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	31	8	30.4	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	32	6	2.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	33	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	34			NOT DETERMINED
5-74	35	5	18.5	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	36	2	67.4	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1

TOTAL RANGE 2
MEAN
STANDARD DEVIATION

- 19
6.1363
2.0070
AVERAGE DEVIATION
95 PCT. CONF. INTVL OF MEAN

1.3140
6.1363 +OR- 0.8900

SAMPLE 44
CD

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	4	51.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	8	2.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	5	6	26.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	6			NOT DETERMINED
5-74	7			NOT DETERMINED
5-74	8			NOT DETERMINED
4-74	10	12	46.7	OTHER
5-74	11	7	14.4	PERMANGANATE-AZIDE: USGS TWRI BKS CH A1
5-74	13			NOT DETERMINED
4-74	14	11	34.4	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	15	11	34.4	OTHER
4-74	16	50	511.1	REJECT PERMANGANATE-AZIDE: USGS TWRI BKS CH A1
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20			NOT DETERMINED
4-74	21	6	26.7	PERMANGANATE-AZIDE: APHA STD METH, 13ED
5-74	23	10	22.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	24			NOT DETERMINED
4-74	25			NOT DETERMINED
4-74	26	10	22.2	OTHER
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30			NOT DETERMINED
4-74	31			NOT DETERMINED
5-74	32			NOT DETERMINED
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	20	144.4	REJECT OTHER
4-74	36	5	38.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED

TOTAL RANGE	4	-	50			SAMPLE 44
MEAN		8.1818	AVERAGE DEVIATION	2.3802		
STANDARD DEVIATION		2.7502	95 PCT.CONF.INTVL OF MEAN	8.1818 +OR-	1.8475	CR TOT

DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	5	13.0	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	5			NOT DETERMINED
5-74	6			NOT DETERMINED
5-74	7	6	4.3	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	8	7	21.7	OTHER
4-74	10	6	4.3	OTHER
5-74	11	6	4.3	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	13			NOT DETERMINED
4-74	14	550	*****	REJECT OTHER
5-74	15	8	39.1	OTHER
4-74	16			NOT DETERMINED
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20	6	4.3	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
4-74	21			NOT DETERMINED
5-74	23	6	4.3	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	5	13.0	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	3	47.8	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
4-74	31			NOT DETERMINED
5-74	32	4	30.4	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	7	21.7	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
4-74	36			NOT DETERMINED

TOTAL RANGE	5	-	550			SAMPLE 44
MEAN		5.7500		AVFRAGE DEVIATION	1.0000	
STANDARD DEVIATION		1.3568		95 PCT.CONF.INTVL OF MEAN	5.7500 +DR-	0.8621 CO

DATE MM-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1	120	18.8	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	2			NOT DETERMINED
5-74	3	120	18.8	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	100	1.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5	70	30.7	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	90	10.9	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	100	1.0	OTHER
4-74	10	100	1.0	OTHER
5-74	11	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	14	140	38.6	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	15	120	18.8	OTHER
4-74	16	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	100	1.0	OTHER
5-74	19	100	1.0	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	23	100	1.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	100	1.0	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	25	100	1.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26	110	8.9	OTHER
4-74	27			NOT DETERMINED
5-74	28	80	20.8	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	29	110	8.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	90	10.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	90	10.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	100	1.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33	90	10.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	34	120	18.8	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	110	8.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	70	30.7	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE 70
MEAN
STANDARD DEVIATION

- 140
100.9998
14.4675

AVERAGE DEVIATION
95 PCT.CONF.INTVL OF MEAN

9.4666
100.9998 +OR- 5.4017

SAMPLE 44

CU

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	14	46.0	OTHER
5-74	4	8	16.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5			NOT DETERMINED
5-74	6	8	16.6	OTHER
5-74	7	5	47.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	8			NOT DETERMINED
4-74	10	16	66.9	OTHER
5-74	11	7	27.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	13	8	16.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	14	19	98.2	OTHER
5-74	15	10	4.3	OTHER
4-74	16	390	*****	REJECT OTHER
5-74	18			NOT DETERMINED
5-74	19	6	37.4	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	20	9	6.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	21	30	212.9	REJECT ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	23	8	16.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	7	27.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	9	6.1	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	31	12	25.2	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	32	9	6.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	8	16.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	36			NOT DETERMINED

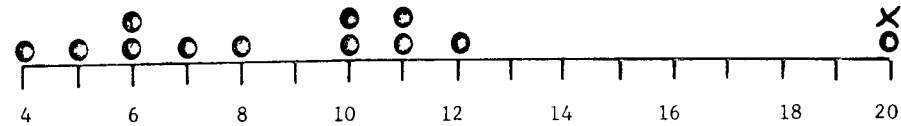
TOTAL RANGE 5
MEAN
STANDARD DEVIATION

- 390
9.5882
3.6752

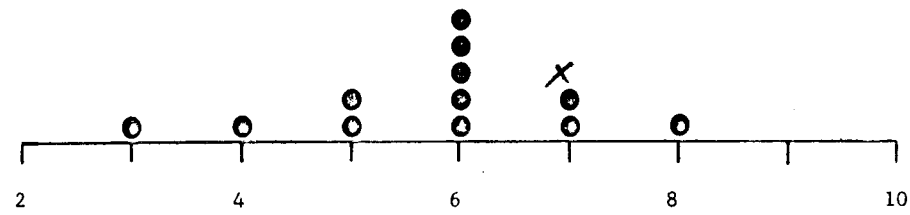
AVERAGE DEVIATION
95 PCT.CONF.INTVL OF MEAN

2.7128
9.5882 +OR- 1.8897
9.0

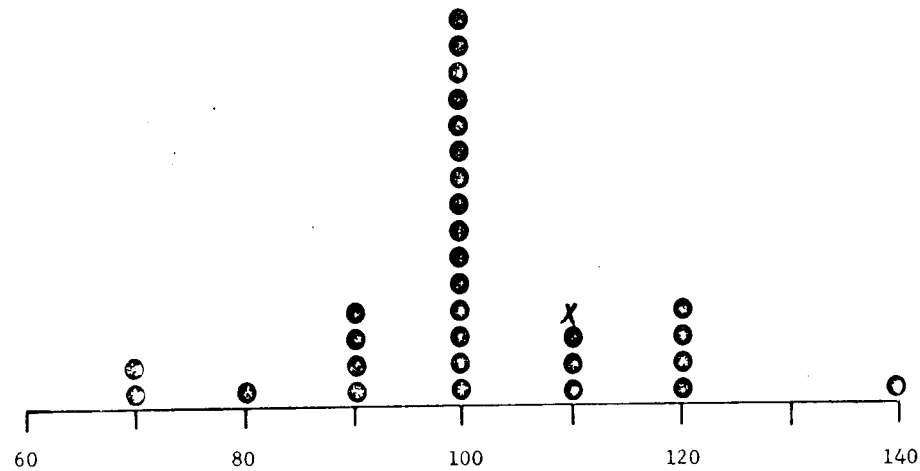
SAMPLE 44
PB



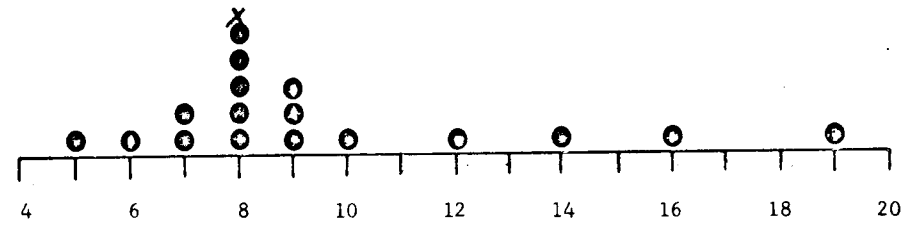
CHROMIUM (Cr) -- µg/l



COBALT (Co) -- µg/l



COPPER (Cu) -- µg/l



LEAD (Pb) -- µg/l

Sample No. 44

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4			NOT DETERMINED
5-74	5			NOT DETERMINED
5-74	6	0.4	13.7	OTHER
5-74	7			NOT DETERMINED
5-74	8	0.4	13.7	OTHER
4-74	10			NOT DETERMINED
5-74	11	0.5	7.8	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	13			NOT DETERMINED
4-74	14	0.7	51.0	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	15			NOT DETERMINED
4-74	16			NOT DETERMINED
5-74	18			NOT DETERMINED
5-74	19	0.4	13.7	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	20			NOT DETERMINED
4-74	21	0.4	13.7	OTHER
5-74	23			NOT DETERMINED
5-74	24			NOT DETERMINED
4-74	25	0.4	13.7	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	26	0.6	29.4	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	0.2	56.9	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	31			NOT DETERMINED
5-74	32	0.3	35.3	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	0.8	72.5	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	36			NOT DETERMINED

TOTAL RANGE	0.2	-	0.8				SAMPLE 44
MEAN		0.4636		AVERAGE DEVIATION		0.1355	
STANDARD DEVIATION		0.1748		95 PCT.CONF.INTVL OF MEAN		0.4636 +OR- 0.1174	HG

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1	160	*****	REJECT OTHER
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	5	18.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5			NOT DETERMINED
5-74	6	10	62.2	OTHER
5-74	7	3	51.4	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	8			NOT DETERMINED
4-74	10	5	18.9	OTHER
5-74	11	6	2.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	13			NOT DETERMINED
4-74	14	110	*****	REJECT OTHER
5-74	15	6	2.7	OTHER
4-74	16	13	110.8	OTHER
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20	4	35.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	21			NOT DETERMINED
5-74	23	4	35.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	4	35.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30			NOT DETERMINED
4-74	31			NOT DETERMINED
5-74	32	6	2.7	ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	8	29.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	36	30	386.5	REJECT ATOMIC ABS-CHELATION/EXTRACTION; USGS TWRI BK5 CH A1

TOTAL RANGE 3
MEAN
STANDARD DEVIATION

- 160
6.1667
2.8868

AVERAGE DEVIATION
95 PCT.CONF.INTVL OF MEAN

2.0833
6.1667 +OR- 1.8342

SAMPLE 44

NI

DATE MU-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN		METHOD
4-74	1	110	170.0	REJECT	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	2			NOT DETERMINED	
5-74	3	30	26.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	5	30	26.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	50	22.7		ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	40	1.8		OTHER
4-74	10	40	1.8		OTHER
5-74	11	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	20	50.9		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	14	50	22.7		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	15	40	1.8		OTHER
4-74	16	220	440.0	REJECT	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	50	22.7		OTHER
5-74	19	240	489.1	REJECT	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	30	26.4		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	23	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	10	75.5		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	25	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	26	40	1.8		OTHER
4-74	27	50	22.7		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28	50	22.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	29	250	513.6	REJECT	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	40	1.8		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	80	96.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	30	26.4		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	33	40	1.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	34	60	47.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	60	47.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	20	50.9		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE 10

- 250

MEAN
STANDARD DEVIATION

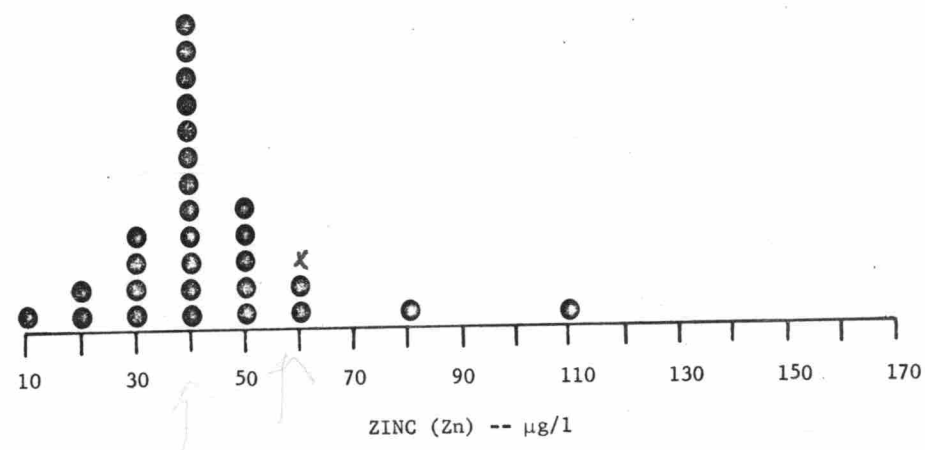
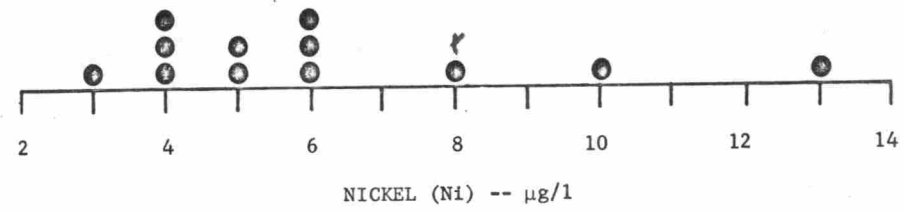
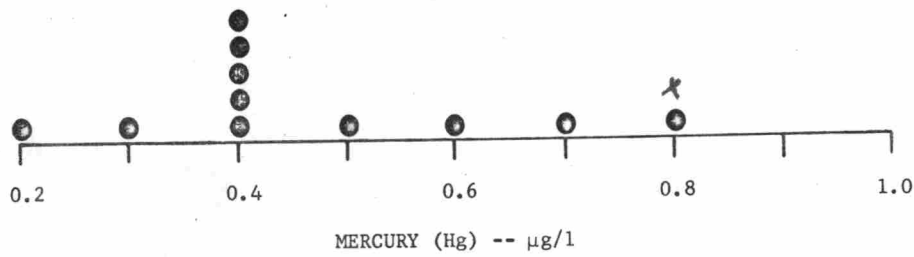
40.7405
13.8469

AVERAGE DEVIATION
95 PCT.CONF.INTVL OF MEAN

9.1906
40.7405 +OR- 5.4789

SAMPLE 44

ZN



Sample No. 44

DETERMINATION	NO. LABS REPORTING	PCT. OF VALUES REJECTED	PCT. OF UNREJECTED VALUES WITHIN		
			95 PCT. CI	X +OR- STD	X +OR- 2STD
AL	13	8	50	75	92
FE	30	7	57	75	93
MN	31	6	45	76	93
CO	24	8	41	82	91
CR TOT	13	15	36	55	100
CU	13	8	58	75	92
CU	30	0	50	73	90
PB	19	11	53	76	94
HG	11	0	55	73	100
NI	15	20	50	75	92
ZN	31	13	44	78	93

DATE MO-YR	CODE	REPORTED VALUE	PCT.DFV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	100	33.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	5			NOT DETERMINED
5-74	6	500	255.1	OTHER
5-74	7	150	0.5	FERRON-ORTHOPHENANTHROLINE: USGS TWRI BK5 CH A1
5-74	8			NOT DETERMINED
4-74	10	60	59.8	OTHER
5-74	11			NOT DETERMINED
5-74	13			NOT DETERMINED
4-74	14	480	221.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	15	80	46.4	OTHER
4-74	16	60	59.8	ERIOCHROME CYANINE R: APHA STD METH, 13ED
5-74	18	170	13.9	OTHER
5-74	19			NOT DETERMINED
5-74	20	60	59.8	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
4-74	21			NOT DETERMINED
5-74	23			NOT DETERMINED
5-74	24			NOT DETERMINED
4-74	25	70	53.1	8-QUINOLINOL, EXTRACTION: 1973 ASTM PT23 D857-69
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	40	73.2	ERIOCHROME CYANINE R: APHA STD METH, 13ED
4-74	31			NOT DETERMINED
5-74	32	70	53.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS PROVISIONAL
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	100	33.0	OTHER
4-74	36			NOT DETERMINED

TOTAL RANGE	40	-	500				SAMPLE 45
MEAN		149.2305	AVERAGE DEVIATION	108.1655			
STANDARD DEVIATION		155.6950	95 PCT.CONF.INTVL OF MEAN	149.2305 +OR-	94.0936		AL

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN		METHOD
4-74	1	670	49.1	REJECT	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	2	470	4.6		PHENANTHROLINE: APHA STD METH, 13ED
5-74	3	430	4.3		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	440	2.1		OTHER
5-74	5	500	11.3		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	470	4.6		ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	440	2.1		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	460	2.4		OTHER
4-74	10	440	2.1		OTHER
5-74	11	520	15.7		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	460	2.4		PHENANTHROLINE: APHA STD METH, 13ED
4-74	14	720	60.3	REJECT	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	15	510	13.5		OTHER
4-74	16	460	2.4		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	460	2.4		OTHER
5-74	19	460	2.4		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	420	6.5		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	440	2.1		URTHOPHENANTROLINE: 1973 ASTM PT23 D1068-68
5-74	23	450	0.2		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	440	2.1		PHENANTHROLINE: APHA STD METH, 13ED
4-74	25	450	0.2		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	26	440	2.1		OTHER
4-74	27	400	11.0		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28			NOT DETERMINED	
4-74	29	400	11.0		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	280	37.7	REJECT	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	390	13.2		ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	450	0.2		BIPYRIDINE: USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED	
5-74	34	500	11.3		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	480	6.8		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	350	22.1		ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE 280 - 720
 MEAN 449.2563
 STANDARD DEVIATION 37.3060

AVERAGE DEVIATION 26.7493
 95 PCT.CONF.INTVL OF MEAN 449.2563 +OR- 14.7611

SAMPLE 45

FE

454

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2	80	28.1	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	3	56	10.3	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	50	19.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	5	60	3.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	60	3.9	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	55	11.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	8	70	12.1	OTHER
4-74	10	57	8.7	OTHER
5-74	11	70	12.1	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	13	100	60.2	PERSULFATE: APHA STD METH, 13ED
4-74	14	380	508.7	REJECT OTHER
5-74	15	75	20.1	OTHER
4-74	16	60	3.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	18	67	7.3	OTHER
5-74	19	54	13.5	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	60	3.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
4-74	21	60	3.9	PERSULFATE: APHA STD METH, 13ED
5-74	23	70	12.1	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	24	100	60.2	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	25	60	3.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
4-74	26	61	2.3	OTHER
4-74	27	70	12.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28	80	28.1	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
4-74	29	50	19.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	30	47	24.7	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	45	27.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	60	3.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	33	54	13.5	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	34	50	19.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
5-74	35	60	3.9	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1
4-74	36	32	48.7	ATOMIC ABS-DIRECT: USGS TWRI BKS CH A1

TOTAL RANGE 32
MEAN
STANDARD DEVIATION

380
62.4331
14.5001

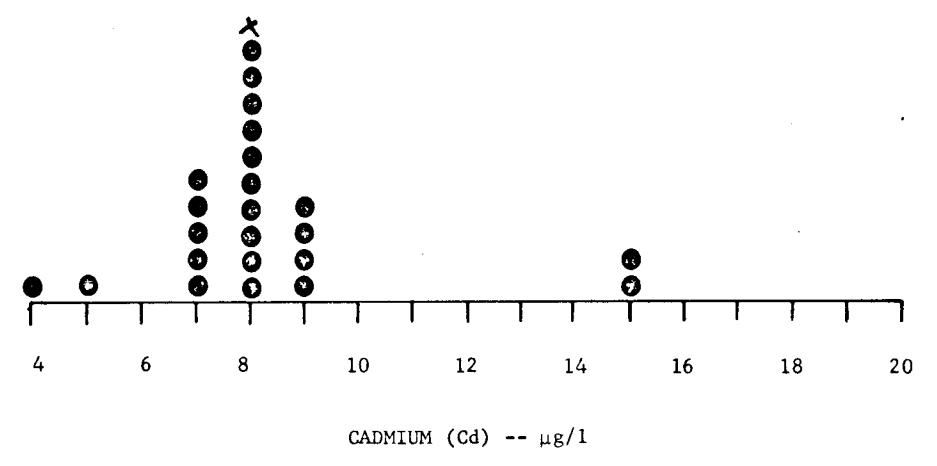
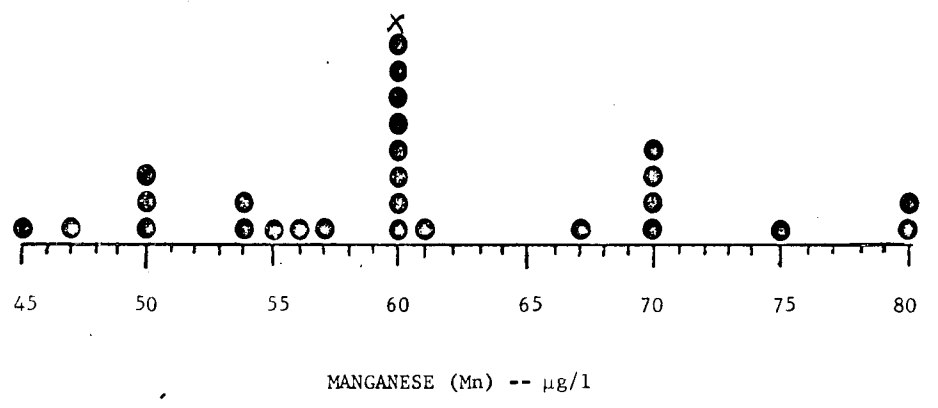
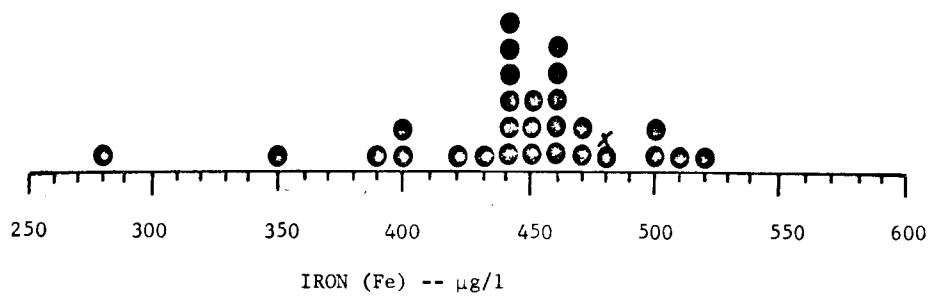
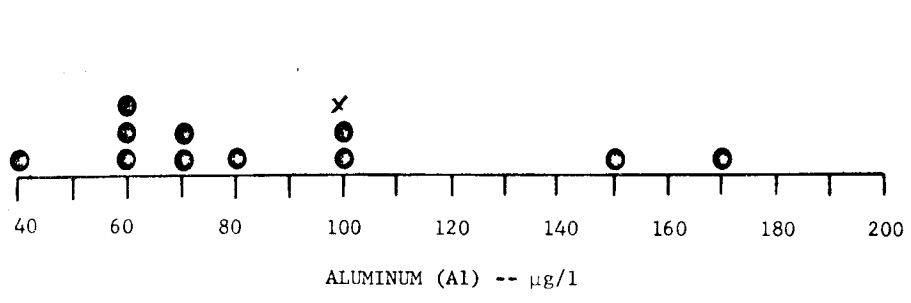
AVERAGE DEVIATION
95 PCT.CONF.INTVL OF MEAN

10.5110
62.4331 +OR- 5.4138

SAMPLE 45
MN

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	9	8.9	OTHER
5-74	4	9	8.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5	7	15.3	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	6	5	39.5	OTHER
5-74	7	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	8	8	3.2	OTHER
4-74	10	8	3.2	OTHER
5-74	11	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	13	25	202.6	REJECT ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	14	15	81.6	OTHER
5-74	15	7	15.3	OTHER
4-74	16	7	15.3	OTHER
5-74	18			NOT DETERMINED
5-74	19	7	15.3	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	20	7	15.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	21			NOT DETERMINED
5-74	23	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	9	8.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	27			NOT DETERMINED
5-74	28	15	81.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	29			NOT DETERMINED
5-74	30	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	31	9	8.9	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	32	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	34			NOT DETERMINED
5-74	35	8	3.2	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	36	4	51.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1

TOTAL RANGE	4	-	25			SAMPLE 45
MEAN		8.2609	AVERAGE DEVIATION	1.4291		
STANDARD DEVIATION		2.4349	95 PCT.CONF.INTVL OF MEAN	8.2609 +OR-	1.0530	CD



Sample No. 45

DATE MM-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	20	5.6	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	18	4.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	5	7	63.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	6	20	5.6	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	7			NOT DETERMINED
5-74	8	17	10.2	OTHER
4-74	10	21	10.9	OTHER
5-74	11	30	58.5	PERMANGANATE-AZIDE: USGS TWRI BKS CH A1
5-74	13			NOT DETERMINED
4-74	14	24	26.8	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	15	23	21.5	OTHER
4-74	16	70	269.7	REJECT PERMANGANATE-AZIDE: USGS TWRI BKS CH A1
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20			NOT DETERMINED
4-74	21	18	4.9	PERMANGANATE-AZIDE: APHA STD METH, 13ED
5-74	23			NOT DETERMINED
5-74	24			NOT DETERMINED
4-74	25			NOT DETERMINED
4-74	26	26	37.3	OTHER
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	8	57.7	PERMANGANATE-AZIDE: APHA STD METH, 13ED
4-74	31			NOT DETERMINED
5-74	32	20	5.6	OTHER
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	20	5.6	OTHER
4-74	36	12	36.6	ATOMIC ABS-DIRECT: APHA STD METH, 13ED

TOTAL RANGE	7	-	70				SAMPLE 45
MEAN		18.9333		AVERAGE DEVIATION	4.4800		
STANDARD DEVIATION		6.2044		95 PCT.CONF.INTVL OF MEAN	18.9333 +OR-	3.4362	CR TOT

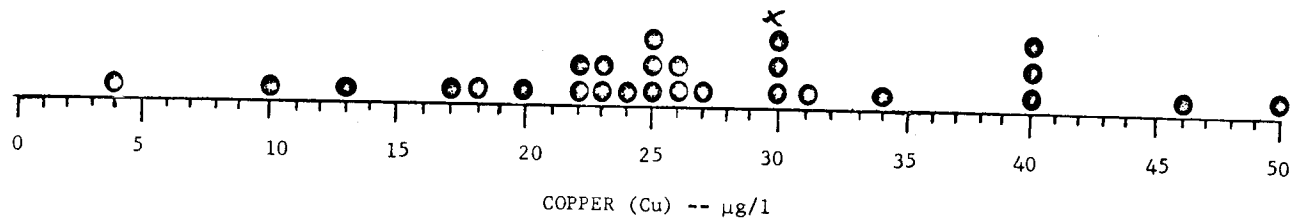
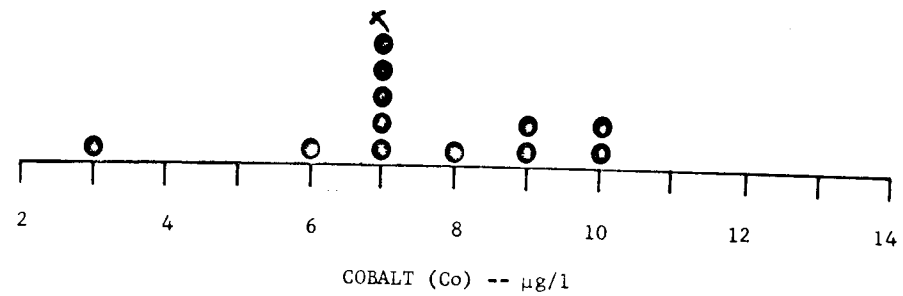
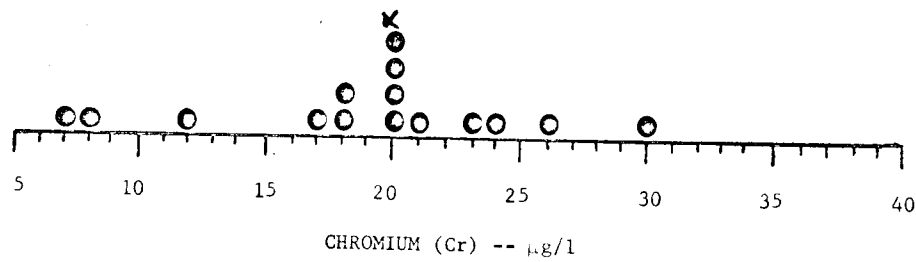
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DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	6	20.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5			NOT DETERMINED
5-74	6			NOT DETERMINED
5-74	7	7	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	8	10	33.3	OTHER
4-74	10	9	20.0	OTHER
5-74	11	9	20.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	13			NOT DETERMINED
4-74	14	90	*****	REJECT OTHER
5-74	15	10	33.3	OTHER
4-74	16			NOT DETERMINED
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20	7	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	21			NOT DETERMINED
5-74	23	8	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	7	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	3	60.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	31			NOT DETERMINED
5-74	32	7	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	7	6.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	36			NOT DETERMINED

TOTAL RANGE	3	-	90				SAMPLE 45
MEAN		7.5000		AVERAGE DEVIATION	1.4167		
STANDARD DEVIATION		1.9306		95 PCT. CONF. INTVL OF MEAN	7.5000 +OR-	1.2267	CO

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1	24	10.4	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	23	14.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5	4	85.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	10	62.7	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	25	6.6	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	30	12.0	OTHER
4-74	10	26	2.9	OTHER
5-74	11	40	49.4	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	40	49.4	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	14	46	71.8	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	15	22	17.8	OTHER
4-74	16	18	32.8	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	22	17.8	OTHER
5-74	19	23	14.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	26	2.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	40	49.4	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	23	25	6.6	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	27	0.8	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26	33	23.2	OTHER
4-74	27			NOT DETERMINED
5-74	28	20	25.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	29	30	12.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	13	51.5	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31			NOT DETERMINED
5-74	32	34	27.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33	25	6.6	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	34	50	86.7	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	30	12.0	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	17	36.5	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE	4	-	50				SAMPLE 45
MEAN		26.7776		AVERAGE DEVIATION	7.8107		
STANDARD DEVIATION		10.4820		95 PCT.CONF.INTVL OF MEAN	26.7776 +OR-	4.1475	CU



Sample No. 45

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	10	13.6	OTHER
5-74	4	12	3.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	5			NOT DETERMINED
5-74	6	5	56.8	REJECT OTHER
5-74	7	13	12.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	8			NOT DETERMINED
4-74	10	21	81.5	REJECT OTHER
5-74	11	11	4.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	13	11	4.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	14	38	228.4	REJECT OTHER
5-74	15	13	12.3	OTHER
4-74	16	34	193.8	REJECT OTHER
5-74	18			NOT DETERMINED
5-74	19	10	13.6	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
5-74	20	12	3.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	21	60	418.5	REJECT ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	23	12	3.7	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	24			NOT DETERMINED
4-74	25	11	4.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	26	10	13.6	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30	12	3.7	ATOMIC ABS-CHELATION/EXTRACTION: APHA STD METH, 13ED
4-74	31			NOT DETERMINED
5-74	32	14	21.0	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	11	4.9	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BK5 CH A1
4-74	36			NOT DETERMINED

TOTAL RANGE	5	-	60				SAMPLE 45
MEAN		11.5714		AVERAGE DEVIATION	1.0000		
STANDARD DEVIATION		1.2225		95 PCT.CONF.INTVL OF MEAN	11.5714 +OR-	0.7057	PB

DATE MO-YR	CODE	REPORTED VALUE	PCT. DEV. FROM MEAN	METHOD
4-74	1			NOT DETERMINED
4-74	2			NOT DETERMINED
5-74	3	3.0	14.9	OTHER
5-74	4			NOT DETERMINED
5-74	5			NOT DETERMINED
5-74	6	3.6	2.1	OTHER
5-74	7			NOT DETERMINED
5-74	8	3.7	4.9	OTHER
4-74	10			NOT DETERMINED
5-74	11	3.4	3.6	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	13	5.0	41.8	OTHER
4-74	14	0.6	83.0	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	15			NOT DETERMINED
4-74	16			NOT DETERMINED
5-74	18			NOT DETERMINED
5-74	19	3.8	7.8	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	20			NOT DETERMINED
4-74	21	2.5	29.1	OTHER
5-74	23			NOT DETERMINED
5-74	24			NOT DETERMINED
4-74	25	3.9	10.6	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	26	4.2	19.1	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	27			NOT DETERMINED
5-74	28	3.7	4.9	OTHER
4-74	29			NOT DETERMINED
5-74	30	2.4	31.9	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	31	4.2	19.1	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	32	3.3	6.4	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	5.6	58.8	ATOMIC ABS-FLAMELESS: USGS PROVISIONAL
4-74	36			NOT DETERMINED

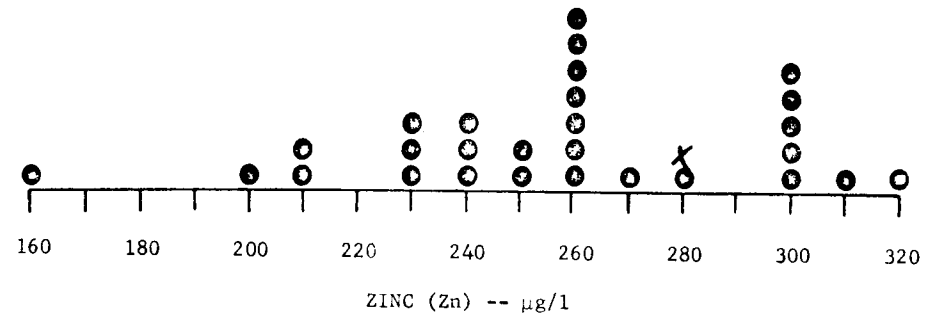
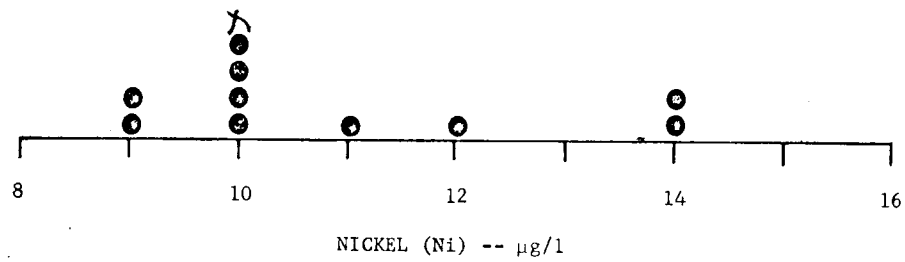
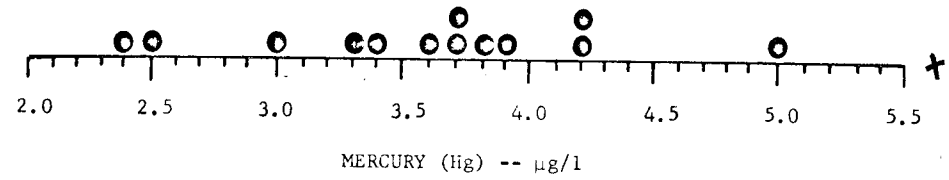
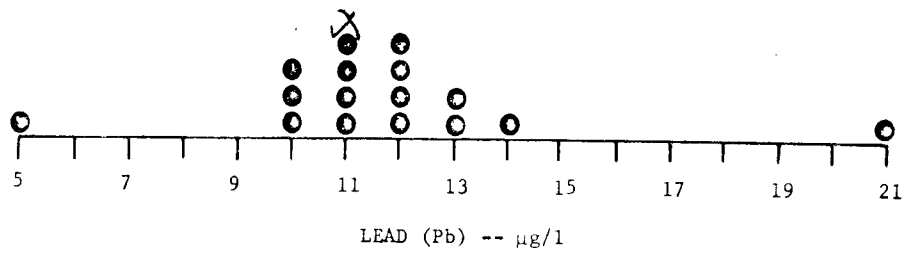
TOTAL RANGE	0.6	-	5.6			SAMPLE 45
MEAN		3.5267		AVERAGE DEVIATION	0.7947	
STANDARD DEVIATION		1.1616		95 PCT.CONF.INTVL OF MEAN	3.5267 +OR-	0.6433 HG

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1	160	*****	REJECT OTHER
4-74	2			NOT DETERMINED
5-74	3			NOT DETERMINED
5-74	4	9	17.4	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	5			NOT DETERMINED
5-74	6			NOT DETERMINED
5-74	7	10	8.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	8			NOT DETERMINED
4-74	10	14	28.4	OTHER
5-74	11	14	28.4	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	13			NOT DETERMINED
4-74	14	330	*****	REJECT OTHER
5-74	15	11	0.9	OTHER
4-74	16	64	487.2	REJECT OTHER
5-74	18			NOT DETERMINED
5-74	19			NOT DETERMINED
5-74	20	10	8.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	21			NOT DETERMINED
5-74	23	9	17.4	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	24			NOT DETERMINED
4-74	25	10	8.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	26			NOT DETERMINED
4-74	27			NOT DETERMINED
5-74	28			NOT DETERMINED
4-74	29			NOT DETERMINED
5-74	30			NOT DETERMINED
4-74	31			NOT DETERMINED
5-74	32	12	10.1	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
5-74	33			NOT DETERMINED
5-74	34			NOT DETERMINED
5-74	35	10	8.3	ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1
4-74	36	44	303.7	REJECT ATOMIC ABS-CHELATION/EXTRACTION: USGS TWRI BKS CH A1

TOTAL RANGE	9	-	330			SAMPLE 45
MEAN		10.9000	AVERAGE DEVIATION	1.4800		
STANDARD DEVIATION		1.8529	95 PCT.CONF.INTVL OF MEAN	10.9000 +OR-	1.3254	NI

DATE MO-YR	CODE	REPORTED VALUE	PCT.DEV. FROM MEAN	METHOD
4-74	1	300	31.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	2			NOT DETERMINED
5-74	3	300	31.9	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	4	230	1.1	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	5	160	29.6	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	6	260	14.3	ATOMIC ABS-DIRECT: 1973 ASTM PT23 D2576-70
5-74	7	240	5.5	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	8	250	9.9	OTHER
4-74	10	320	40.7	OTHER
5-74	11	300	31.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	13	250	9.9	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	14	270	18.7	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	15	300	31.9	OTHER
4-74	16	10	95.6	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	18	210	7.7	OTHER
5-74	19	40	82.4	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	20	260	14.3	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	21	230	1.1	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	23	260	14.3	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	24	80	64.8	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	25	260	14.3	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	26	230	1.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	27	260	14.3	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	28	240	5.5	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	29	30	86.8	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	30	200	12.1	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
4-74	31	310	36.3	ATOMIC ABS-DIRECT: APHA STD METH, 13ED
5-74	32	240	5.5	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	33	260	14.3	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	34	260	14.3	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
5-74	35	280	23.1	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1
4-74	36	210	7.7	ATOMIC ABS-DIRECT: USGS TWRI BK5 CH A1

TOTAL RANGE	10	-	320			SAMPLE 45
MEAN		227.4174	AVERAGE DEVIATION	56.7333		
STANDARD DEVIATION		81.4437	95 PCT.CONF.INTVL OF MEAN	227.4174 +OR-	29.8698	LN



Sample No. 45