M60050.001945

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Room 135
San Diego, California 92132-5187

Contract No. N68711-92-D-4670

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN II

FINAL TECHNICAL MEMORANDUM BACKGROUND AND REFERENCE LEVELS REMEDIAL INVESTIGATIONS MARINE CORPS AIR STATION EL TORO, CALIFORNIA

CTO-0076/0272

October 1996

Prepared by:

BECHTEL NATIONAL, INC.
401 West A Street, Suite 1000
San Diego, California 92101

REGISTERED GEOLOGIST
TIMOTHY W. LATAS
No. 5142
EXP. 1/31/97
STATE OF CALIFORNIA

Signature: _____ Date: 10/9/96
Timothy W. Latas, R.G., CTO Leader

TABLE OF CONTENTS

Section | Page

ACRONYMS/ABBREVIATIONS iii

1 TECHNICAL MEMORANDUM

1.1 Identifying Background Data 1-1

1.2 Selection Of Statistical Procedures 1-6

1.2.1 Nonparametric Approach 1-14
1.2.2 Nonparametric Estimation of 0.95 Quantiles 1-14
1.2.3 Nonparametric Estimation of 95 Percent UCLs 1-14
1.2.4 Parametric Approach 1-17
1.2.5 Parametric Estimation of 0.95 Quantiles 1-17
1.2.6 Parametric Estimation of 95 Percent UCLs 1-17

1.3 Metals 1-18

1.4 Organics 1-18

1.5 Geology of Background Metal Samples 1-18

2 SUMMARY

3 REFERENCES

FIGURES

Figure | Page

1 Background and Reference Sample Locations 1-11

2 Method Flowchart for Background Analysis 1-13

3 Distribution of Average Metal Concentrations by Geologic Formation 1-22

TABLES

Table | Page

1 Background Metal Soil Samples 1-2

2 Background Soil Boring Samples 1-4

3 Background Pesticide and Herbicide Samples 1-7

TABLE OF CONTENTS (continued)

Table		Page
4	Background Concentrations for Metals	1-15
5	Background Concentrations for Organics	1-16
6	Background Metal Soil Samples and Associated Geologic Formations	1-19
7	Background Metal Soil Samples Summary Statistics	1-20

ACRONYMS/ABBREVIATIONS

bgs	below ground surface
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
IDW	investigation-derived waste
IRP	Installation Restoration Program
LN	log normal
µg/L	micrograms per kilogram
MCAS	Marine Corps Air Station
MCPA	2-methyl-4-chlorophenoxyacetic acid
mg/kg	milligrams per kilogram
N	normal
RI	Remedial Investigation
UCL	upper confidence limit
U.S. EPA	United States Environmental Protection Agency

Section 1
TECHNICAL MEMORANDUM

The purpose of this technical memorandum is to present the procedures and results for the calculation of background concentrations for metals and reference levels for herbicides and pesticides. The general approach used in estimating the background concentrations for metals and reference levels for pesticides and herbicides in the soils at Marine Corps Air Station (MCAS) El Toro consists of: 1) compiling sample results that represent soil conditions that have not been affected by Station operations, 2) selecting appropriate statistical procedures, and 3) calculating background concentrations and reference levels. The specific details of the three steps are discussed in the following sections. In addition, this technical memorandum provides a discussion of how geologic formations sampled for background metals have affected the distribution of the metals data.

1.1 IDENTIFYING BACKGROUND DATA

This step involves identifying a background sample data set for MCAS El Toro. During the Phase I Remedial Investigation (RI), three sets of soil data were compiled for use in these calculations. Two of these data sets are proposed to be combined and the appropriate statistical analyses be conducted to evaluate metal background concentrations. The third set of data will be used to calculate pesticide and herbicide reference levels.

The first set of data was collected from 11 soil sample locations in the foothills above MCAS El Toro and was used to calculate background metal concentrations for the Phase I RI (Jacobs Engineering 1993a, Appendix A3). This set of background concentrations was used for identifying significant releases from site-specific analytical results. The data set consisted of two soil samples collected at each location: one sample at ground surface, and the second sample from two feet below ground surface (bgs). A total of 24 samples were analyzed for metals by United States Environmental Protection Agency (U.S. EPA) methods and the results are reported on Table 1. The proposed background method in this technical memorandum will use all 24 samples and will combine this data with the second set of data.

The second set of background metal data was compiled from a series of soil borings that were completed upgradient from Installation Restoration Program (IRP) sites (Jacobs Engineering 1993b). This set of data was used during the Phase I RI to establish metal background concentrations for investigation-derived waste (IDW) and determine whether soil wastes could be disposed on-Station. The evaluation included samples from depths from near the surface to over 150 feet in upgradient soil borings. For the proposed background calculation in this paper, only soil samples collected from less than 10 feet bgs will be used, or a total of 19 samples as presented on Table 2.

The third set of data was collected from 24 locations (47 total samples) across MCAS El Toro and were used to calculate reference levels for pesticides and herbicides for the Phase I RI (Jacobs Engineering 1993a, Appendix A3). These reference levels were used to identifying significant releases from site-specific analytical results. The data set

Table 1
Background Metal Soil Samples
Phase I Remedial Investigation
MCAS[a] El Toro

		STATION ID/SAMPLE NUMBER/SAMPLE DEPTH (feet bgs[b])											
Analyte Name	Units	00-BGN256 0	00-BGN256 S1456773 2	00-BGN256 S1456781 2	00-BGN278 S1456782 0	00-BGN278 S1456783 2	00-BGN111 S1456665 0	00-BGN111 S1456775 2	00-BGN112 S1456655 0	00-BGN112 S1456656 2	00-BGN134 S1456786 0	00-BGN134 S1456787 2	00-BGN156 S1456659 0
Silver	mg/kg[c]	0.44 UJ[d]	0.45 UJ	0.45 UJ	0.45 UJ	0.46 UJ	0.44 U[e]	0.44 U	0.44 U	0.46 U	0.46 U	0.45 U	0.44 U
Aluminum	mg/kg	4,960	4,740	3,870	5,250	4,710	4,210	6,630	9,930	14,000	7,730	11,200	6,870
Arsenic	mg/kg	0.65 B[f]	0.71 B	0.91 B	1.2 B	1.1 B	0.88 B	0.74 B	2.8	4.7	1.6 B	2.5	2.4
Barium	mg/kg	43.9	45	42.6 B	62.2	54.2	40.1 B	35.2 B	63.4	90.5	90.3	124	105
Beryllium	mg/kg	0.26 B	0.26 B	0.27 B	0.24 B	0.11 B	0.37 U	0.36 U	0.35 B	0.62 B	0.49 U	0.44 U	0.53 B
Calcium	mg/kg	5,020	4,810	4,680	3,330	2,280	3,220	2,450	2,000	2,560	3,430	4,230	6,150
Cadmium	mg/kg	0.38 B	0.26 U	0.26 U	1.1 B	0.73 B	0.65 B	0.25 U	0.75 B	0.84 B	2.6	1.5	1.3
Cobalt	mg/kg	1.2 U	1.3 U	1.3 U	2.8 B	1.9 B	2.3 B	1.7 B	5.2 B	6.5 B	9.7 B	5 B	4.3 B
Chromium	mg/kg	4.5 U	4.5 U	4 U	6.5	5.8 U	6.2	7.1	12.4	25.5	9.2	16	8
Copper	mg/kg	4.3 B	1.6 J[f]	1.4 J	4.7 B	3.2 B	4.1 B	1.6 B	6.6	7.1	8.5	9.5	11.1
Iron	mg/kg	3,890	3,300	2,790	7,140	6,310	3,980	3,580	12,300	17,400	10,900	16,300	9,360
Mercury	mg/kg	0.07	0.03 U	0.03 U	0.03 B	0.03 U	0.05 U	0.03 U	0.41	0.03 U	0.04 U	0.04 U	0.09
Potassium	mg/kg	1,470	522 B	451 B	2,250	1,170	852 B	276 B	3,110	3,780	2,990	2,910	3,290
Magnesium	mg/kg	1,580	1,330	1,140	2,130	1,920	1,580	2,500	3,810	6,610	3,160	4,940	3,270
Manganese	mg/kg	105	64.3	59.8	150	118	92.9	126	251	236	574	195	276
Sodium	mg/kg	167 B	138 B	108 B	185 B	165 B	181 B	203 B	224 B	506 B	241 B	277 B	204 B
Nickel	mg/kg	3.4 B	2.2 B	1.7 U	6.4 B	5.3 B	5.3 B	4.6 B	5.7 B	10.6	57.9	14.5	8 B
Lead	mg/kg	10.6	1.4	1.1	10	1.4	10.8	1.9	8.6	2.9	4.9	1.9	22.4
Antimony	mg/kg	2.5 U	2.6 U	2.6 U	2.6 U	2.6 U	2.5 U	2.6 U	2.5 U	2.7 U	2.6 U	2.6 U	2.5 U
Selenium	mg/kg	0.16 U	0.11 U	0.11 U	0.12 U	0.15 U	0.1 U	0.11 U	0.13 B	0.22 B	0.11 U	0.21 B	0.1 U
Thallium	mg/kg	0.34 U	0.15 U	0.32 U	0.32 U	0.39 U	0.15 U	0.15 U	0.19 B	0.2 B	0.22 B	0.24 B	0.15 U
Vanadium	mg/kg	8.1 B	8.2 B	7.2 B	15.6	13.3	11	14.1	39.2	85.4	28.5	44.8	20.8
Zinc	mg/kg	21.8	11.4	10.7	28.6	19.4	17.9	8.4	37.6	48	41.7	46	45.4

(table continues)

Table 1 (continued)

Analyte Name	Units	00-BGN156 S1456650 2	00-BGN156 S1456771 2	00-BGN178 S1456661 0	00-BGN178 S1456662 2	00-BGN1910 S1456663 0	00-BGN1910 S1456664 2	00-BGN2910 S1456784 0	00-BGN2910 S1456785 2	00-BGN212 S1456776 0	00-BGN212 S1456777 2	00-BGN234 S1456778 0	00-BGN234 S1456779 2
		STATION ID/SAMPLE NUMBER/SAMPLE DEPTH (feet bgs[b])											
Silver	mg/kg	0.45 U	0.45 U	0.46 U	0.44 U	0.65 B	0.53 B	0.43 UJ	0.44 UJ	0.43 UJ	0.46 UJ	0.46 UJ	0.44 UJ
Aluminum	mg/kg	10,500	10,700	7,970	6,190	15,300	12,900	3,270	3,550	2,640	3,320	6,250	6,880
Arsenic	mg/kg	2.1 B	2 B	0.46 B	0.65 B	7.4	8.5	0.14 U	0.15 U	0.29 B	0.15 U	0.98 B	1.2 B
Barium	mg/kg	109	108	59.7	57.5	153	172	31.8 B	22.8 B	36 B	25.9 B	57.6	54.4
Beryllium	mg/kg	0.53 B	0.39 B	0.24 B	0.24 B	0.79 B	0.66 B	0.6 B	0.26 B	0.26 B	0.2 B	0.11 U	0.23 B
Calcium	mg/kg	5,070	4,830	4,550	5,810	55,100	67,600	2,530	3,060	2,040	2,250	1,500	1,530
Cadmium	mg/kg	1.2	1.6	0.38 B	0.43 B	10.6	11.4	0.25 U	0.25 U	0.25 U	0.26 U	0.65 B	0.48 B
Cobalt	mg/kg	4.2 B	4.1 B	4 B	3.6 B	5.2 B	6 B	1.2 U	1.2 U	1.2 U	1.3 U	2 B	2.5 B
Chromium	mg/kg	10.5	11.4	6.7	5.3	55	43.7	3.1 U	2.5 U	2.7 U	2.1 B	10.2	7.6
Copper	mg/kg	9	9.3	5.6	5.1 B	36.2	37.9	1.1 J[g]	0.36 J	2 J	0.72 J	5.6	4.1 B
Iron	mg/kg	11,600	12,500	9,640	8,410	18,500	17,700	2,310	2,260	2,310	1,880	7,540	8,090
Mercury	mg/kg	0.03 U	0.09	0.04 B	0.03 U	0.11	0.12	0.03 U	0.03 U	0.03 B	0.03 U	0.04 B	0.03 U
Potassium	mg/kg	2,990	2,870	2,670	2,020	6,230	4,880	891 B	435 B	890 B	353 B	2,070	1,350
Magnesium	mg/kg	3,930	4,030	3,700	3,290	13,600	7,630	944 B	969 B	1,300	1,440	2,150	2,170
Manganese	mg/kg	272	264	185	174	263	241	49.6	49.6	49.3	13.9	171	97.4
Sodium	mg/kg	230 B	206 B	225 B	197 B	419 B	450 B	115 B	150 B	146 B	167 B	199 B	261 B
Nickel	mg/kg	7.4 B	10.1	3.4 B	3 B	64.3	71.1	1.6 U	1.6 U	1.8 B	1.8 B	5.6 B	3.5 B
Lead	mg/kg	2.3	2.1	4.9	1.6	12.4	4.8	1.8	0.67	6.3	1.1	17.6	2.2
Antimony	mg/kg	2.6 U	2.6 U	2.6 U	2.5 U	4.5 B	3 U	2.5 U	2.6 U	2.5 U	2.6 U	2.6 U	2.5 U
Selenium	mg/kg	0.11 U	0.11 U	0.16 B	0.1 U	0.37 B	0.32 B	0.1 U	0.11 U	0.1 U	0.13 U	0.11 U	0.1 U
Thallium	mg/kg	0.15 U	0.15 B	0.22 B	0.15 U	0.53 B	0.42 B	0.29 U	0.19 U	0.27 U	0.15 U	0.15 U	0.39 U
Vanadium	mg/kg	25.7	26.8	24.4	21.5	134	117	5.4 B	6.1 B	5.1 B	5.4 B	16.9	19.2
Zinc	mg/kg	35.3	35.1	32.1	25.4	99.5	97.9	10.8	9.6	12.9	6.2	26.7	19.2

Notes:
[a] MCAS – Marine Corps Air Station
[b] bgs – below ground surface
[c] mg/kg – milligrams per kilogram
[d] UJ – estimated detection limit
[e] U – detection limit, analyte not detected
[f] B – estimated value
[g] J – estimated value

Table 2
Background Soil Boring Samples
Phase I Remedial Investigation
MCAS[a] El Toro

		STATION ID/SAMPLE NUMBER/SAMPLE DEPTH (feet bgs[b])									
Analyte Name	Units	02-UGS S1454008 0	02-UGS S1454502 2	03-UGS S1454013 0	03-UGS S1454399 0	05-UGS S1454040 0	05-UGS S1454402 0	06-UGS S1454550 2	07-DBMW100 S1457113 3	07-DBMW100 S1457114 8	12-UGMW31 S1454210 2
Silver	mg/kg[c]	0.3 U[d]	0.31 U	0.43 U	0.43 U	0.43 U	0.43 U	0.49 U	0.46 U	0.49 U	0.48 U
Aluminum	mg/kg	2,720	4,240	4,910	8,550	4,990	6,580	9,280	5,950	10,200	17,300
Arsenic	mg/kg	1.1 B[e]	1.9 B	3.5	2.7	1.5 B	1.9 B	2.7	1.3 B	3.1	2.1 B
Barium	mg/kg	34.8 B	54.2	79.3	108	61.3	67.3	116	77	102	148
Beryllium	mg/kg	0.19 U	0.29 U	0.29 U	0.44 U	0.28 U	0.27 U	0.43 B	0.49 U	0.55 U	0.51 B
Calcium	mg/kg	1,800	2,520	4,300	5,220	2,920	3,080	4,490	2,930	5,140	4,210
Cadmium	mg/kg	0.55 U	0.57 U	0.41 B	0.75 B	0.96 B	0.99 B	1.7	0.85 B	1.5	1.5
Cobalt	mg/kg	1.7 B	2.8 B	2.9 B	4.5 B	2.4 B	1.8 B	5.5 B	2.8 B	4.6 B	6.9 B
Chromium	mg/kg	3.2	5	4.9	7.9	5.8	7	10.6	7.1	11.9	15.9
Copper	mg/kg	2.9 B	4.3 B	4.6 B	6.4	6.7	5.8	8.6	6.8	9.9	9.6
Iron	mg/kg	4,030	6,030	7,260	11,300	7,350	8,550	12,400	8,780	12,800	19,000
Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Potassium	mg/kg	1,250	1,500	2,780	3,460	1,950	2,110	3,340	2,160	2,690	4,910
Magnesium	mg/kg	1,330	1,980	3,190	4,390	2,460	2,750	4,550	3,420	5,170	7,570
Manganese	mg/kg	79.7	116	140	189	136	148	238	176	225	293
Sodium	mg/kg	185 U	208 U	189 B	183 B	252 B	304 B	299 B	282 B	353 B	275 B
Nickel	mg/kg	2.5 B	5.1 B	3.2 U	4.1 U	6.4 U	6.1 U	10.8	7.2 U	14.3	10.6
Lead	mg/kg	3	2.8	10.9	11	2.7	2.6	4.7	1.7	3.2	2.3
Antimony	mg/kg	2.5 U	2.6 U					2.8 U	2.7 U	2.8 U	
Selenium	mg/kg	0.42 U	0.43 U			0.1 U	0.1 B	0.12 U	0.27 U	0.12 U	0.12 U
Thallium	mg/kg	0.32 U	0.33 U	0.22 B	0.28 B	0.14 B	0.16 B	0.23 B	0.2 B	0.42 B	0.18 B
Vanadium	mg/kg	9.7 B	14.7	16.3	26.7	18.2	21	29.7	21.6	33.1	47.9
Zinc	mg/kg	17.7	22.2	33.3	42.4	27	29.3	43.2	29.2	43.9	53.6

(table continues)

Table 2 (continued)

Analyte Name	Units	STATION ID/SAMPLE NUMBER/SAMPLE DEPTH (feet bgs[b])								
		13-UGMW32 S1454219 2	15-UGS S1454266 2	16-UGS S1454528 0	16-UGS S1454529 2	16-UGX S1454299 0	16-UGX S1454302 2	20-UGMW36 S1454369 0	20-UGS S1454360 2	21-UGMW37 S1454367 2
Silver	mg/kg	0.47 U	0.49 U	0.43 U	0.44 U	0.43 U	0.44 U	0.43 U	0.54 B	
Aluminum	mg/kg	11,400	11,100	4,140	3,980	4,820	5,190	7,970	14,800	8,120
Arsenic	mg/kg	1.8 B	3	0.93 B	0.46 U	1.1 B	1.4 B	2.6	4.1	1.8 B
Barium	mg/kg	160	157	63.9	83.7	80.3	89.2	116	136	130
Beryllium	mg/kg	0.47	0.36 B	0.29 U	0.17 U	0.16 U	0.16 U	0.35 U	0.5 U	0.4 B
Calcium	mg/kg	9,540 B	9,530	2,550	5,260	4,100	6,990	4,380	5,740	3,370
Cadmium	mg/kg	1.1 B	0.66 B	0.75 U	0.52 U	0.84 U	0.81 U	1.9	2.4	0.97 B
Cobalt	mg/kg	6.5 B	5.4 B	2.8 B	1.9 B	2.9 B	3.2 B	4.6 B	6.8 B	4.9 B
Chromium	mg/kg	10.7	10.3	4.5	3.8	5.1	4.6	12.1	17.7	9
Copper	mg/kg	8.7	7	3.8 B	3.8 B	4 B	4.2 B	9.7	10.3	7.2
Iron	mg/kg	14,100	15,200	6,400	5,740	7,450	8,390	12,900	17,800	12,100
Mercury	mg/kg	0.03 U	0.03 U					0.06 U	0.22	0.03 U
Potassium	mg/kg	4,370	4,520	2,310	1,630	2,830	2,530	4,500	4,940	3,610
Magnesium	mg/kg	6,960	6,780	2,350	2,270	2,950	3,330	4,810	6,890	4,500
Manganese	mg/kg	253	247	131	149	161	174	238	281	247
Sodium	mg/kg	302 B	393 B	184 B	224 B	168 B	169 B	257 B	251 B	303 B
Nickel	mg/kg	8.4 B	7.6 B	4 B	3.9 B	3.4 B	3.6 B	9.9	12.7	7.2 B
Lead	mg/kg	1.9	2.1	4.5	0.79	6.8	1.1	21.4	3.1	2.1
Antimony	mg/kg	2.7 U		2.5 U	2.5 U	2.5 U	2.5 U	2.8 B	2.6 U	
Selenium	mg/kg	0.11 U	0.14 B	0.11 B	0.2 B	0.11 B	0.1 U	0.29 B	0.29 B	0.11 U
Thallium	mg/kg	0.25 B	0.16 U	0.14 U	0.15 U	0.14 U	0.15 U	0.25 B	0.15 U	0.2 B
Vanadium	mg/kg	34	35.8	15.3	14.8	17.2	20.7	32.7	53	27.9
Zinc	mg/kg	49.4	47.1	24.2	18.7	29.2	25.7	57.4	55.4	39.8

Notes:
[a] MCAS – Marine Corps Air Station
[b] bgs – below ground surface
[c] mg/kg – milligrams per kilogram
[d] U – detection limit, analyte not detected
[e] B – estimated value

consisted of one to three soil samples collected at each location. These samples were analyzed for pesticides and herbicides by U.S. EPA methods and were reported on Table 3. For the proposed reference level calculation in this paper, all 47 soil samples will be used.

The locations of the three sets of samples are shown on Figure 1.

For this statistical analysis, data with a qualifier "J" or "B" were treated as valid measurements. A "B" qualifier means the concentration reported is greater than the instrument detection limit but less than the contract required detection limit for inorganic compounds. A "J" qualifier means the associated value is an estimated quantity for organic compounds. Prior to the calculation of any statistics, analytical data were pre-processed to include or exclude censored data. These censored data consist of non-detects assigned a "U" qualifier, the reported value of which is the detection limit. Censored data were pre-processed as follows:

- Censored data exceeding the maximum detected value were excluded from further analysis
- A value of 1/2 the detection limit was adopted for the remaining censored data

1.2 SELECTION OF STATISTICAL PROCEDURES

Once a background data set is compiled, the next step is to select the statistical procedures. Figure 2 presents a flow chart which demonstrates the specific step-by-step decision process for the statistical calculations which is consistent with statistical performance requirements in the U.S. EPA publications (U.S. EPA 1989b, 1992b, and 1994). The first step in this process was an examination of probability plots of the background and reference data for outliers. Probability plots were constructed using GEO-EAS 1.2.1 to facilitate the assignment of a distribution. Because environmental data are most often lognormally distributed, these probability plots were produced using the log-transformed data. These plots are provided in Appendix A. Outliers that were visually apparent were removed or "trimmed" from the data prior to further consideration. This exercise resulted in two outliers being removed from the cadmium and copper data sets and three outliers from the nickel data set. No other data were trimmed from the data set.

The selection of an appropriate statistical procedure for a particular data set primarily is based on the distribution characteristics of the data after removal of outliers. Two sets of background and reference levels were calculated: 1) the 0.95 (or 95th) quantile, also referred to as 95th percentile; and 2) the 95 percent confidence limit on the mean/median, herein referred to as the 95 percent upper confidence limit (UCL). The 0.95 quantiles are used at MCAS El Toro to screen analytical results for potential releases. The 95 percent (UCLs) are used in the baseline risk assessment to estimate risks associated with background metals at MCAS El Toro.

Table 3
Background Pesticide and Herbicide Samples
Phase I Remedial Investigation
MCAS[a] El Toro

		STATION ID/SAMPLE NUMBER											
Analyte Name	**Units**	**00-BGA134 S1454589**	**00-BGA134 S1454590**	**00-BGA134 S1454602**	**00-BGA156 S1454591**	**00-BGA156 S1454592**	**00-BGA178 S1454593**	**00-BGA178 S1454594**	**00-BGA212 S1454587**	**00-BGA212 S1454588**	**00-BGA234 S1454597**	**00-BGA234 S1454598**	**00-BGA234 S1454601**
Alpha-chlordane	mg/kg[b]	1.89 U[c]	2.05 U	2.01 U	1.92 U	1.93 U	1.88 U	1.92 U	1.96 U	2.13 U	3.01	1.94 U	2.14 U
Gamma-chlordane	mg/kg	1.89 UJ[d]	2.05 UJ	2.01 UJ	1.92 UJ	1.93 UJ	1.88 UJ	1.92 UJ	2.84	1.46	2.49	1.94 U	2.14 U
4,4'-DDD[e]	mg/kg	3.67 U	3.97 U	3.9 U	3.72 U	3.74 U	3.66 U	3.72 U	45.1	1.5	4.58 U	3.77 U	4.16 U
4,4'-DDE[f]	mg/kg	3.67 U	3.97 U	3.9 U	3.72 U	3.74 U	3.66 U	3.72 U	233	17.3	4.58 U	3.77 U	4.16 U
4,4'-DDT[g]	mg/kg	3.67 UJ	3.97 UJ	3.9 UJ	3.72 UJ	3.74 UJ	3.66 UJ	3.72 UJ	272	34.2	18.4	3.77 U	4.16 U
Dieldrin	mg/kg	3.67 UJ	3.97 UJ	3.9 UJ	3.72 UJ	3.74 UJ	3.66 UJ	3.72 UJ	118	6.6	4.58 U	3.77 U	4.16 U
Endrin aldehyde	mg/kg	3.67 U	3.97 U	3.9 U	3.72 U	3.74 U	3.66 U	3.72 U	41.7	4.13 U	4.58 U	3.77 U	4.16 U
Endrin	mg/kg	3.67 UJ	3.97 UJ	3.9 UJ	3.72 UJ	3.74 UJ	3.66 UJ	3.72 UJ	19.9	1.01	4.58 U	3.77 U	4.16 U
Endosulfan sulfate	mg/kg	3.67 U	3.97 U	3.9 U	3.72 U	3.74 U	3.66 U	3.72 U	3.81 U	4.13 U	4.58 U	3.77 U	4.16 U
Endosulfan I	mg/kg	1.89 U	2.05 U	2.01 U	1.92 U	1.93 U	1.88 U	1.92 U	1.96 U	2.13 U	2.36 U	1.94 U	2.14 U
Endosulfan II	mg/kg	3.67 U	3.97 U	3.9 U	3.72 U	3.74 U	3.66 U	3.72 U	10.6	4.13 U	4.58 U	3.77 U	4.16 U
Methoxychlor	mg/kg	18.9 U	20.5 U	20.1 U	19.2 U	19.3 U	18.8 U	19.2 U	19.6 U	21.3 U	23.6 U	19.4 U	21.4 U
MCPA[h]	mg/kg	27,700 U	30,000 U	29,500 U	27,900 U	28 400 U	27,500 U	28,000 U	28,500 U	31,200 U	16,800 U	73,400 U	127,000
Dichloroprop	mg/kg	111 U	120 U	118 U	112 U	114 U	110 U	112 U	114 U	125 U	138 U	113 U	125 U

(table continues)

Table 3 (continued)

Analyte Name	Units	STATION ID/SAMPLE NUMBER											
		00-BGA312 S1454599	00-BGA312 S1454600	00-BGC212 S1454604	00-BGC212 S1454605	00-BGC378 S1454613	00-BGC412 S1454614	00-BGC412 S1454615	00-BGC434 S1454616	00-BGC434 S1454617	00-BGR112 S1454620	00-BGR112 S1454621	00-BGR134 S1454622
Alpha-chlordane	mg/kg	2.01 U	2 U	1.98 U	1.85 U	1.9 U	2.01 U	1.96 U	2.1 U	2.04 U	2 U	2.05 U	2.18 U
Gamma-chlordane	mg/kg	2.01 U	2 U	1.98 U	1.85 U	1.9 UJ	2.01 U	1.96 U	2.1 UJ	2.04 UJ	2 UJ	2.05 UJ	2.18 UJ
4,4′-DDD	mg/kg	58.6	18.6	3.84 U	3.59 U	3.68 UJ	6.19	3.81 U	4.07 UJ	3.97 UJ	3.89 UJ	3.98 UJ	4.24 UJ
4,4′-DDE	mg/kg	158	126	3.84 U	3.59 U	3.68 U	5.62	3.81 U	4.07 U	3.97 U	3.89 U	3.98 U	4.24 U
4,4′-DDT	mg/kg	208 J[i]	255 J	3.84 U	3.59 U	3.68 U	31	3.81 U	4.07 U	3.97 U	3.89 U	3.98 U	4.24 U
Dieldrin	mg/kg	3.9 U	3.87 U	3.84 U	3.59 U	3.68 U	3.9 U	3.81 U	4.07 UJ	3.97 UJ	3.89 UJ	3.98 UJ	4.24 UJ
Endrin aldehyde	mg/kg	3.9 U	3.87 U	3.84 U	3.59 U	3.68 U	3.9 U	3.81 U	4.07 U	3.97 U	3.89 U	3.98 U	4.24 U
Endrin	mg/kg	3.9 U	3.87 U	3.84 U	3.59 U	3.68 U	3.9 U	3.81 U	4.07 UJ	3.97 UJ	3.89 UJ	3.98 UJ	4.24 UJ
Endosulfan sulfate	mg/kg	4.21	3.44	3.84 U	3.59 U	3.68 U	3.9 U	3.81 U	4.07 U	3.97 U	3.89 U	3.98 U	4.24 U
Endosulfan I	mg/kg	0.144	0.179	1.98 U	1.85 U	1.9 U	2.01 U	1.96 U	2.1 U	2.04 U	2 U	2.05 U	2.18 U
Endosulfan II	mg/kg	3.9 U	3.87 U	3.84 U	3.59 U	3.68 U	3.9 U	3.81 U	4.07 U	3.97 U	3.89 U	3.98 U	4.24 U
Methoxychlor	mg/kg	20.1 U	20 U	19.8 U	18.5 U	19 U	20.1 U	19.6 U	21 U	20.4 U	20 U	20.5 U	21.8 U
MCPA	mg/kg	29,700 U	29,300 U	29,000 U	26,900 U	27,300 U	29,600 U	28,900 U	30,500 U	30,100 U	29,800 U	30,500	32,200 U
Dichloroprop	mg/kg	119 U	117 U	116 U	108 U	109 U	118 U	116 U	122 U	120 U	119 U	122 U	129 U

(table continues)

Table 3 (continued)

Analyte Name	Units	STATION ID/SAMPLE NUMBER											
		00-BGC212 S1454618	00-BGC312 S1454606	00-BGC312 S1454607	00-BGC334 S1454608	00-BGC334 S1454609	00-BGC356 S1454610	00-BGC356 S1454611	00-BGC378 S1454612	00-BGR134 S1454623	00-BGR312 S1454624	00-BGR312 S1454636	00-BGR312 S1454625
Alpha-chlordane	mg/kg	1.84 U	1.98 U	1.89 U	1.99 U	1.9 U	1.97 U	1.92 U	1.97 U	2.04 U	2.11 U	2.06 U	1.92 U
Gamma-chlordane	mg/kg	1.84 U	1.98 UJ	1.89 UJ	1.99 U	1.9 U	1.97 U	1.92 U	1.97 UJ	2.04 UJ	2.11 UJ	2.06 UJ	1.92 UJ
4,4'-DDD	mg/kg	3.58 U	3.84 U	3.68 U	6.43	5.17	22.6	3.73 U	3.82 UJ	3.97 UJ	4.1 U	3.99 UJ	3.73 UJ
4,4'-DDE	mg/kg	3.58 U	3.84 U	3.68 U	89.9	7.99	57.9	3.73 U	3.82 U	3.97 U	4.1 U	3.99 U	3.73 U
4,4'-DDT	mg/kg	3.58 U	3.84 UJ	3.68 UJ	97.6	3.69 U	52.2 J	3.73 U	3.82 U	3.97 U	4.1 UJ	3.99 UJ	3.73 UJ
Dieldrin	mg/kg	3.58 U	3.84 U	3.68 U	6.21	3.69 U	3.82 U	3.73 U	3.82 U	3.97 UJ	4.1 U	3.99 U	3.73 U
Endrin aldehyde	mg/kg	3.58 U	3.84 U	3.68 U	3.87 U	3.69 U	3.82 U	3.73 U	3.82 U	3.97 U	4.1 U	3.99 U	3.73 U
Endrin	mg/kg	3.58 U	3.84 U	3.68 U	3.87 U	3.69 U	3.82 U	3.73 U	3.82 U	3.97 U	4.1 U	3.99 U	3.73 U
Endosulfan sulfate	mg/kg	3.58 U	3.84 U	3.68 U	3.87 U	3.69 U	3.82 U	3.73 U	3.82 U	3.97 U	4.1 U	3.99 U	3.73 U
Endosulfan I	mg/kg	1.84 U	1.98 U	1.89 U	1.99 U	1.9 U	1.97 U	1.92 U	1.97 U	2.04 U	2.11 U	2.06 U	1.92 U
Endosulfan II	mg/kg	3.58 U	3.84 U	3.68 U	3.87 U	3.69 U	3.82 U	3.73 U	3.82 U	3.97 U	4.1 U	3.99 U	3.73 U
Methoxychlor	mg/kg	18.4 U	17.5 U	18.9 U	19.9 U	19 U	19.7 U	19.2 U	19.7 U	20.4 U	21.1 U	29.4 U	19.2 U
MCPA	mg/kg	27,000 U	29,300 U	28,400 U	29,200 U	27,800 U	28,800 U	28,500 U	27,900 U	30,300 U	31,100 U	30,400 U	28,300 U
Dichloroprop	mg/kg	108 U	117 U	113 U	117 U	111 U	115 U	114 U	112 U	121 U	124 U	122 U	113 U

(table continues)

Table 3 (continued)

Analyte Name	Units	STATION ID/SAMPLE NUMBER										
		00-BGR334 S1454626	00-BGR334 S1454627	00-BGR356 S1454628	00-BGR356 S1454629	00-BGR356 S1454637	00-BGR378 S1454630	00-BGR378 S1454631	00-BGR390 S1454632	00-BGR390 S1454633	00-BGR412 S1454634	00-BGR412 S1454635
Alpha-chlordane	mg/kg	2.18 U	1.98 U	2 U	17.7	1.94 U	1.94 U	1.91 U	2.02 U	1.97 U	2.03 U	1.98 U
Gamma-chlordane	mg/kg	2.18 UJ	1.98 UJ	2 UJ	18 J	1.94 UJ	1.94 UJ	1.91 UJ	2.02 UJ	1.97 UJ	2.03 UJ	1.98 UJ
4,4'-DDD	mg/kg	4.24 UJ	3.84 UJ	3.87 UJ	4.1 UJ	3.77 UJ	3.76 UJ	3.71 UJ	3.92 UJ	3.83 UJ	3.93 UJ	3.85 UJ
4,4'-DDE	mg/kg	4.24 U	3.84 U	3.87 U	4.1 U	3.77 U	6.15	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
4,4'-DDT	mg/kg	4.24 U	3.84 U	3.87 U	4.1 U	3.77 U	5.21	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
Dieldrin	mg/kg	4.24 UJ	3.84 UJ	3.87 U	4.1 U	3.77 U	3.76 U	28.8	3.92 U	3.83 U	3.93 U	3.85 U
Endrin aldehyde	mg/kg	4.24 U	3.84 U	3.87 U	4.1 U	3.77 U	3.76 U	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
Endrin	mg/kg	4.24 UJ	3.84 UJ	3.87 U	4.1 U	3.77 U	3.76 U	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
Endosulfan sulfate	mg/kg	4.24 U	3.84 U	3.87 U	4.1 U	3.77 U	3.76 U	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
Endosulfan I	mg/kg	2.18 U	1.98 U	2 U	2.11 U	1.94 U	1.94 U	1.91 U	2.02 U	1.97 U	2.03 U	1.98 U
Endosulfan II	mg/kg	4.24 U	3.84 U	3.87 U	4.1 U	3.77 U	3.76 U	3.71 U	3.92 U	3.83 U	3.93 U	3.85 U
Methoxychlor	mg/kg	21.8 U	19.8 U	20 U	21.1 U	19.4 U	19.4 U	19.1 U	20.2 U	19.7 U	20.3 U	19.8 U
MCPA	mg/kg	32,200 U	28,900 U	28,500 U	29,700 U	27,300 U	27,600 U	28,400 U	29,200 U	28,000 U	28,800 U	28,800 U
Dichloroprop	mg/kg	129 U	115 U	114 U	119 U	111 U	141	114 U	117 U	112 U	115 U	115 U

Notes:
[a] MCAS – Marine Corps Air Station
[b] mg/kg – milligrams per kilogram
[c] U – detection limit, analyte not detected
[d] UJ – estimated detection limit
[e] DDD – dichlorodiphenyldichloroethane
[f] DDE – dichlorodiphenyldichloroethene
[g] DDT – dichlorodiphenyltrichloroethane
[h] MCPA – 2-methyl-4-chlorophenoxyacetic acid
[i] J – estimated value

LEGEND:

- ● Sample in agricultural area, analyzed for pesticides and herbicides
- ■ Sample in commercial area, analyzed for pesticides and herbicides
- ▼ Sample in residential area, analyzed for pesticides and herbicides
- ◆ Sample in area of minimal human impact, analyzed for metals
- ▲ Sample from soil borings upgradient of IRP sites

Qls

Qls ?

Landslides

= Bedrock landslides

? = Probable bedrock landslides

= Possible bedrock landslides

Qac | Qb

Qac = Alluvium and colluvium

Qb = Beach sediments

Qt | Qtm

Terrace deposits

Qt = Nonmarine terrace deposits

Qtm = Marine terrace deposits

Tp: Tpsc, Tpy, Tps, Tplv

Puente Formation

Tp = Puente Formation undifferentiated

Tpsc = Sycamore Canyon Member

Tpy = Yorba Member

Tps = Soquel Member

Tplv = La Vida Member

Tcs, Tct, Tco

Capistrano Formation

Tcs = siltstone facies

Tct = turbidite facies

Tco = Oso Member

Tm

Monterey Formation

Tt: Ttp, Ttlt, Ttb

Topanga Formation

Tt = Topanga Formation undifferentiated

Ttp = Paularino Member

Ttlt = Los Trancos Member

Ttb = Bommer Member

Tv

Vaqueros Formation

Tsa

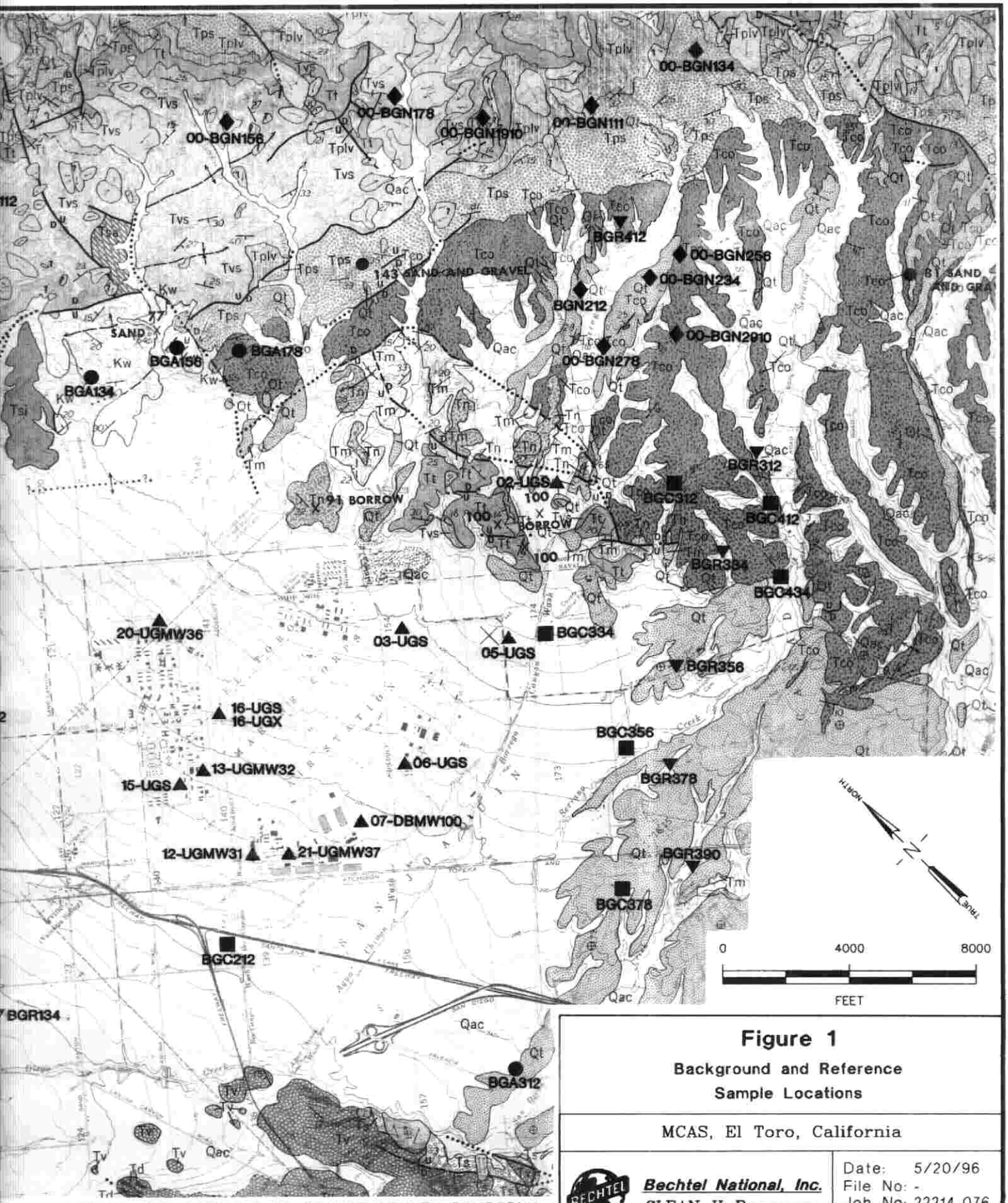
Santiago Formation

Tsi

Silverado Formation

Tvs

Vaqueros and Sespe Formations undifferentiated



SOURCE: GEOLOGIC MAP OF ORANGE COUNTY CALIFORNIA, SHOWING MINES AND MINERAL DEPOSITS (1981)

Figure 1

Background and Reference Sample Locations

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 5/20/96
File No: -
Job No: 22214-076
Rev No: A

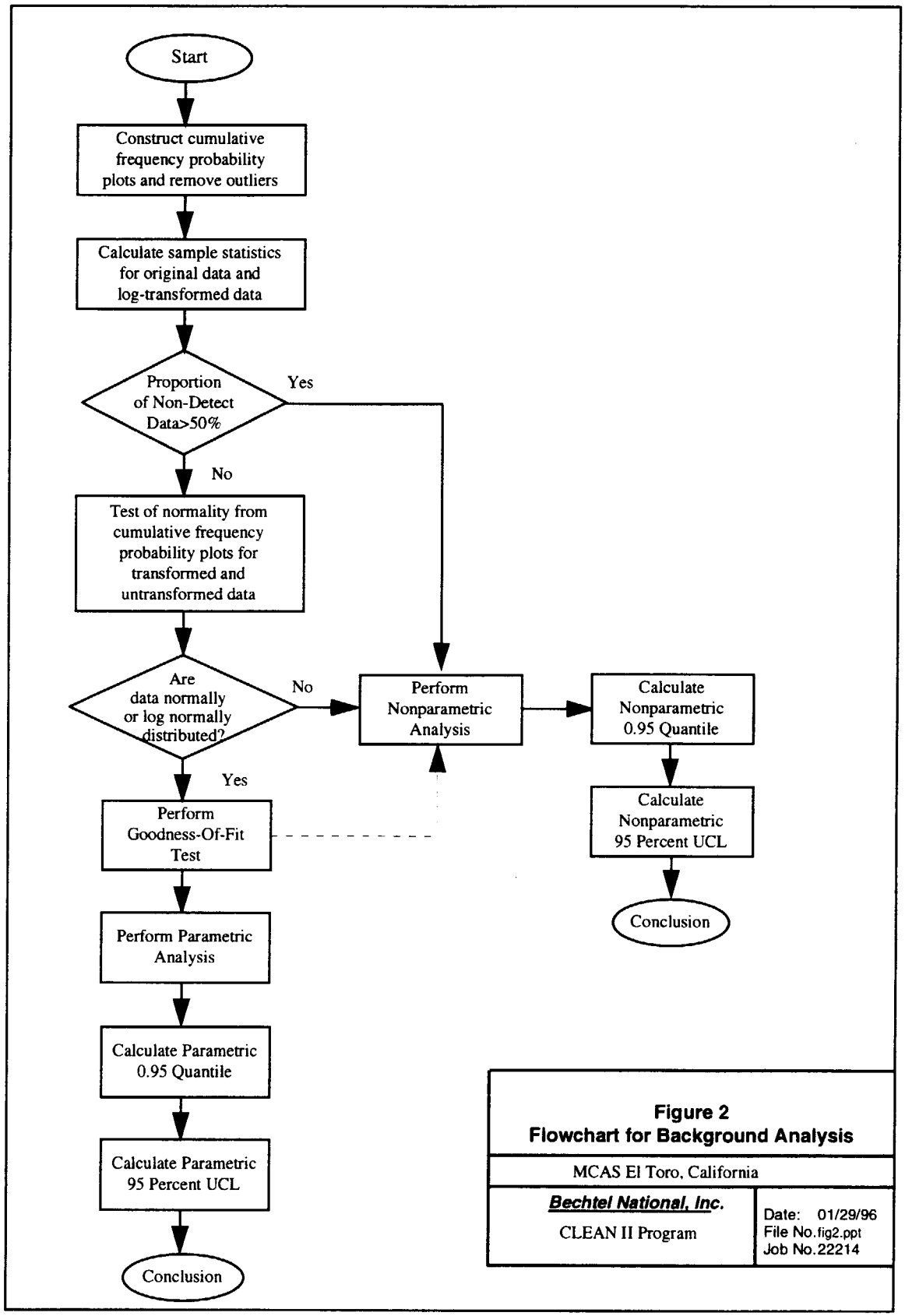


Figure 2
Flowchart for Background Analysis

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 01/29/96
File No.fig2.ppt
Job No.22214

Descriptive statistics were calculated using the Data Analysis Tools available in Microsoft® Excel 5.0. Sample statistics calculated include, among others, the following: mean; standard deviation; skewness; minimum; maximum; and sample size. These statistics were calculated for both the original data (X) and log-transformed data (Y = ln X) in the case of metals to facilitate distributional testing and parametric estimation of the 0.95 quantiles and 95 percent UCLs (Table 4). Statistics were calculated only for the original data (X) for organics (Table 5).

1.2.1 Nonparametric Approach

When the proportion of non-detects in a data set is greater than 50 percent, the assumption of a normal distribution is not valid. Therefore, based on Figure 2, these data sets cannot be statistically analyzed using a parametric method but are to be analyzed using a nonparametric method. Also, a nonparametric statistical approach was used for those data sets that have a non-detect proportion less than 50 percent but do not show a normal or lognormal distribution.

When applied to non-normally distributed data, the power of parametric procedures is low, and their results may be in error. Nonparametric, or "distribution-free", methods make no assumptions about the distribution of data, and therefore, do not require that the data to have a specific distribution. One of the advantages for the use of a nonparametric procedure is that non-detects do not have to be handled in a special manner (U.S. EPA 1994a).

1.2.2 Nonparametric Estimation of 0.95 Quantiles

The pth quantile is calculated nonparametrically using the procedure described by Gilbert (1987, p. 141). The pth quantile is of the form:

$$k(x_p) = p(n+1)$$

where k = rank of the data point in the ordered dataset; p = 0.95; and n = sample size. Since k is often not an integer, the quantile is obtained by linear interpolation between the closest order statistics. This calculation is implemented in Microsoft Excel 5.0.

1.2.3 Nonparametric Estimation of 95 Percent UCLs

An upper 100(1 - α) percent confidence limit for the true pth quantile is calculated nonparametrically using the procedure described by Gilbert (1987, p. 142). The equation is valid for n > 20 and is of the form:

$$u_{1-\alpha}(x_p) = p(n+1) + Z_{1-\alpha}[np(1-p)]^{1/2}$$

where $u_{1-\alpha}$ = rank of the 100(1 - α) confidence limit for the true pth quantile; n = sample size; $Z_{1-\alpha}$ = factor given in Appendix A1 of Gilbert (1987), and p = 0.5 in this case. Since $u_{1-\alpha}$ is usually not an integer, the UCL is obtained by linear interpolation between the closest order statistics. This calculation is implemented in Microsoft Excel 5.0.

Table 4
Background Concentrations for Metals

Analyte	Number of Analyses	Number of Detects	Non-Detects Excluded	Outliers Excluded	Sample Size	STATISTICS: Minimum Detected Concentration (mg/kg)[a]	Maximum Detected Concentration (mg/kg)	Mean (mg/kg)	Standard Deviation (mg/kg)	Distribution	95th QUANTILE: Parametric (mg/kg)	95th QUANTILE: Non-Parametric (mg/kg)	95% CONFIDENCE LIMIT MEAN/MEDIAN: Parametric (mg/kg)	95% CONFIDENCE LIMIT MEAN/MEDIAN: Non-Parametric (mg/kg)
Aluminum	43	43	0	0	43	2,640	17,300	7,437	3,707	LN[b]	14,800	—	8,610	—
Antimony	36	2	0	0	36	2.8	4.5	1.43	0.59	—	—	3.06	—	1.3
Arsenic	43	39	0	0	43	0.29	8.5	1.92	1.73	—	—	6.86	—	1.94
Barium	43	43	0	0	43	22.8	172	82.51	40.61	LN	173	—	97.3	—
Beryllium	43	24	0	0	43	0.11	0.79	0.29	0.17	LN	0.669	—	0.352	—
Cadmium	43	30	0	2	41	0.38	2.6	0.81	0.631	—	—	2.35	—	0.879
Calcium	43	43	0	0	43	1,500	57,600	6,700	12,420	—	—	46,000	—	4,600
Chromium	43	36	0	0	43	2.1	5.5	9.63	10.24	LN	26.9	—	12.7	—
Cobalt	43	36	0	0	43	1.7	9.7	3.49	2.12	N[c]	6.98	—	4.04	—
Copper	43	43	0	2	43	0.36	11.1	5.63	2.96	N	10.5	—	6.41	—
Iron	43	43	0	0	43	1,880	19,000	9,246	4,953	—	—	18,400	—	11,100
Lead	43	43	0	0	43	0.67	22.4	5.22	5.37	LN	15.1	—	6.99	—
Magnesium	43	43	0	0	43	944	13,600	3,646	2,437	LN	8370	—	4,430	—
Manganese	43	43	0	0	43	13.9	574	179.1	97.82	—	—	291	—	207
Mercury	39	11	0	0	39	0.03	0.41	0.044	0.073	—	—	0.22	—	0.02
Nickel	43	35	0	3	40	1.8	14.5	5.56	3.74	LN	15.3	—	7.53	—
Potassium	43	43	0	0	43	276	6,230	2,514	1,446	N	4,890	—	2,890	—
Selenium	41	13	2	0	39	0.1	0.37	0.11	0.086	—	—	0.32	—	0.0827
Silver	42	3	0	0	42	0.53	0.65	0.25	0.095	—	—	0.539	—	0.225
Sodium	43	41	0	0	43	108	506	231.4	91.47	LN	405	—	258	—
Thallium	43	19	0	0	43	0.14	0.53	0.17	0.1	—	—	0.42	—	0.192
Vanadium	43	43	0	0	43	5.1	134	27.77	26.63	LN	71.8	—	35.1	—
Zinc	43	43	0	0	43	6.2	99.5	33.4	20.1	LN	77.9	—	41.2	—

Notes:
[a] mg/kg – milligrams per kilogram
[b] LN – log normal
[c] N – normal

Table 5
Background Concentrations for Organics

Analyte	Number of Analyses	Number of Detects	Non-Detects Excluded	STATISTICS Minimum Detected Concentration (µg/kg)[a]	Maximum Detected Concentration (µg/kg)	Sample Size	Mean (µg/kg)	Standard Deviation (µg/kg)	NON-PARAMETRIC 95th Quantile (µg/kg)	95% Confidence Limit on 50% Quantile (median) (µg/kg)
Alpha-chlordane	47	2	0	3.01	17.7	47	1.39	2.45	2.24	1
Gamma-chlordane	47	4	0	1.46	18	47	1.43	2.49	2.7	1.01
4,4′-DDD[b]	47	8	0	1.5	58.6	47	5.1	10.79	36.1	1.99
4,4′-DDE[c]	47	9	0	5.62	233	47	16.5	45.29	145	1.99
4,4′-DDT[d]	47	9	0	5.21	272	47	22.27	61.48	236	1.99
Dichloroprop	47	1	0	141	141	47	60.18	12.41	67.2	58.8
Dieldrin	47	4	0	6.21	118	47	5.17	17.28	19.9	1.96
Endrin	47	2	0	1.01	19.9	47	2.3	2.63	2.22	1.95
Endrin aldehyde	47	1	0	41.7	41.7	47	2.79	5.8	2.22	1.95
Endosulfan sulfate	47	2	3	3.44	4.21	44	2.01	0.42	3.1	1.94
Endosulfan I	47	2	45	0.144	0.179	2	—	—	0.179	—
Endosulfan II	47	1	0	10.6	10.6	47	2.12	1.27	2.22	1.95
MCPA[e]	47	1	0	127,000	127,000	47	17,250	16,710	28,500	14,700

Notes:
[a] µg/kg – micrograms per kilogram
[b] DDD – dichlorodiphenyldichloroethane
[c] DDE – dichlorodiphenyldichloroethene
[d] DDT – dichlorodiphenyltrichloroethane
[e] MCPA – 2-methyl-4-chlorophenoxyacetic acid

Note that the resulting UCL represents the 95 percent confidence interval on the median, rather than the mean, in this nonparametric estimation. For the previous parametric estimation, the resulting UCL represents the 95 percent confidence interval on the mean. The 95 percent UCLs estimated parametrically and nonparametrically, therefore, are not precisely the same. However, both provide conservative estimates of the central tendency of the data.

1.2.4 Parametric Approach

As indicated in Figure 2, if a data set contains less than 50 percent non-detects, a parametric method may become applicable. The validity of assumption of normality is required for parametric statistical procedures. Metal data sets were tested for normality and lognormality by constructing probability plots, assessing the magnitude of the sample skewness, and applying goodness-of-fit tests. Inspection of probability plots and the skewness were used to screen the data sets for normality or lognormality. If the magnitude of the skewness, as determined for both the original and transformed data, was large (greater than about 0.5), the data set was judged to be non-normal or non-lognormal. If the magnitude of the skewness was small (less than about 0.5), the W test is used to test whether a data set has been drawn from an underlying normal or lognormal distribution. The application of this test is described by Gilbert (1987, pp. 158-160) and implemented in Microsoft Excel 5.0.

1.2.5 Parametric Estimation of 0.95 Quantiles

The pth quantile is calculated for normally distributed data using the procedure described in Gilbert (1987, p. 134). The pth quantile is

$$x_p = \bar{x} + Z_p s$$

where $\bar{x}$ = the sample mean; s = sample standard deviation; and Z_p = pth quantile of the standard normal distribution given in Table A1 of Gilbert (1987). Application to lognormally distributed data results in an equation of the form

$$x_p = \exp\left(\bar{y} + Z_p s_y\right)$$

where $\bar{y}$ = sample mean of the log-transformed data; s_y = standard deviation of the log-transformed data; and Z_p = pth quantile of the standard normal distribution given in Table A1 of Gilbert (1987). These calculations are implemented in Microsoft Excel 5.0.

1.2.6 Parametric Estimation of 95 Percent UCLs

The upper one-sided 100(1 - α) percent confidence limit for the mean of normally distributed data is given by Gilbert (1987, p. 138) as

$$UL_{1-\alpha} = \bar{x} + t_{1-\alpha,n-1}\frac{s}{\sqrt{n}}$$

where $t_{1-\alpha,n-1}$ = t statistic given in Appendix A2 of Gilbert (1987). The upper one-sided 100(1 - α) percent confidence limit for the mean of lognormally distributed data is given by Gilbert (1987, p. 170) as

$$UL_{1-\alpha} = \exp\left(\bar{y} + 0.5s_y^2 + \frac{s_y H_{1-\alpha}}{\sqrt{n-1}}\right)$$

where $H_{1-\alpha}$ = factor given in Appendix A12 of Gilbert (1987), which is a function of s_y, n, and the chosen confidence level α. The calculation of these UCLs are implemented in Microsoft Excel 5.0.

1.3 METALS

Results for metals are summarized in Table 4. Probability plots are given in Appendix A. Spreadsheet calculations for the individual metals are provided in Appendix B. Metal results are characterized by a high percent of detects. Three metals were found to be normally distributed at the 95 percent confidence level; 10 metals were found to be lognormally distributed at the 95 percent confidence level; and, 10 metals were subject to nonparametric estimates of the 0.95 quantiles and 95 percent UCLs.

1.4 ORGANICS

Results for organics are summarized on Table 5. Probability plots are given in Appendix A. Spreadsheet calculations for the individual metals are given in Appendix C. Organic results are characterized by a high percent of nondetects, which were in excess of 50 percent. Therefore, 0.95 quantiles and 95 percent UCLs were estimated nonparametrically, in accordance with the adopted methodology prescribed on Figure 2.

1.5 GEOLOGY OF BACKGROUND METAL SAMPLES

Of the many factors that can influence distribution of metal concentrations in the background data sets, geologic conditions can account for most of the variation in individual chemical distributions. The following section discusses specific geologic formations that were sampled in the background data sets. Geologic descriptions were derived from Morton (1976). Table 6 summarizes the sample identifications and corresponding geologic formations. Figure 1 illustrates the locations of the samples and corresponding geologic formations as presented on a geologic map from California Division of Maps and Geology (Morton and Miller, 1981).

The average, minimum, and maximum values for background metal samples by geologic formation are presented on Table 7. Figure 2 illustrates the distribution of average metal concentrations by geologic formation (aluminum, barium, calcium, potassium, magnesium, manganese and sodium are excluded from this figure due to their relatively high concentrations).

Table 6
Background Metal Soil Samples and Associated Geologic Formations

Sample ID	Geologic formation	Geologic Map Symbol
00-BGN111	Puente Formation La Vida Member	Tplv
00-BGN112	Quaternary landslide/Vaqueros and Sespe formation	Qls/Tvs
00-BGN134	Puente Formation Soquel Member	Tps
00-BGN156	Quaternary landslide/Vaqueros and Sespe formation	Qls/Tvs
00-BGN178	Quaternary landslide/Vaqueros and Sespe formation	Qls/Tvs
00-BGN1910	Topanga formation	Tt
00-BGN212	Quaternary nonmarine terrace deposits	Qt
00-BGN234	Quaternary nonmarine terrace deposits	Qt
00-BGN256	Capistrano Formation Oso Member	Tco
00-BGN278	Quaternary nonmarine terrace deposits	Qt
00-BGN2910	Capistrano Formation Oso Member	Tco
02-UGS	Quaternary alluvium and colluvium	Qac
03-UGS	Quaternary alluvium and colluvium	Qac
05-UGS	Quaternary alluvium and colluvium	Qac
06-UGS	Quaternary alluvium and colluvium	Qac
07-DBMW100	Quaternary alluvium and colluvium	Qac
12-UGS	Quaternary alluvium and colluvium	Qac
13-UGS	Quaternary alluvium and colluvium	Qac
15-UGS	Quaternary alluvium and colluvium	Qac
16-UGS	Quaternary alluvium and colluvium	Qac
16-UGX	Quaternary alluvium and colluvium	Qac
20-UGS	Quaternary alluvium and colluvium	Qac
21-UGS	Quaternary alluvium and colluvium	Qac

Alluvium and colluvium (Qac)

The alluvial and colluvial deposits in the MCAS El Toro area form the Tustin Plain. Consisting of heterogeneous silts, fine sands, silty clay, and occasional gravels, these deposits represent the erosion of geologic formations upstream from the Tustin Basin and deposition of these erosional materials in broad, coalescing alluvial fans in the Tustin Basin. The set of background soil samples taken from upgradient soil borings are considered to represent these heterogeneous deposits. As shown on Figure 3, the trend of metal concentrations is similar to other Quaternary deposits.

Landslide debris (Qls)

The composition of the landslide debris is dependent on bedrock sources. For the background samples collected at MCAS El Toro, the bedrock source appears to be the Vaqueros and Sespe Formations. Discussion of these formations is presented below. As

Table 7
Background Metal Soil Samples
Summary Statistics
(reported in mg/kg*)

Metals	QUATERNARY ALLUVIUM AND COLLUVIUM (Qac)			QUATERNARY NONMARINE TERRACE DEPOSITS (Qt)			PUENTE FORMATION LA VIDA MEMBER (Tplv)			PUENTE FORMATION SOQUEL MEMBER (Tps)		
	Average Concentration	Minimum Concentration	Maximum Concentration	Average Concentration	Minimum Concentration	Maximum Concentration	Average Concentration	Minimum Concentration	Maximum Concentration	Average Concentration	Minimum Concentration	Maximum Concentration
Silver	0.104	0.075	0.255	0.225	0.215	0.46	0.220	0.22	0.44	0.228	0.23	0.46
Aluminum	7,696.842	2720	17,300	4,841.667	2,640	6,880	5,420.000	4,210	6,630	9,465.000	7,730	11,200
Arsenic	1.591	0.115	4.1	0.808	0.075	1.2	0.810	0.74	0.88	2.050	1.6	2.5
Barium	97.189	17.4	160	48.383	25.9	62.2	37.650	35.2	40.1	107.150	90.3	124
Beryllium	0.141	0.04	0.47	0.183	0.055	0.26	0.183	0.185	0.37	0.233	0.245	0.49
Calcium	4,384.211	1,800	9,530	2,155.000	1,500	3,330	2,835.000	2,450	3,220	3,830.000	3,430	4,230
Cadmium	0.701	0.13	2.4	0.536	0.125	1.1	0.388	0.25	0.65	2.050	1.5	2.6
Cobalt	#VALUE!	0.85	4.9	1.742	0.6	2.8	2.000	1.7	2.3	7.350	5	9.7
Chromium	7.803	3.2	17.7	5.108	1.35	10.2	6.650	6.2	7.1	12.600	9.2	16
Copper	5.816	1.45	10.3	3.387	0.72	5.6	2.850	1.6	4.1	9.000	8.5	9.5
Iron	10,398.947	4,030	19,000	5,545.000	1,880	8,090	3,780.000	3,580	3,980	13,600.000	10,900	16,300
Mercury	0.018	0.0075	0.22	0.024	0.015	0.04	0.020	0.025	0.05	0.020	0.02	0.04
Potassium	3,020.526	1,250	4,940	1,347.167	353	2,250	564.000	276	852	2,950.000	2,910	2,990
Magnesium	4,086.842	1,330	7,570	1,851.667	1,300	2,170	2,040.000	1,580	2,500	4,050.000	3,160	4,940
Manganese	190.616	79.7	293	99.933	13.9	171	109.450	92.9	126	384.500	195	574
Sodium	120.576	46.25	303	#VALUE!	146	261	192.000	181	203	259.000	241	277
Nickel	4.836	0	14.3	#VALUE!	1.8	6.4	4.950	4.6	5.3	36.200	14.5	57.9
Lead	4.668	0.79	21.4	6.433	1.1	17.6	6.350	1.9	10.8	3.400	1.9	4.9
Antimony	0.486	0	2.6	1.283	1.25	2.6	1.275	1.25	2.6	1.300	1.3	2.6
Selenium	0.059	0	0.21	0.059	0.05	0.15	0.053	0.05	0.11	0.133	0.055	0.21
Thallium	0.090	0.035	0.21	0.139	0.075	0.39	0.075	0.075	0.15	0.230	0.22	0.24
Vanadium	25.418	2.35	53	12.583	5.1	19.2	12.550	11	14.1	36.650	28.5	44.8
Zinc	36.247	17.7	57.4	18.833	6.2	28.6	13.150	8.4	17.9	43.850	41.7	46

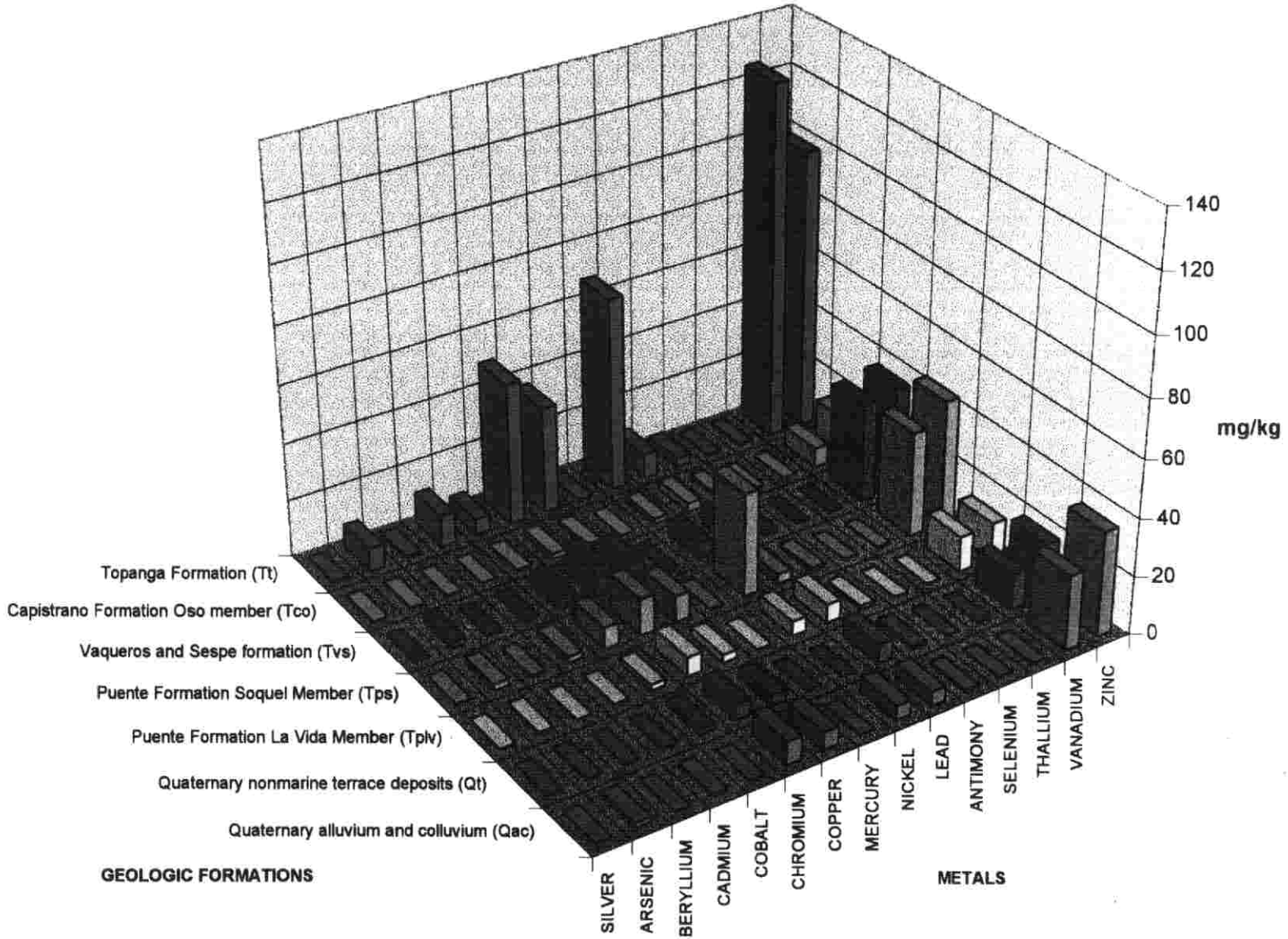
(table continues)

Table 7 (continued)

Metals	VAQUEROS AND SESPE FORMATION (Tvs)			CAPISTRANO FORMATION OSO MEMBER (Tco)			TOPANGA FORMATION (Tt)		
	Average Concentration	Minimum Concentration	Maximum Concentration	Average Concentration	Minimum Concentration	Maximum Concentration	Average Concentration	Minimum Concentration	Maximum Concentration
Silver	0.224	0.22	0.46	0.221	0.215	0.45	0.458	0.53	0.65
Aluminum	9,061.429	6,190	14,000	4,078.000	3,270	4,960	14,100.000	12,900	15,300
Arsenic	2.159	0.46	4.7	0.483	0.07	0.91	7.950	7.4	8.5
Barium	77.829	57.5	109	37.220	22.8	45	162.500	153	172
Beryllium	0.414	0.24	0.62	0.330	0.26	0.6	0.725	0.66	0.79
Calcium	4,384.286	2,000	6,150	4,020.000	2,530	5,020	61,350.000	55,100	67,600
Cadmium	0.754	0.38	1.6	0.178	0.125	0.38	11.000	10.6	11.4
Cobalt	4.557	3.6	6.5	0.620	0.6	1.3	5.600	5.2	6
Chromium	10.729	5.3	25.5	1.860	1.55	4.5	49.350	43.7	55
Copper	7.157	5.1	11.1	1.306	0.36	4.3	37.050	36.2	37.9
Iron	11,192.857	8,410	17,400	2,910.000	2,260	3,890	18,100.000	17,700	18,500
Mercury	0.089	0.015	0.41	0.026	0.015	0.07	0.115	0.11	0.12
Potassium	2,932.857	2,020	3,780	753.800	435	1470	5,555.000	4,880	6230
Magnesium	4,044.286	3,270	6,610	1,192.600	944	1,580	10,615.000	7,630	13,600
Manganese	225.571	174	276	65.660	49.6	105	252.000	241	263
Sodium	256.000	197	506	135.600	108	167	434.500	419	450
Nickel	5.929	3	10.6	1.610	0.8	3.4	67.700	64.3	71.1
Lead	6.800	1.6	22.4	3.114	0.67	10.6	8.600	4.8	12.4
Antimony	1.286	1.25	2.7	1.280	1.25	2.6	3.000	3	4.5
Selenium	0.103	0.05	0.22	0.059	0.05	0.16	0.345	0.32	0.37
Thallium	0.141	0.075	0.22	0.129	0.075	0.34	0.475	0.42	0.53
Vanadium	34.486	20.8	85.4	7.000	5.4	8.2	125.500	117	134
Zinc	36.557	25.4	48	12.860	9.6	21.8	98.700	97.9	99.5

Note:
* mg/kg – milligrams per kilogram

Figure 3
Distribution of Average Metal Concentrations by Geologic Formation



s:\cto76\ri_reprt\BGK_M.XLS\Chart5

shown on Figure 3, the trend of metal concentrations is similar to other Quaternary deposits.

Nonmarine terraces (Qt)

These generally liner bench-like deposits parallel and flank drainage channels. These terraces are composed of pale-reddish-brown to yellow-brown and grayish-brown silty to clayey gravel and conglomerates. Clasts reflect composition of bedrock units exposed in upstream drainages and the matrix ranges from lithic, clayey, and quartzo-feldspathic. The background samples collected from deposits would likely represent the matrix rather than clast composition. As shown on Figure 3, the trend of metal concentrations is similar to other Quaternary deposits.

Capistrano Formation – Oso Member (Tco)

The Oso Member of the Capistrano Formation is a marine, white to very light gray coarse-grained and medium to fine-grained sandstone and silty sandstone with local shaly silt interbeds. The composition of the member is a feldspathic quartzose with abundant mica. The background samples collected from this member would be expected to contain relatively low concentrations of metals. As shown on Figure 3, the trend of metal concentrations is similar or lower than Quaternary deposits.

Puente Formation – Soquel Member (Tps)

The Soquel Member of the Puente Formation is a marine pale yellow-gray to pale yellow-brown silty sandstone and pebbly sandstone. The composition of the member is quartzo-feldspathic sandstone with abundant biotite. The background samples collected from this member would be expected to contain relatively low concentrations of metals. As shown on Figure 3, metal concentrations tend to be relatively greater than Quaternary deposits, especially the average concentrations for cobalt, chromium, copper, and nickel.

Puente Formation – La Vide Member (Tplv)

The La Vida Member of the Puente Formation is a marine light-brown to light pinkish-brown or light gray to almost white siliceous and micaceous siltstone and shale with light gray to yellowish silty sandstone interbeds. The composition of the member is quartzo-feldspathic and micaceous sandstone. The background samples collected from this member would be expected to contain relatively low concentrations of metals. As shown on Figure 3, the trend of metal concentrations is similar to Quaternary deposits.

Vaqueros and Sespe Formations (Tvs)

The Vaqueros Formation is a marine siltstone, mudstone, shale and minor conglomeratic sandstone, consisting of quartz and feldspar derived from tonalite, siliceous metavolcanic and metasedimentary rocks of the Santa Ana Mountains. The Sespe Formation is a nonmarine coarse sandstone, silty sandstone, and conglomeratic sandstone, consisting of quartzo-feldspathic grains and locally abundant biotite. The background samples collected from this member would be expected to contain relatively low concentrations of

metals. As shown on Figure 3, the trend of metal concentrations is similar to Quaternary deposits.

Topanga Formation – Undifferentiated (Tt)

The Topanga Formation is a marine, yellowish-gray to light brown fine-grained sandstone and silty sandstone with lenses and interbeds of conglomerate. The composition of the formation is quartz, feldspar, and abundant lithic grains. The background samples collected from this formation would be expected to contain relatively low concentrations of metals, however, a mercury-barite ore body has been mapped in the Topanga Formation north of Tustin, as shown on Figure 1. The presence of such ore bodies can elevate concentrations of metals to high levels. As illustrated on Figure 3, all average metal concentrations are substantially greater than other tertiary formations and Quaternary deposits, especially for arsenic, cadmium, cobalt, chromium, nickel, vanadium, and zinc.

Section 2
SUMMARY

Three sets of soil sample data were used to calculate background and reference levels for metals, herbicides and pesticides at MCAS El Toro. Two sets of data were used to calculate metal background concentrations, using the 0.95 quantile and 95 percent UCL procedures. One set of herbicide and pesticide data was used to calculate organic reference levels using 0.95 quantile and 95 percent UCL procedures. Based on a review of geologic information, the following conclusions are presented:

- Most average metal concentrations do not significantly vary from one geologic formation to another, except for the Puente Formation Soquel Member and the Topanga Formation which is known to be a source of mercury and barite in the region,
- Analysis of background metal concentration distributions as shown in Appendix A indicates that outliers are samples derived from the Topanga Formation or Puente Formation Soquel Member,
- Alluvial deposits on-station have similar metal distributions to the source Tertiary formations,
- Alluvial deposits derived from the Puente Formation Soquel Member may have relatively higher concentrations of cobalt, chromium, copper, nickel; and,
- Alluvial deposits derived from the Topanga Formation may have relatively higher concentrations of arsenic, cadmium, cobalt, chromium, nickel, vanadium, and zinc.

Section 3
REFERENCES

Bechtel. *See* Bechtel National, Inc.

Bechtel National, Inc. 1995. Final Risk Assessment Work Plan, Marine Corps Air Station El Toro.

Jacobs Engineering. *See* Jacobs Engineering Group, Inc.

Jacobs Engineering Group, Inc. 1993a. "Marine Corps Air Station El Toro: Installation Restoration Program, Phase I Remedial Investigation. Draft Technical Memorandum." Volume 1. CLE-C01-01F145-B18-0001.

———. 1993b. "Marine Corps Air Station El Toro: Remedial Investigation (RI) - Derived Soil Cuttings Proposed Background Soil Threshold Levels for Metals and Other Waste Classification Issues." Memorandum dated 23 February 1993.

Morton, Paul K. 1976. Environmental Geology of Orange County, California, California Division of Mines and Geology Open-File Report 79-8 LA.

Morton, P.K. and R.V. Miller 1981 Geologic Map of Orange County, California showing Mines and Mineral Deposits, California Division of Mines and Geology, Bulletin 204.

United States Environmental Protection Agency. 1989a. *Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part A).* Directive 9285.701A. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

———. 1989b. *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities - Interim Final Guidance.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

———. 1991. *Risk Assessment Guidance for Superfund (RAGS), Volume I - Development of Preliminary Remediation Goals (Part B).* Directive 9285.701A. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

———. 1992a. *Interim Guidance for Dermal Exposure Assessment.* EPA 600/8-91/011B. U.S. Environmental Protection Agency, Office of Research and Development, Washington, DC.

———. 1992b. *Draft Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance.* U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC.

———. 1994. *Statistical Training Course for Ground-Water Monitoring Data Analysis.* EPA 530-r-93-003. U.S. Environmental Protection Agency, Washington, DC.

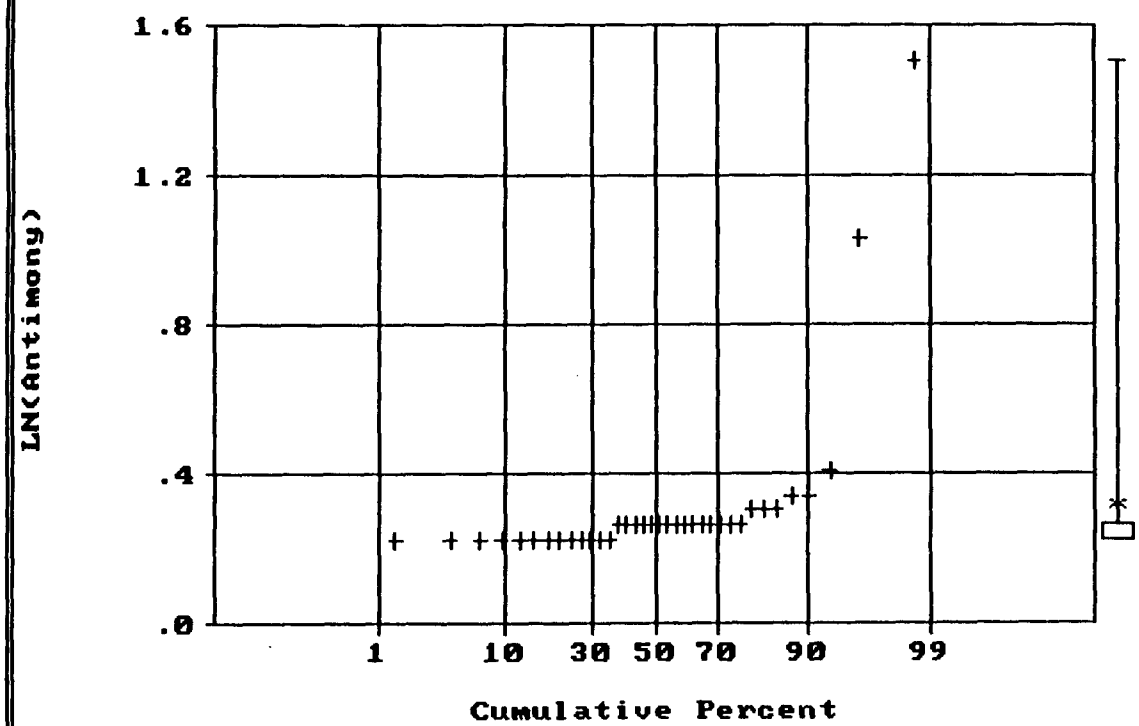
———. 1995a. Region IX Preliminary Remediation Goals (PRGs) Second Half 1995, September 1995, U.S. EPA Region IX

———. 1995b. Health Effects Assessment Summary Tables (HEAST). U.S. Environmental Protection Agency, Washington, DC.

APPENDIX A

PROBABILITY PLOTS

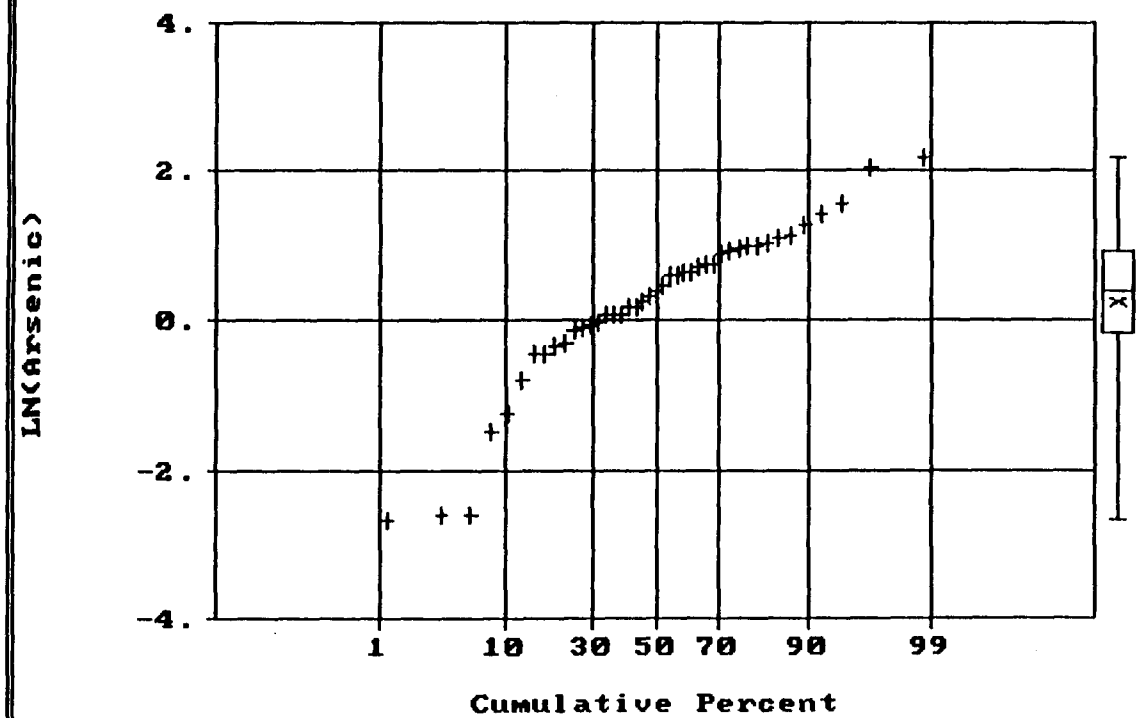
Normal Probability Plot for LN(Antimony)
Data file: antimony.dat



Statistics

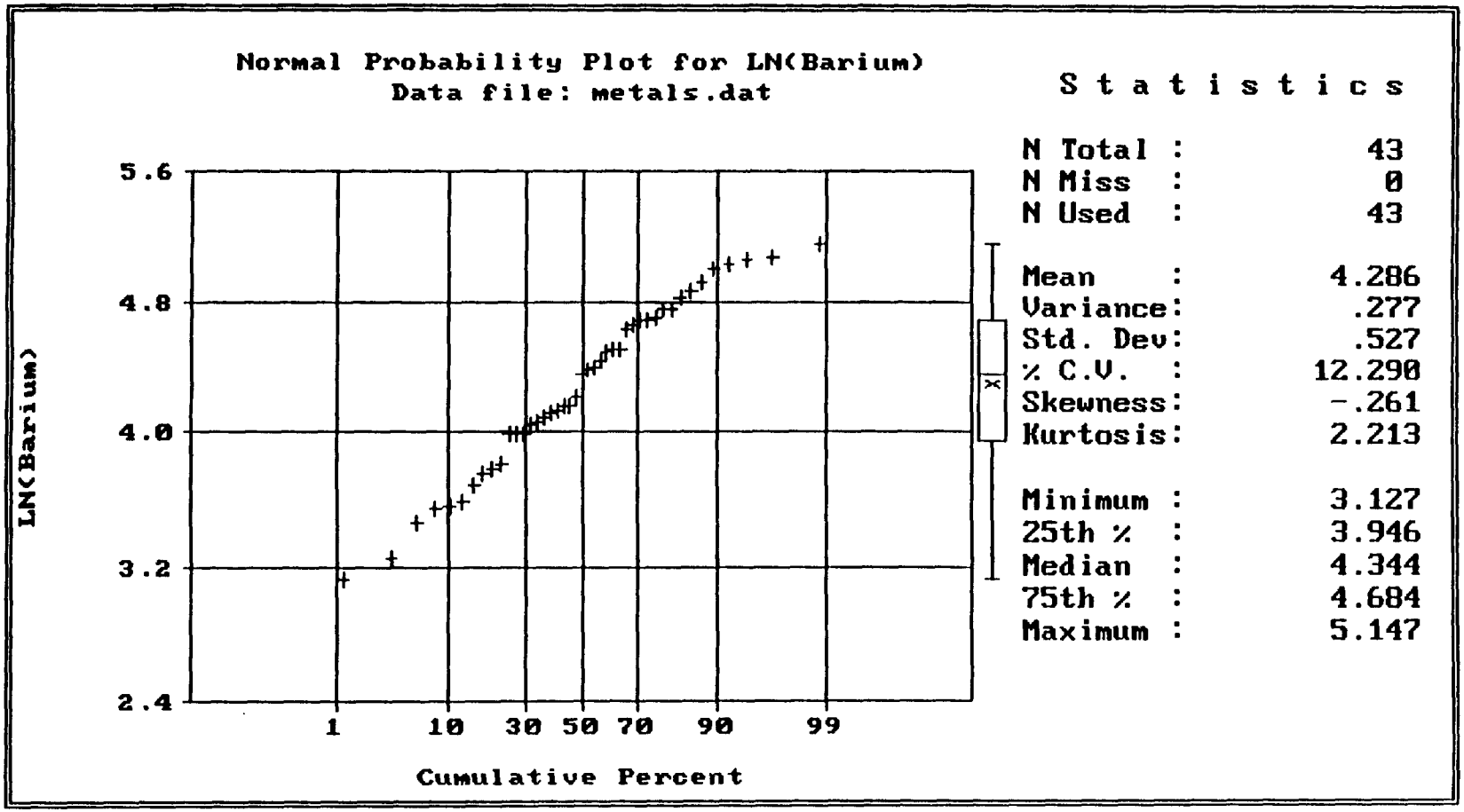
N Total :	36
N Miss :	0
N Used :	36
Mean :	.315
Variance:	.060
Std. Dev:	.244
% C.V. :	77.435
Skewness:	4.050
Kurtosis:	18.697
Minimum :	.223
25th % :	.223
Median :	.262
75th % :	.262
Maximum :	1.504

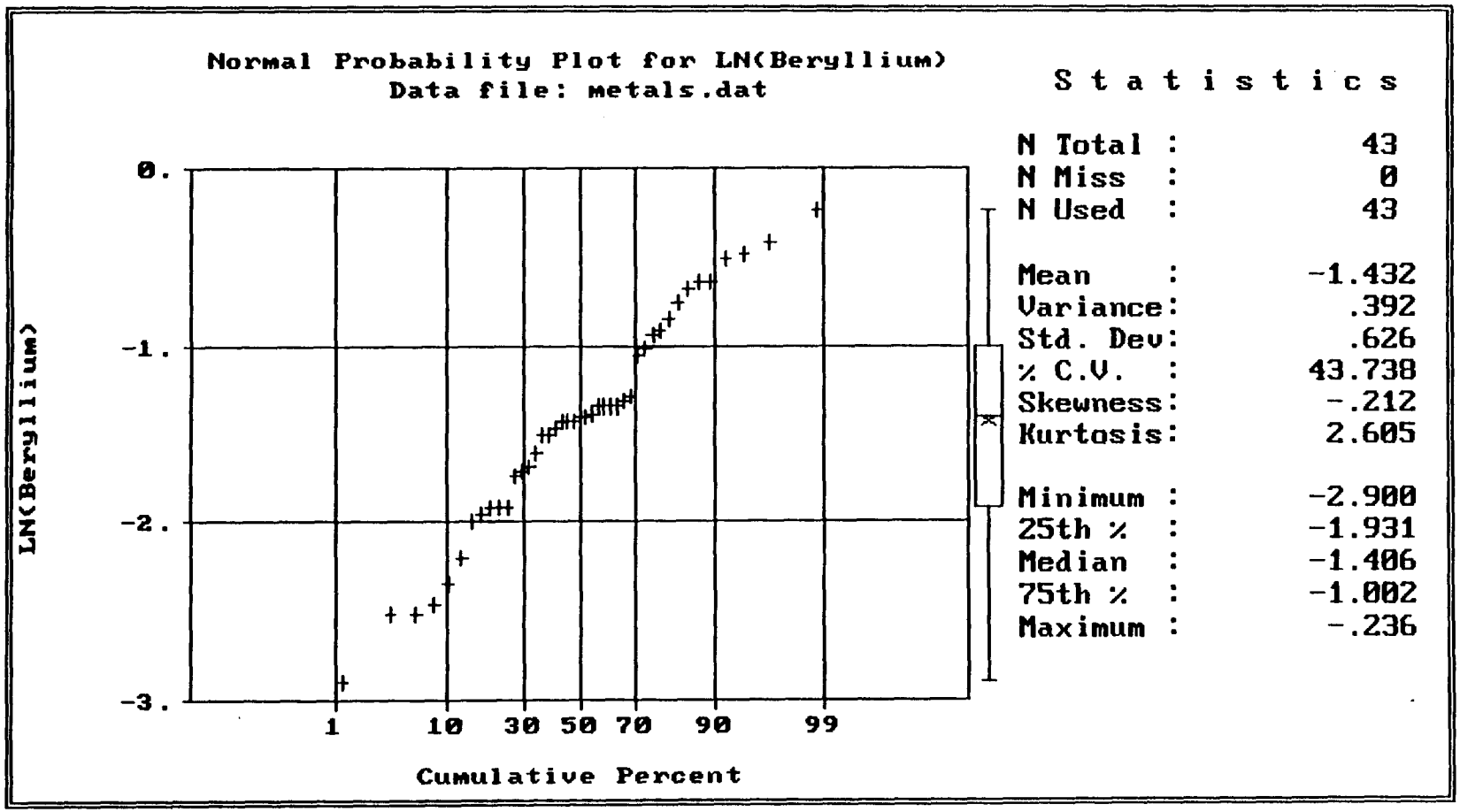
Normal Probability Plot for LN(Arsenic)
Data file: metals.dat



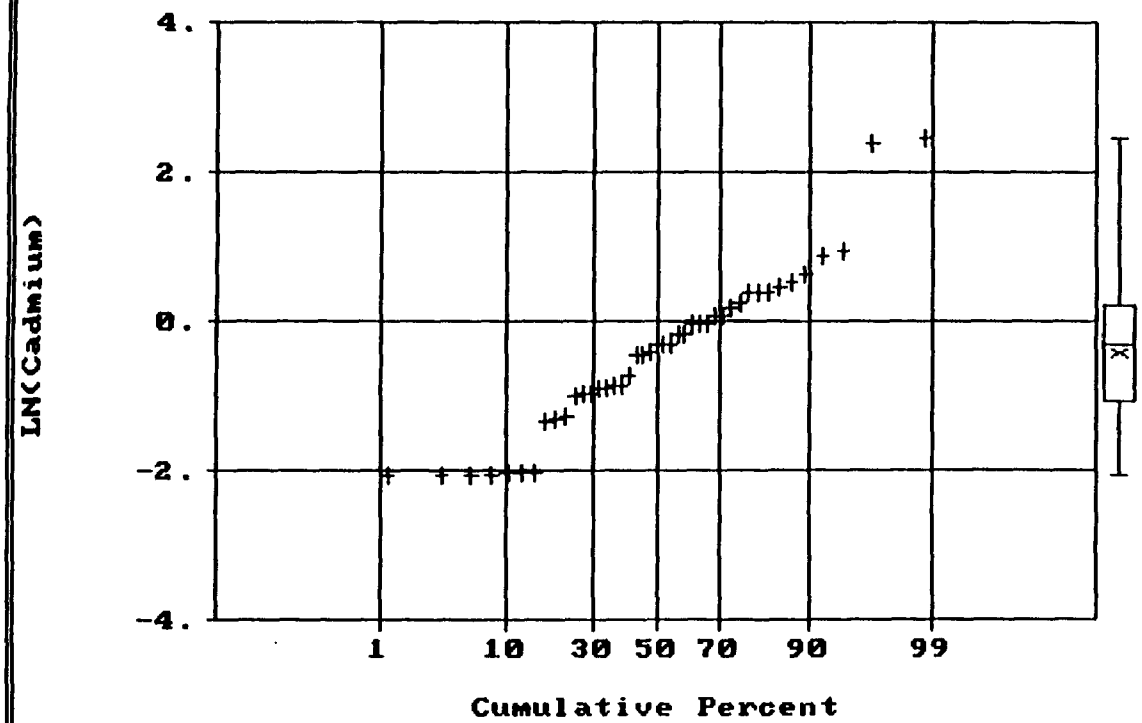
S t a t i s t i c s

N Total :	43
N Miss :	0
N Used :	43
Mean :	.232
Variance:	1.177
Std. Dev:	1.085
% C.V. :	468.172
Skewness:	-1.084
Kurtosis:	4.290
Minimum :	-2.659
25th % :	-.171
Median :	.405
75th % :	.926
Maximum :	2.140


Normal Probability Plot for LN(Barium)
Data file: metals.dat
LN(Barium)
5.6
4.8
4.0
3.2
2.4
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : 4.286
Variance: .277
Std. Dev: .527
% C.V. : 12.290
Skewness: -.261
Kurtosis: 2.213
Minimum : 3.127
25th % : 3.946
Median : 4.344
75th % : 4.684
Maximum : 5.147

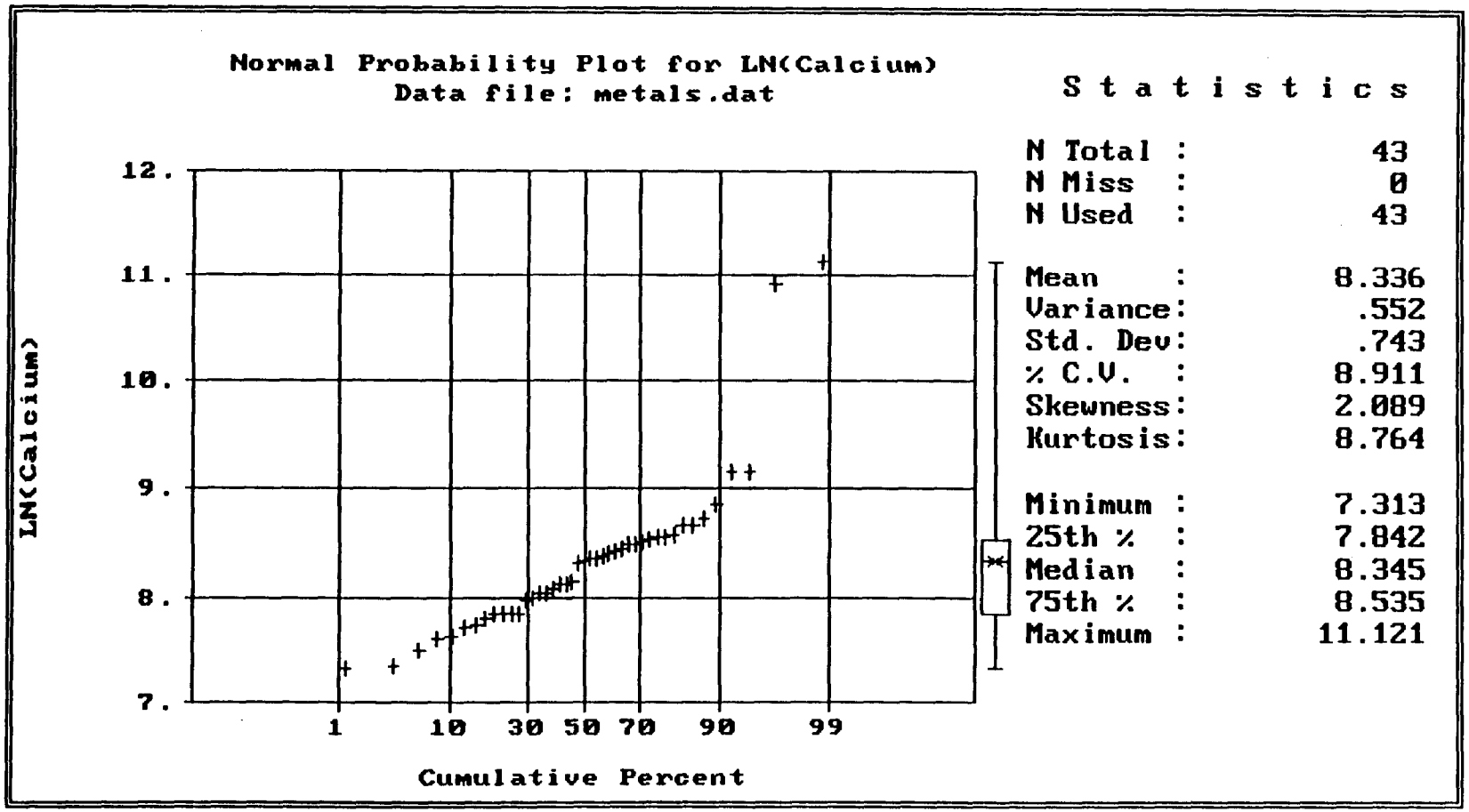

Normal Probability Plot for LN(Beryllium)
Data file: metals.dat
LN(Beryllium)
0.
-1.
-2.
-3.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : -1.432
Variance: .392
Std. Dev: .626
% C.V. : 43.738
Skewness: -.212
Kurtosis: 2.605
Minimum : -2.900
25th % : -1.931
Median : -1.406
75th % : -1.002
Maximum : -.236

Normal Probability Plot for LN(Cadmium)
Data file: metals.dat

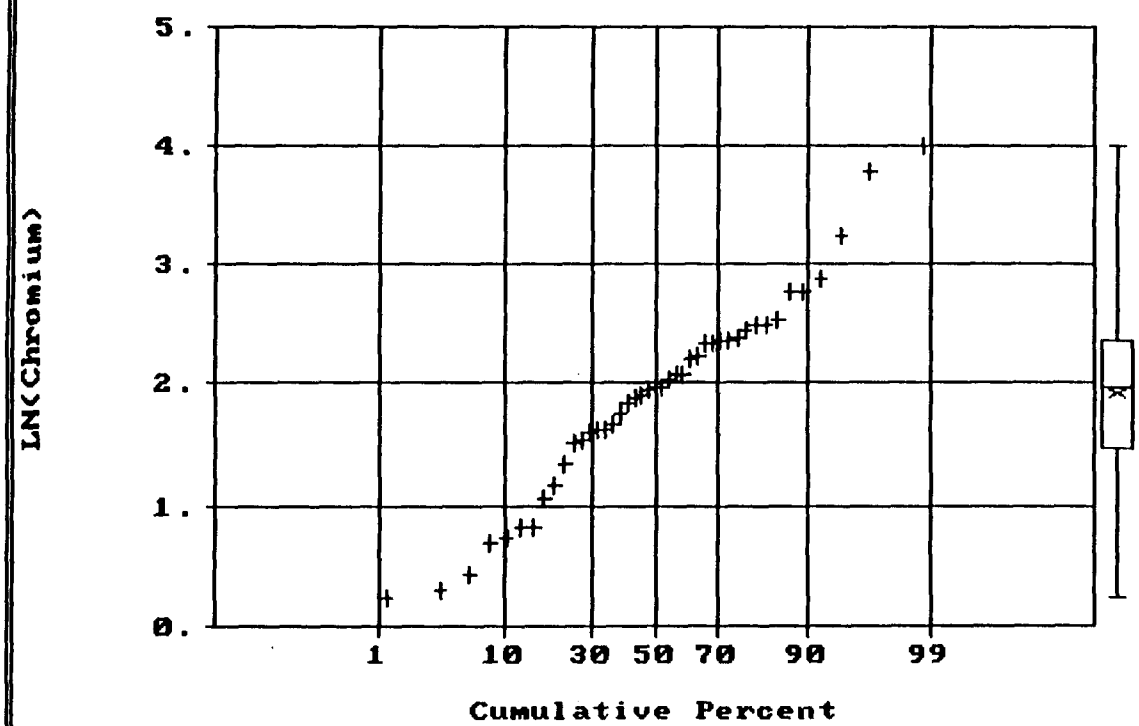


S t a t i s t i c s

N Total :	43
N Miss :	0
N Used :	43
Mean :	-.418
Variance:	1.175
Std. Dev:	1.084
% C.V. :	259.647
Skewness:	.390
Kurtosis:	3.357
Minimum :	-2.079
25th % :	-1.049
Median :	-.315
75th % :	.202
Maximum :	2.434


Normal Probability Plot for LN(Calcium)
Data file: metals.dat
LN(Calcium)
12.
11.
10.
9.
8.
7.
1
10
30
50
70
90
99
Cumulative Percent
S t a t i s t i c s
N Total : 43
N Miss : 0
N Used : 43
Mean : 8.336
Variance: .552
Std. Dev: .743
% C.V. : 8.911
Skewness: 2.089
Kurtosis: 8.764
Minimum : 7.313
25th % : 7.842
Median : 8.345
75th % : 8.535
Maximum : 11.121

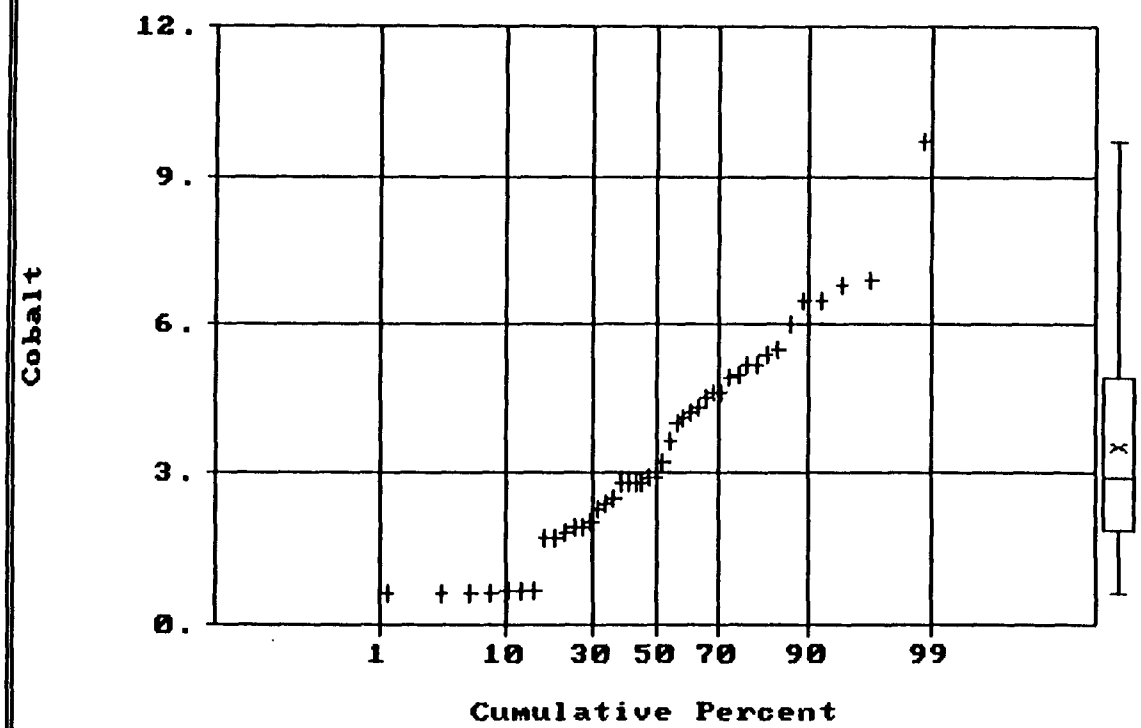
Normal Probability Plot for LN(Chromium)
Data file: metals.dat



Statistics

N Total :	43
N Miss :	0
N Used :	43
Mean :	1.907
Variance:	.707
Std. Dev:	.841
% C.V. :	44.099
Skewness:	.084
Kurtosis:	3.152
Minimum :	.223
25th % :	1.462
Median :	1.960
75th % :	2.363
Maximum :	4.007

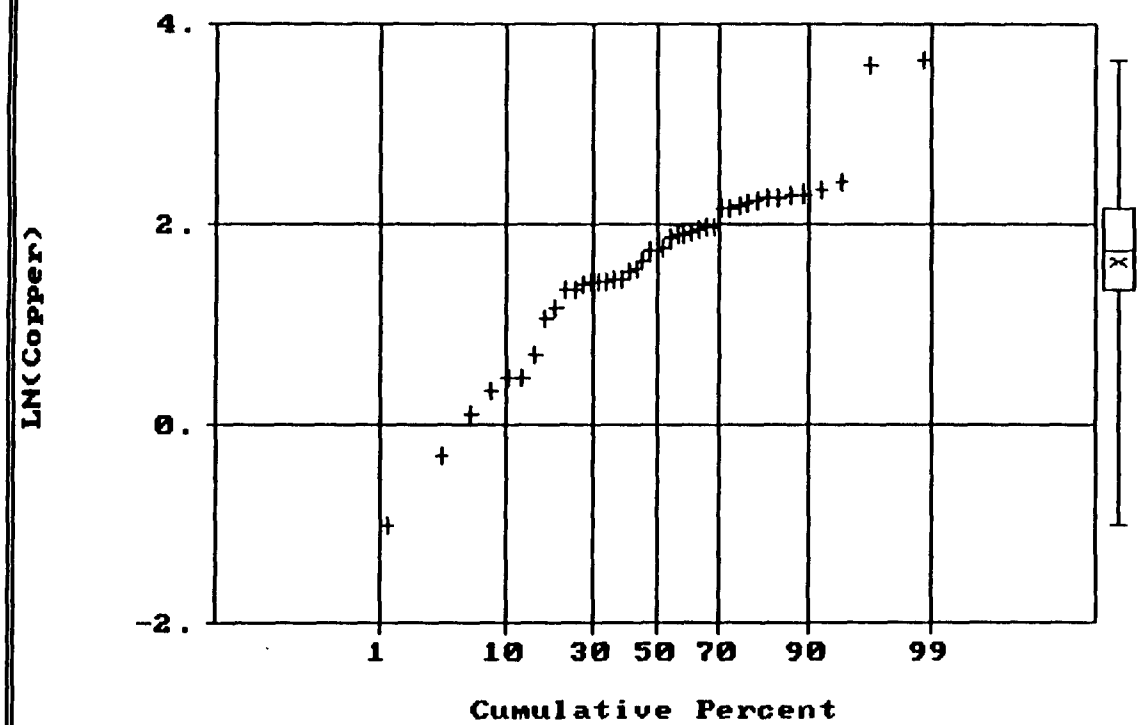
Normal Probability Plot for Cobalt
Data file: metals.dat



Statistics

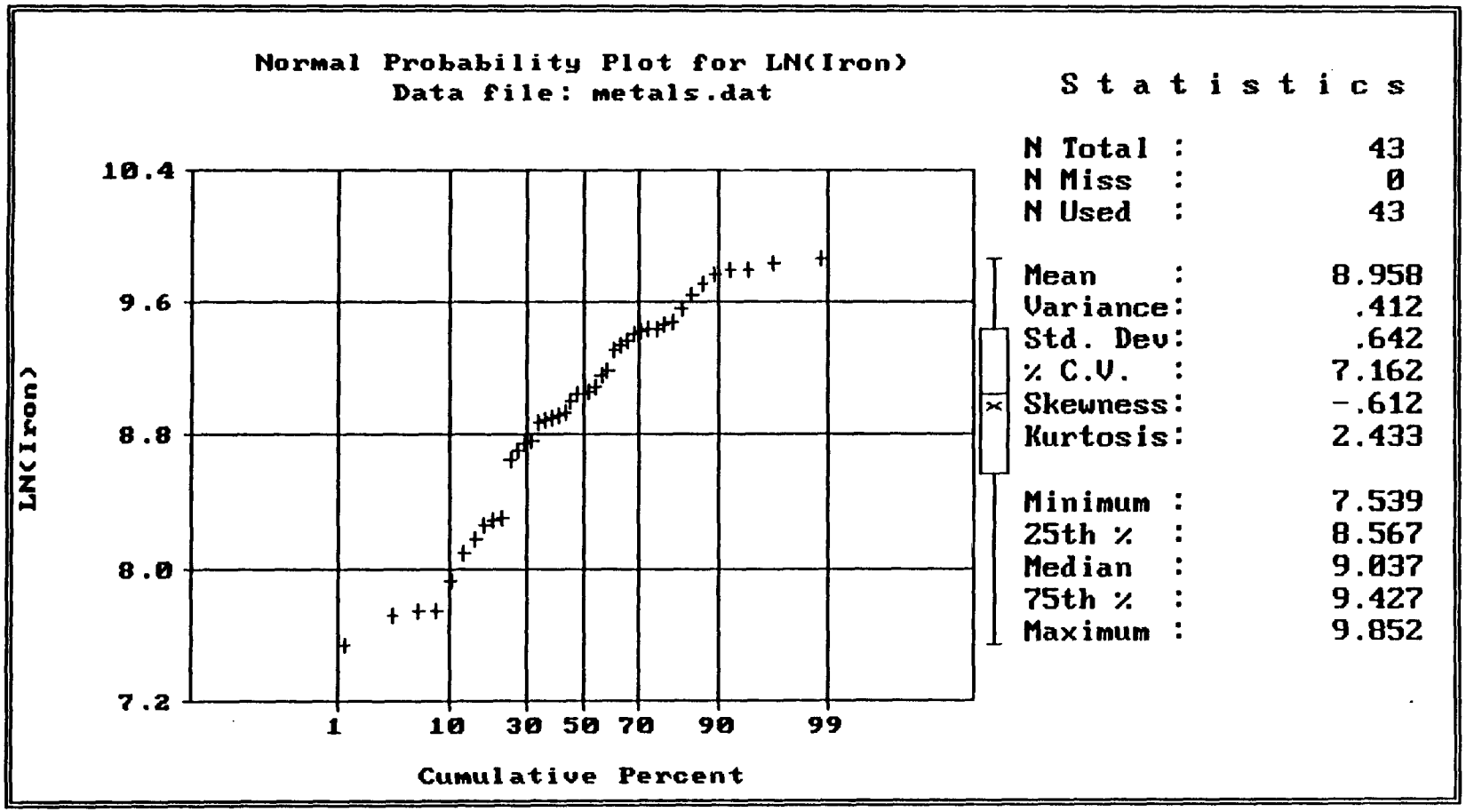
N Total :	43
N Miss :	0
N Used :	43
Mean :	3.494
Variance:	4.502
Std. Dev:	2.122
% C.V. :	60.722
Skewness:	.558
Kurtosis:	3.043
Minimum :	.600
25th % :	1.875
Median :	2.900
75th % :	4.925
Maximum :	9.700

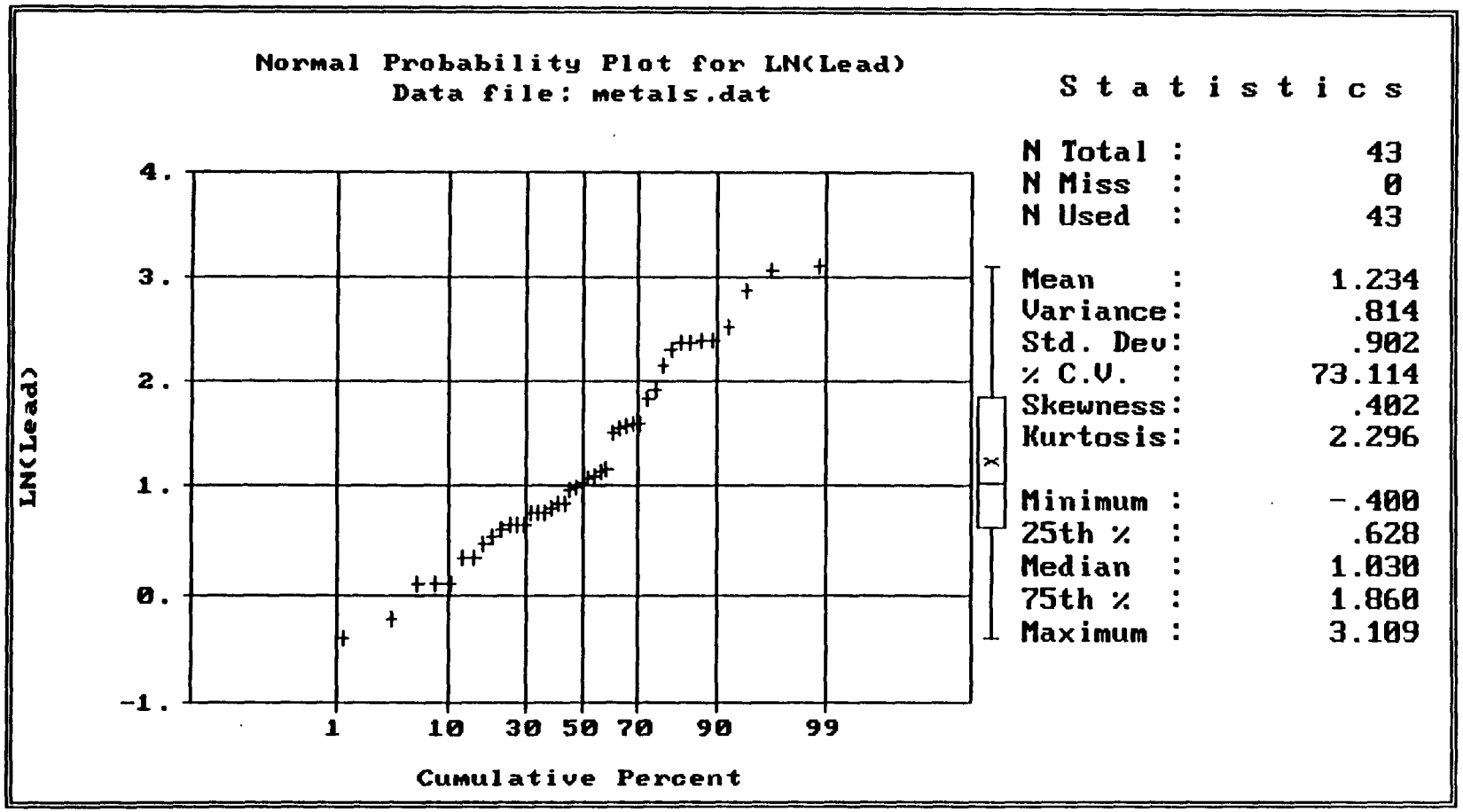
Normal Probability Plot for LN(Copper)
Data file: metals.dat



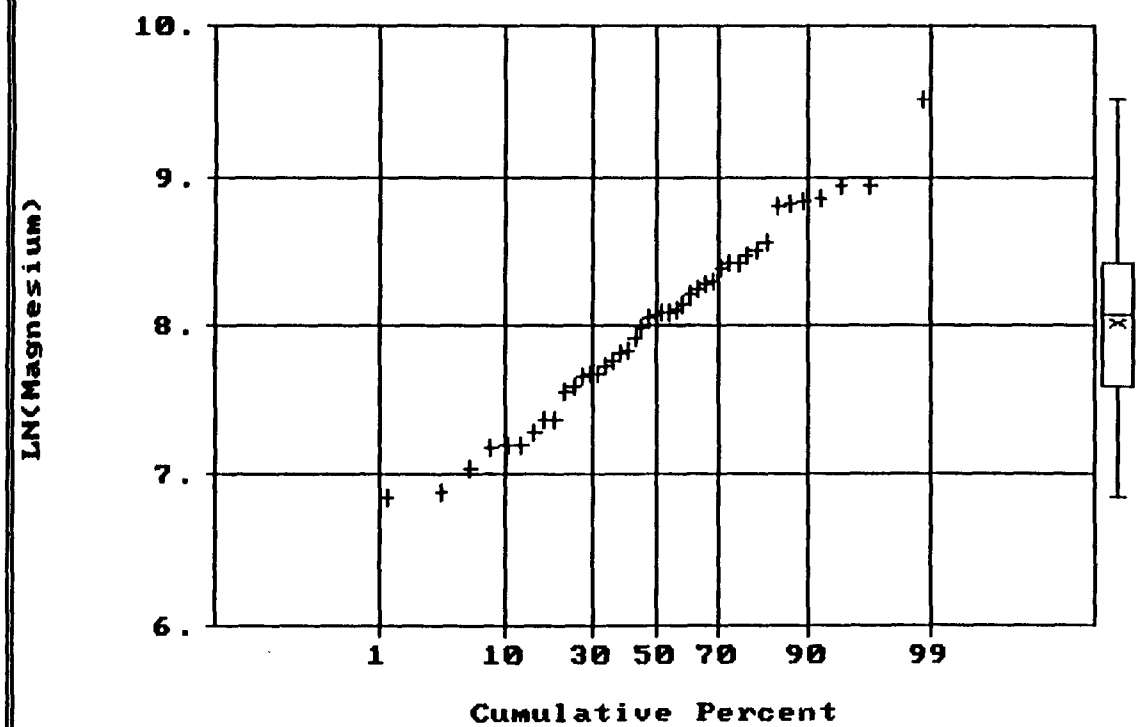
Statistics

N Total :	43
N Miss :	0
N Used :	43
Mean :	1.615
Variance:	.766
Std. Dev:	.875
% C.V. :	54.182
Skewness:	-.589
Kurtosis:	4.520
Minimum :	-1.022
25th % :	1.335
Median :	1.723
75th % :	2.155
Maximum :	3.635


Normal Probability Plot for LN(Iron)
Data file: metals.dat
10.4
9.6
8.8
8.0
7.2
LN(Iron)
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : 8.958
Variance: .412
Std. Dev: .642
% C.V. : 7.162
Skewness: -.612
Kurtosis: 2.433
Minimum : 7.539
25th % : 8.567
Median : 9.037
75th % : 9.427
Maximum : 9.852


Normal Probability Plot for LN(Lead)
Data file: metals.dat
LN(Lead)
4.
3.
2.
1.
0.
-1.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : 1.234
Variance: .814
Std. Dev: .902
% C.V. : 73.114
Skewness: .402
Kurtosis: 2.296
Minimum : -.400
25th % : .628
Median : 1.030
75th % : 1.860
Maximum : 3.109

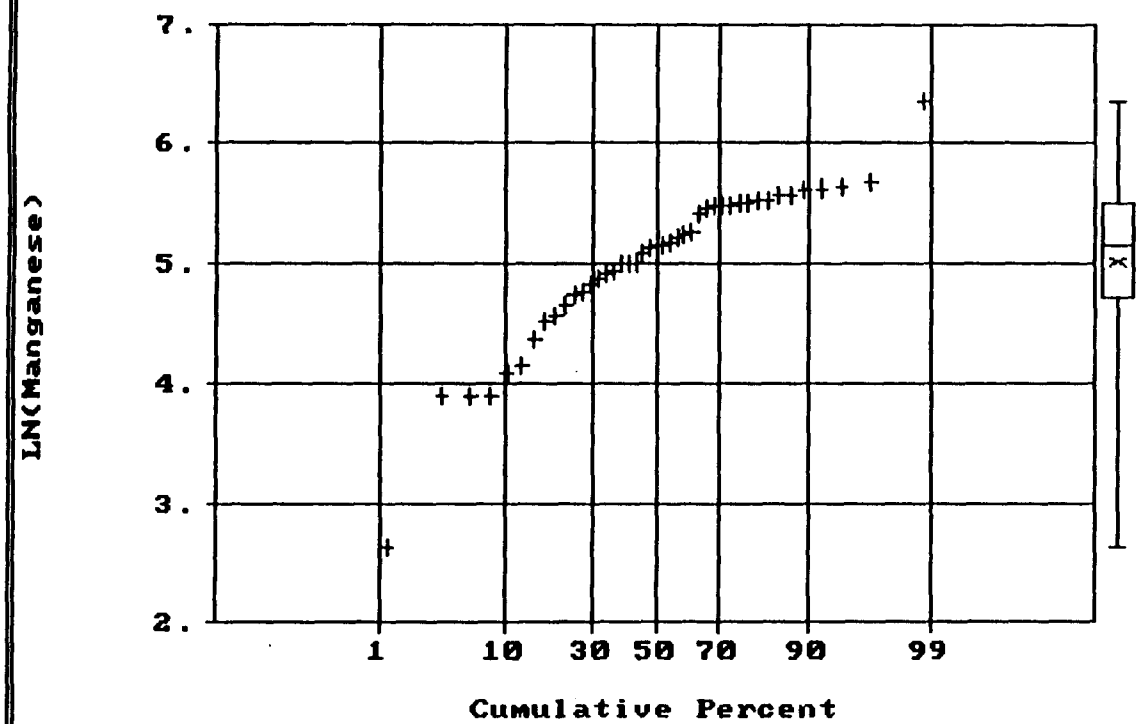
Normal Probability Plot for LN(Magnesium)
Data file: metals.dat



Statistics

N Total :	43
N Miss :	0
N Used :	43
Mean :	8.013
Variance:	.384
Std. Dev:	.619
% C.V. :	7.731
Skewness:	.079
Kurtosis:	2.516
Minimum :	6.850
25th % :	7.583
Median :	8.068
75th % :	8.415
Maximum :	9.518

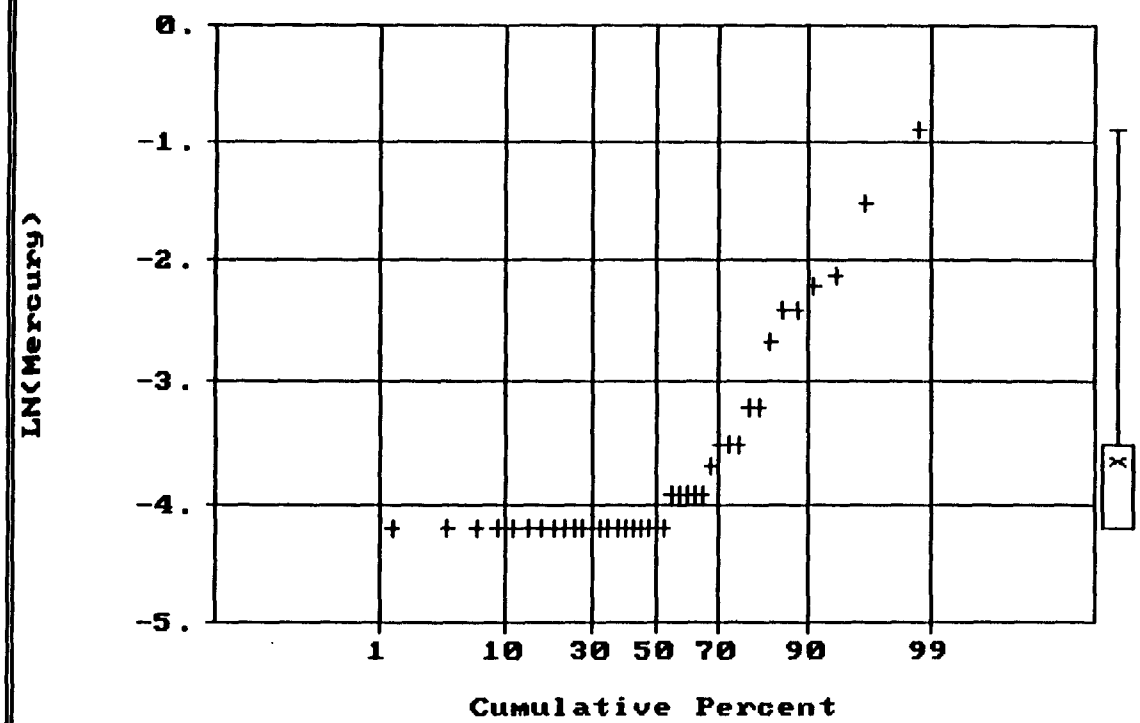
Normal Probability Plot for LN(Manganese)
Data file: metals.dat



Statistics

N Total :	43
N Miss :	0
N Used :	43
Mean :	5.017
Variance:	.437
Std. Dev:	.661
% C.V. :	13.178
Skewness:	-1.250
Kurtosis:	5.483
Minimum :	2.632
25th % :	4.729
Median :	5.159
75th % :	5.491
Maximum :	6.353

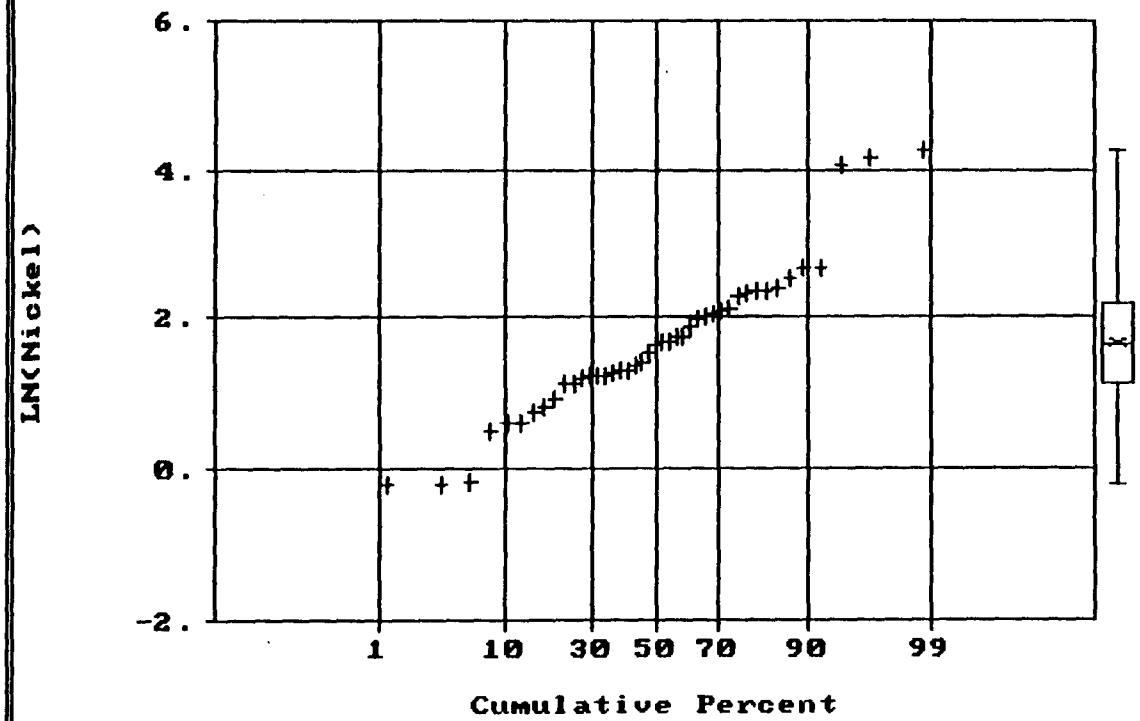
Normal Probability Plot for LN(Mercury)
Data file: mercury.dat



Statistics

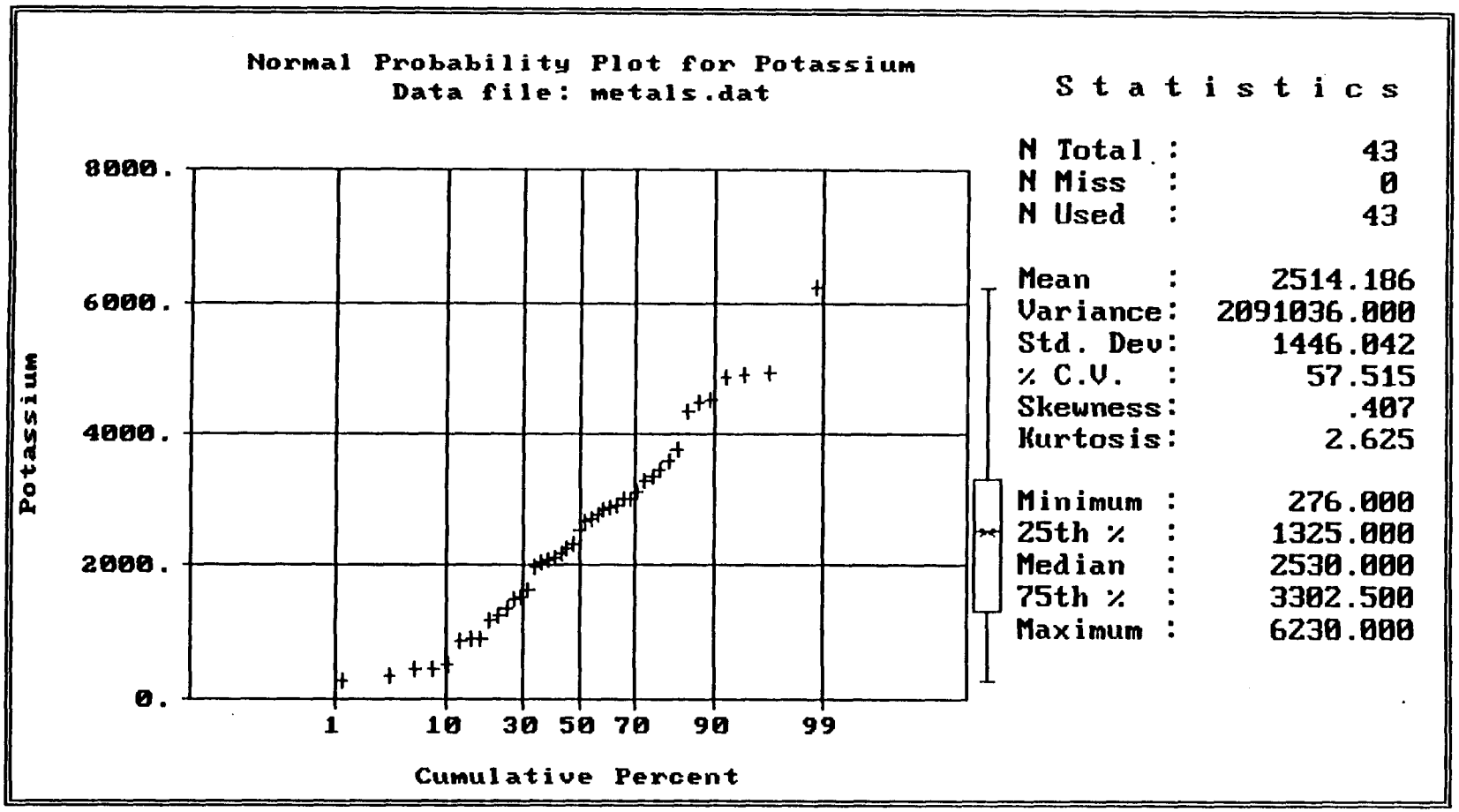
N Total :	39
N Miss :	0
N Used :	39
Mean :	-3.657
Variance:	.731
Std. Dev:	.855
% C.V. :	23.383
Skewness:	1.674
Kurtosis:	4.916
Minimum :	-4.200
25th % :	-4.200
Median :	-4.200
75th % :	-3.507
Maximum :	-.892

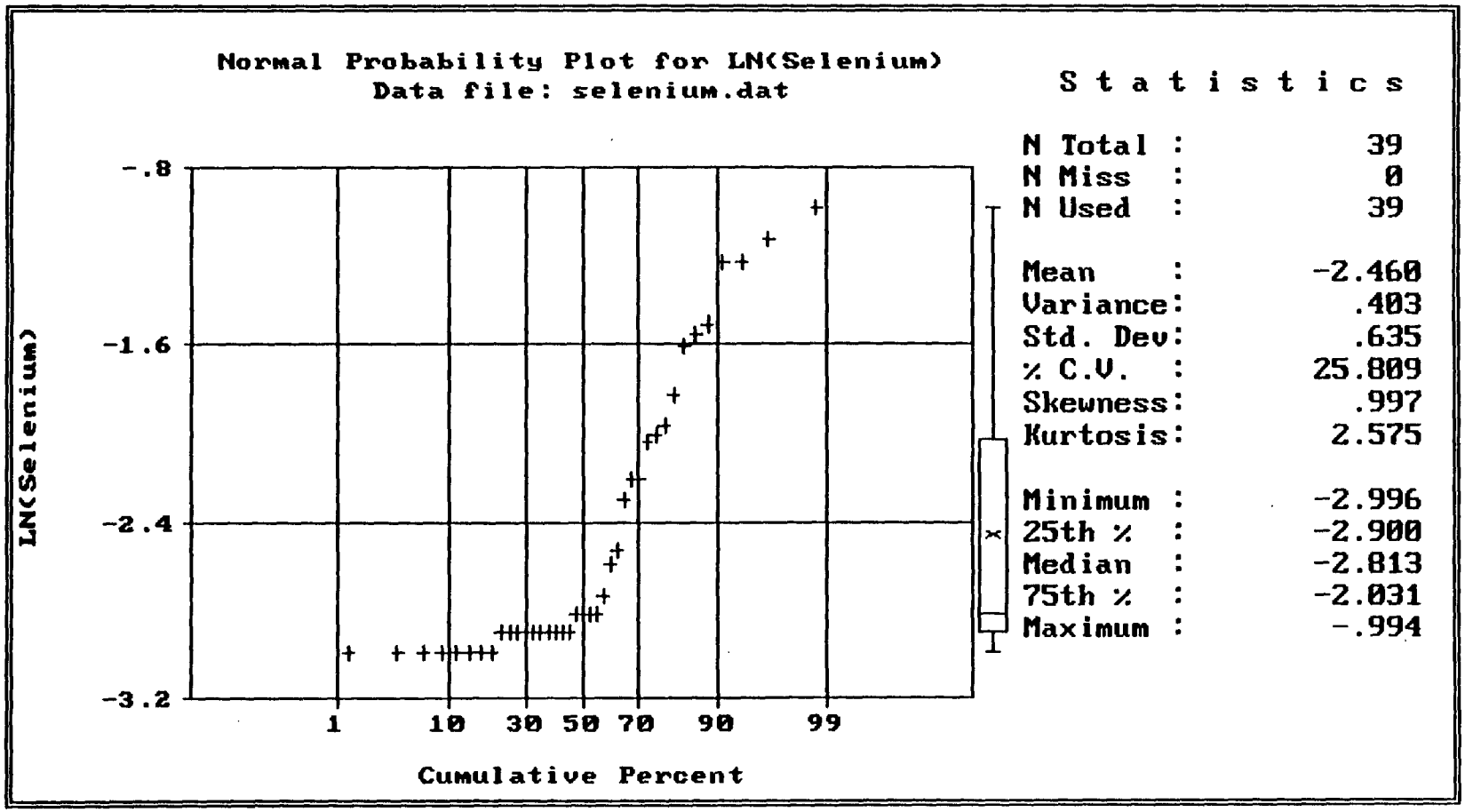
Normal Probability Plot for LN(Nickel)
Data file: metals.dat

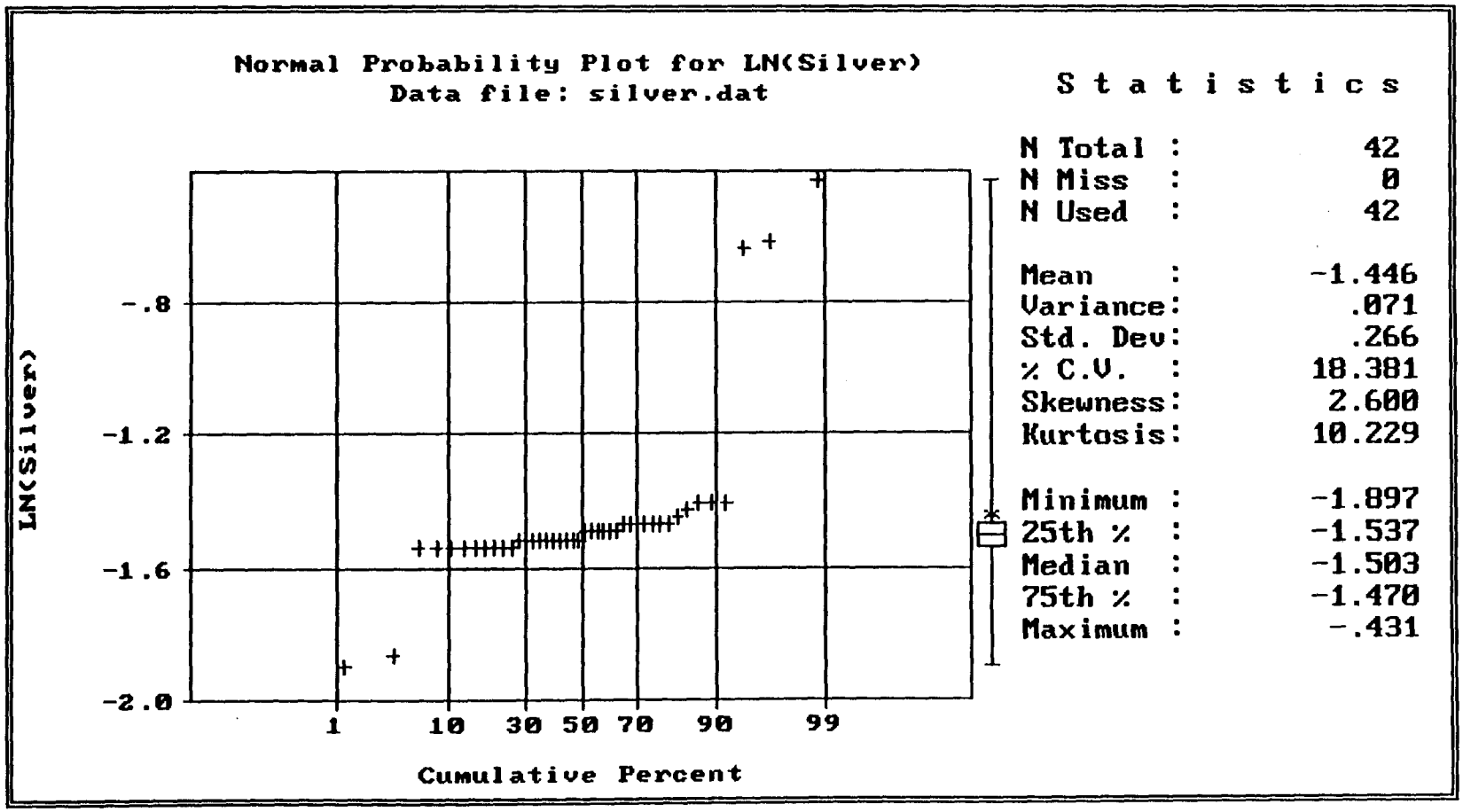


S t a t i s t i c s

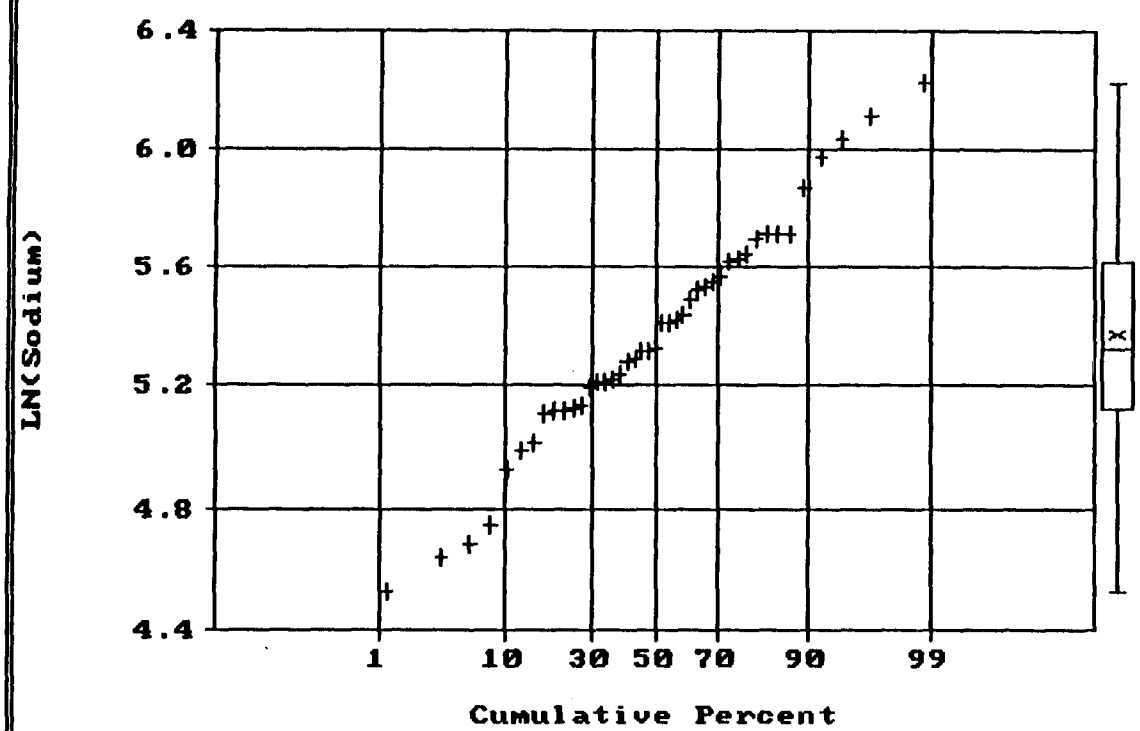
N Total :	43
N Miss :	0
N Used :	43
Mean :	1.655
Variance:	1.027
Std. Dev:	1.013
% C.V. :	61.231
Skewness:	.603
Kurtosis:	3.832
Minimum :	-.223
25th % :	1.111
Median :	1.629
75th % :	2.169
Maximum :	4.264


Normal Probability Plot for Potassium
Data file: metals.dat
Potassium
8000.
6000.
4000.
2000.
0.
1
10
30
50
70
90
99
Cumulative Percent
S t a t i s t i c s
N Total : 43
N Miss : 0
N Used : 43
Mean : 2514.186
Variance: 2091036.000
Std. Dev: 1446.042
% C.V. : 57.515
Skewness: .407
Kurtosis: 2.625
Minimum : 276.000
25th % : 1325.000
Median : 2530.000
75th % : 3302.500
Maximum : 6230.000


Normal Probability Plot for LN(Selenium)
Data file: selenium.dat
LN(Selenium)
-.8
-1.6
-2.4
-3.2
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 39
N Miss : 0
N Used : 39
Mean : -2.460
Variance: .403
Std. Dev: .635
% C.V. : 25.809
Skewness: .997
Kurtosis: 2.575
Minimum : -2.996
25th % : -2.900
Median : -2.813
75th % : -2.031
Maximum : -.994

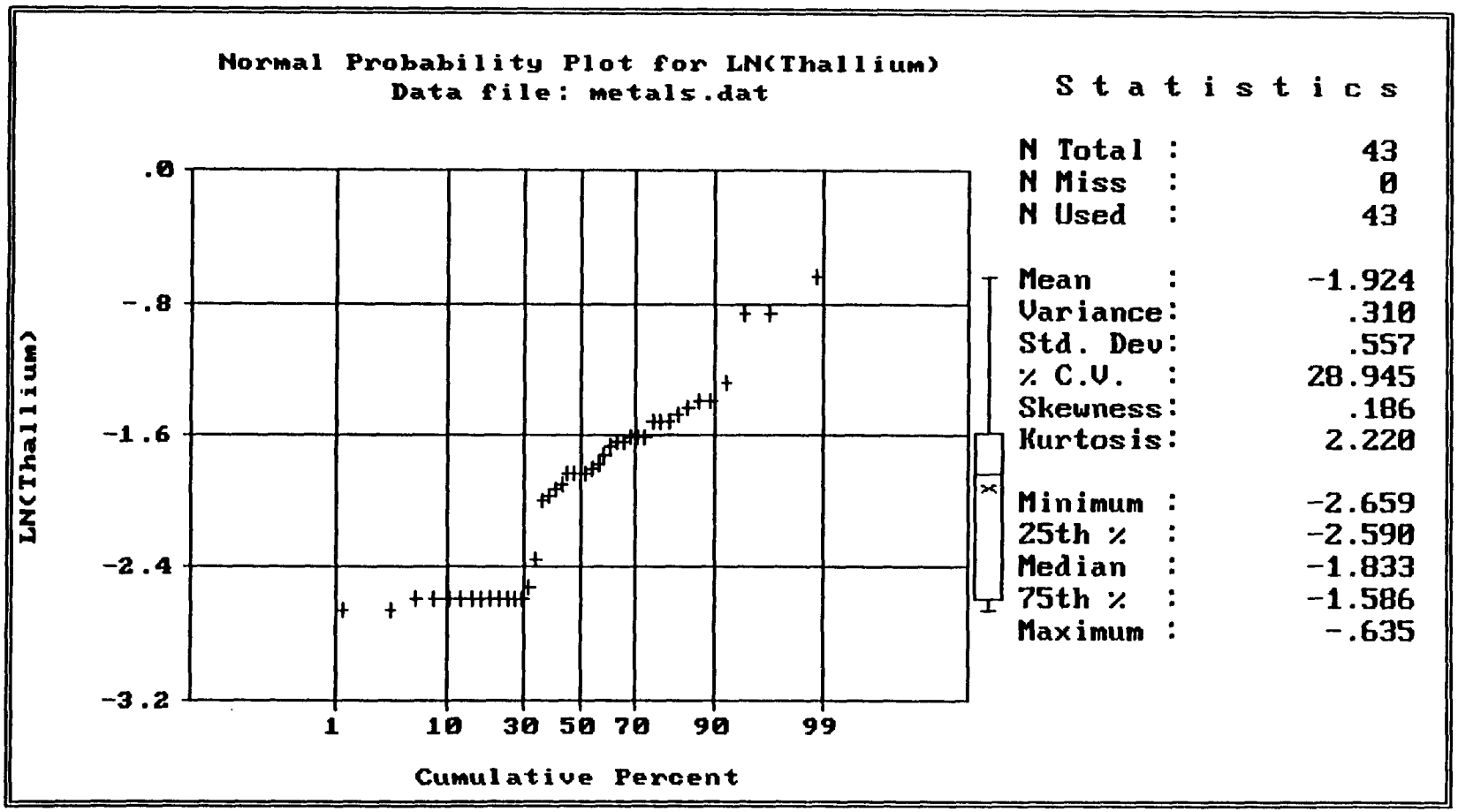

Normal Probability Plot for LN(Silver)
Data file: silver.dat
LN(Silver)
-.8
-1.2
-1.6
-2.0
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 42
N Miss : 0
N Used : 42
Mean : -1.446
Variance: .071
Std. Dev: .266
% C.V. : 18.381
Skewness: 2.600
Kurtosis: 10.229
Minimum : -1.897
25th % : -1.537
Median : -1.503
75th % : -1.470
Maximum : -.431

Normal Probability Plot for LN(Sodium)
Data file: metals.dat

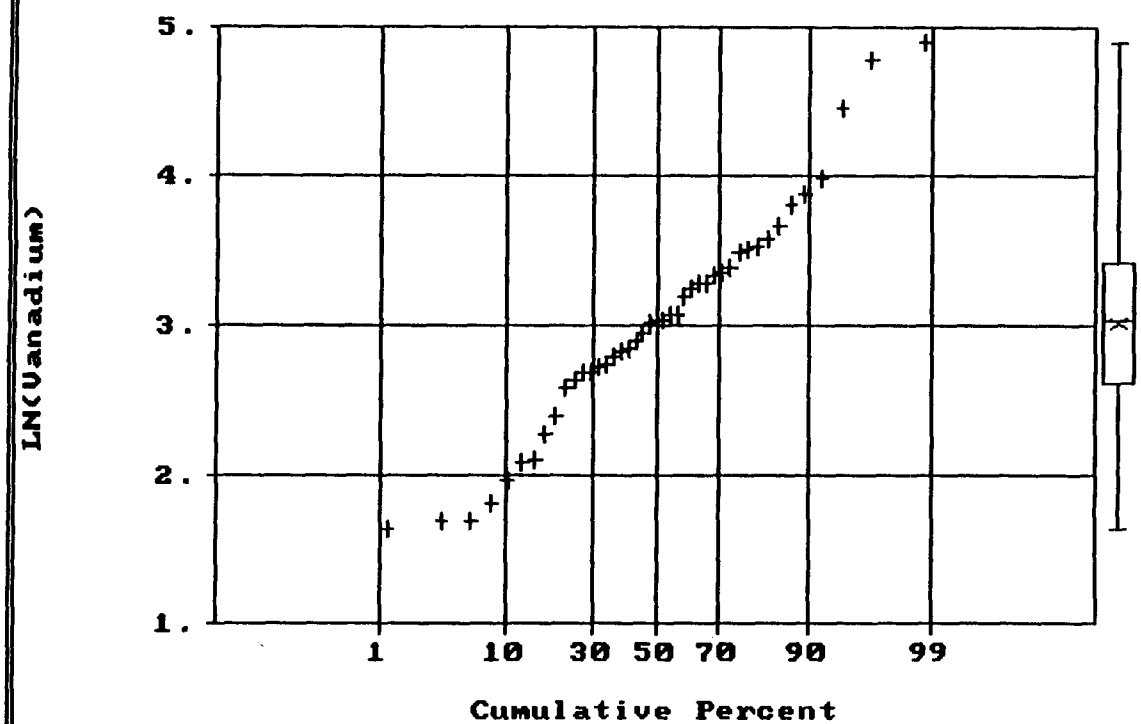


Statistics

N Total :	43
N Miss :	0
N Used :	43
Mean :	5.372
Variance:	.147
Std. Dev:	.383
% C.V. :	7.136
Skewness:	.010
Kurtosis:	2.888
Minimum :	4.527
25th % :	5.122
Median :	5.328
75th % :	5.619
Maximum :	6.227

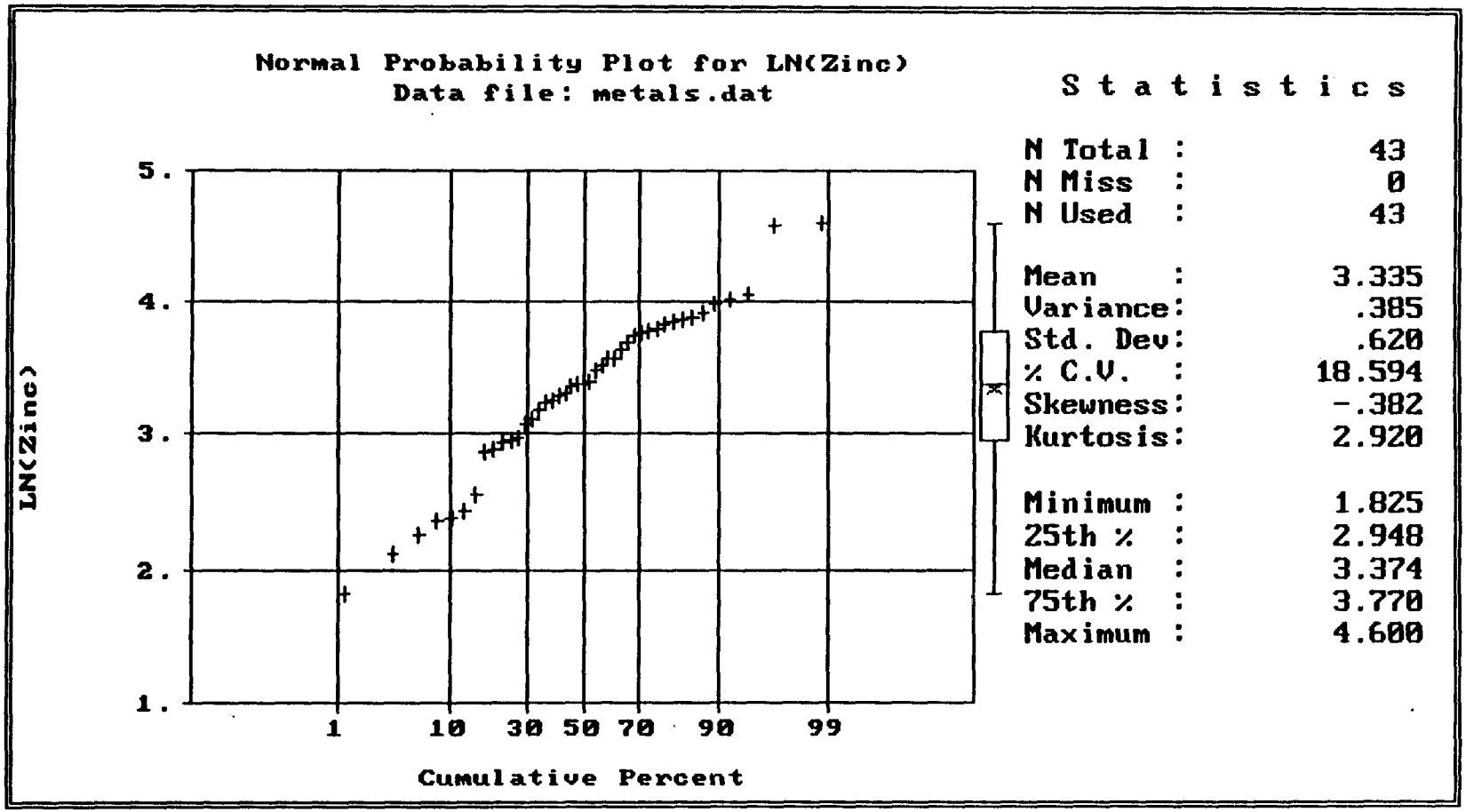

Normal Probability Plot for LN(Thallium)
Data file: metals.dat
LN(Thallium)
.0
-.8
-1.6
-2.4
-3.2
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : -1.924
Variance: .310
Std. Dev: .557
% C.V. : 28.945
Skewness: .186
Kurtosis: 2.220
Minimum : -2.659
25th % : -2.590
Median : -1.833
75th % : -1.586
Maximum : -.635

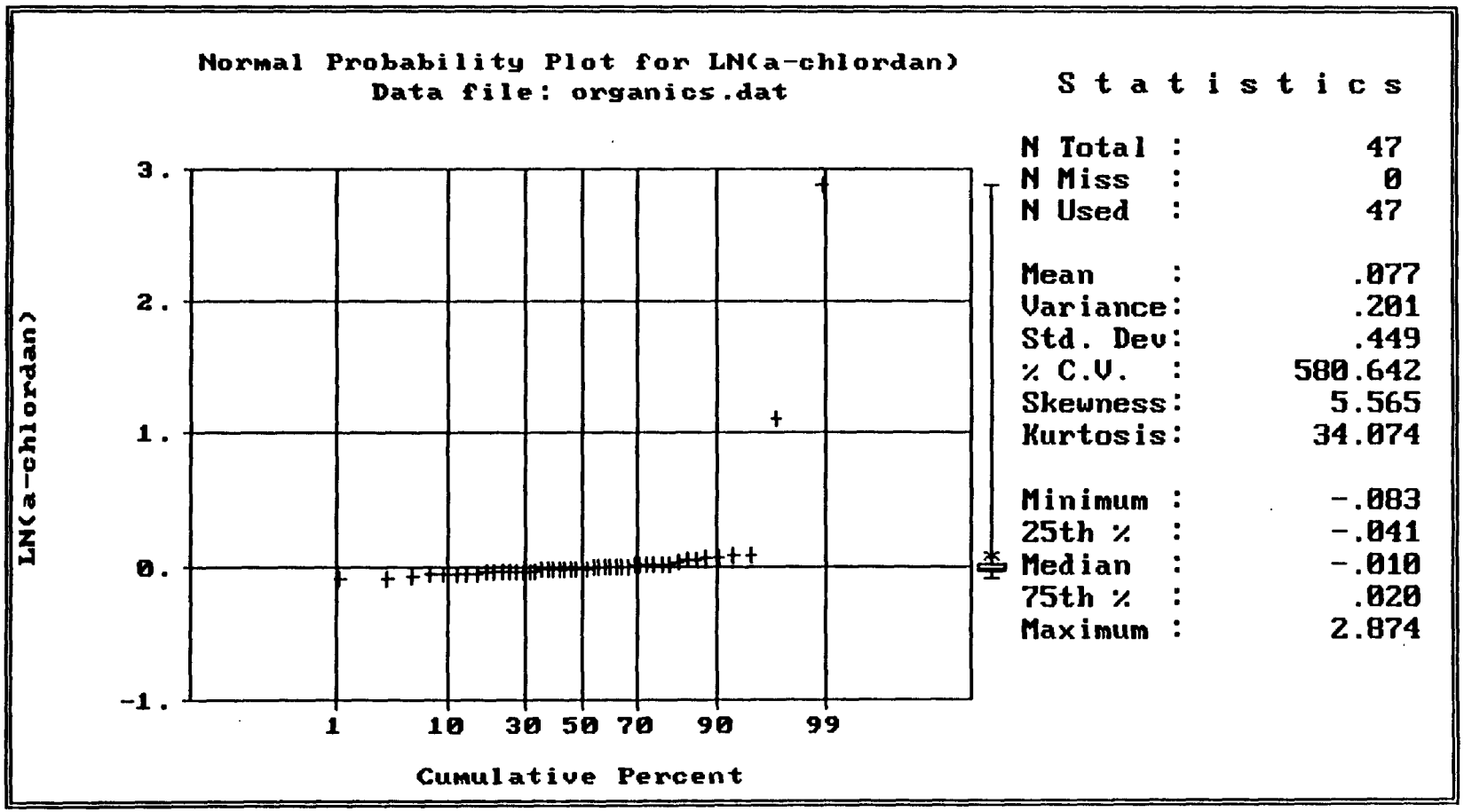
Normal Probability Plot for LN(Vanadium)
Data file: metals.dat

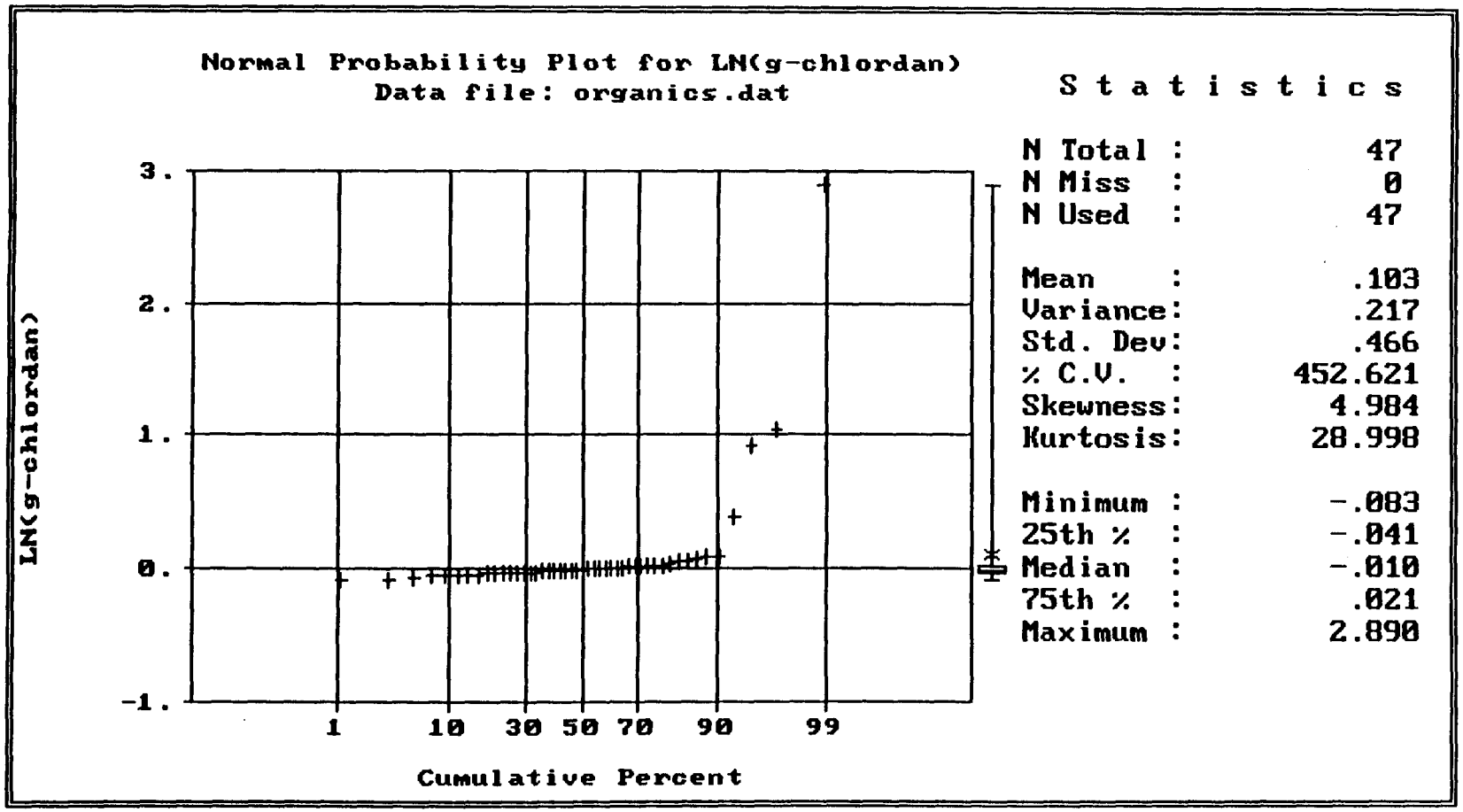


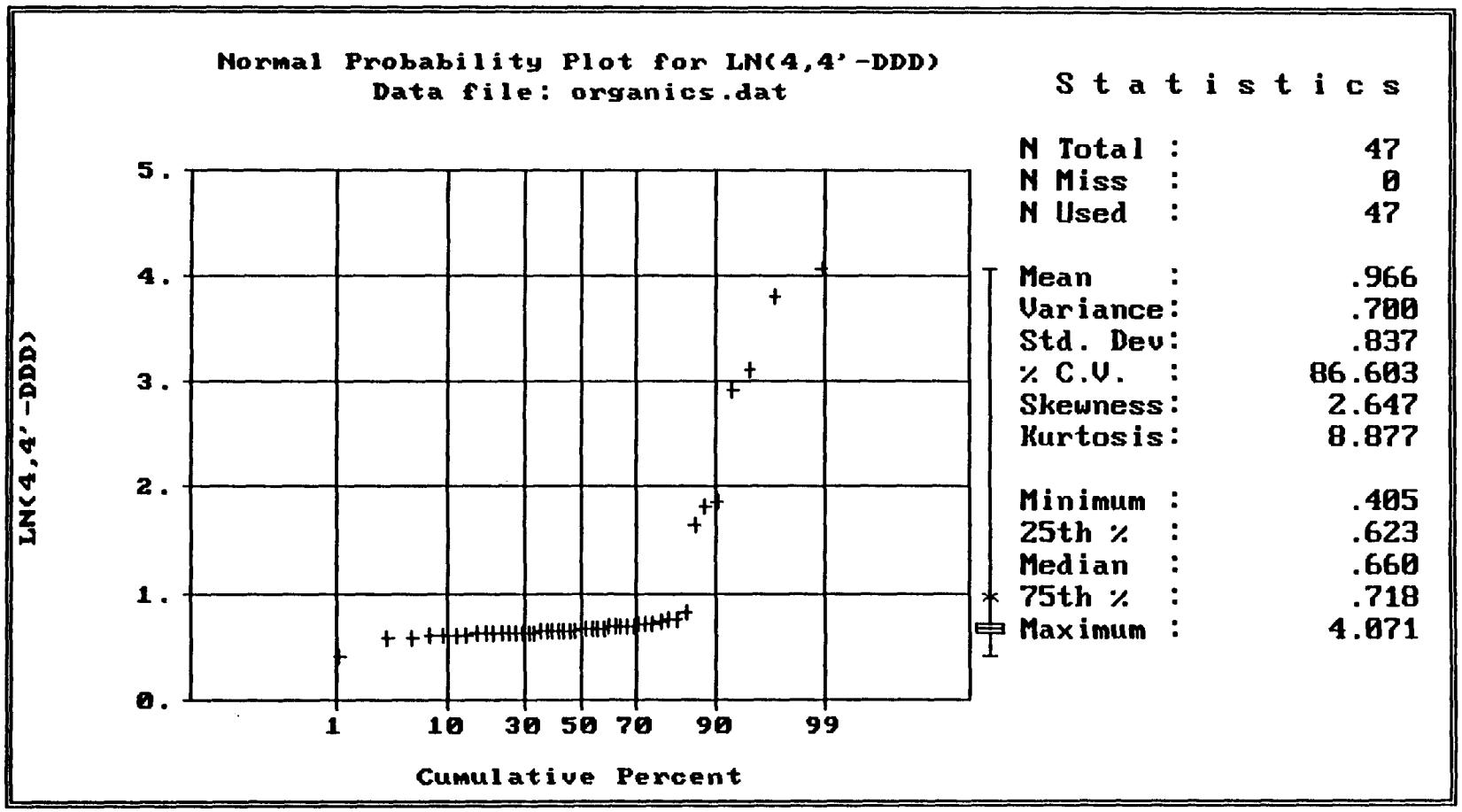
S t a t i s t i c s

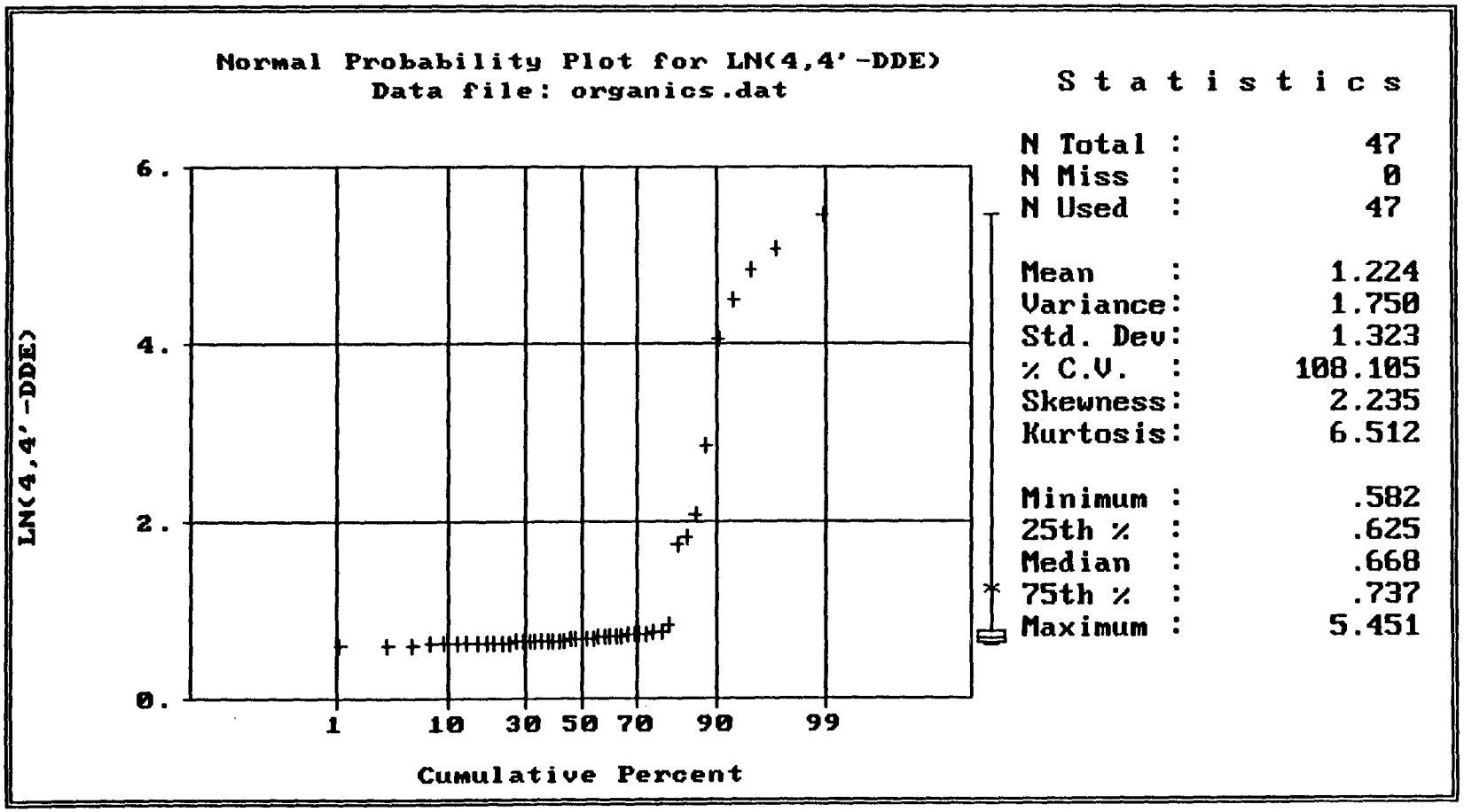
N Total :	43
N Miss :	0
N Used :	43
Mean :	3.021
Variance:	.581
Std. Dev:	.762
% C.V. :	25.222
Skewness:	.261
Kurtosis:	3.139
Minimum :	1.629
25th % :	2.632
Median :	3.035
75th % :	3.415
Maximum :	4.898


Normal Probability Plot for LN(Zinc)
Data file: metals.dat
LN(Zinc)
5.
4.
3.
2.
1.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 43
N Miss : 0
N Used : 43
Mean : 3.335
Variance: .385
Std. Dev: .620
% C.V. : 18.594
Skewness: -.382
Kurtosis: 2.920
Minimum : 1.825
25th % : 2.948
Median : 3.374
75th % : 3.770
Maximum : 4.600

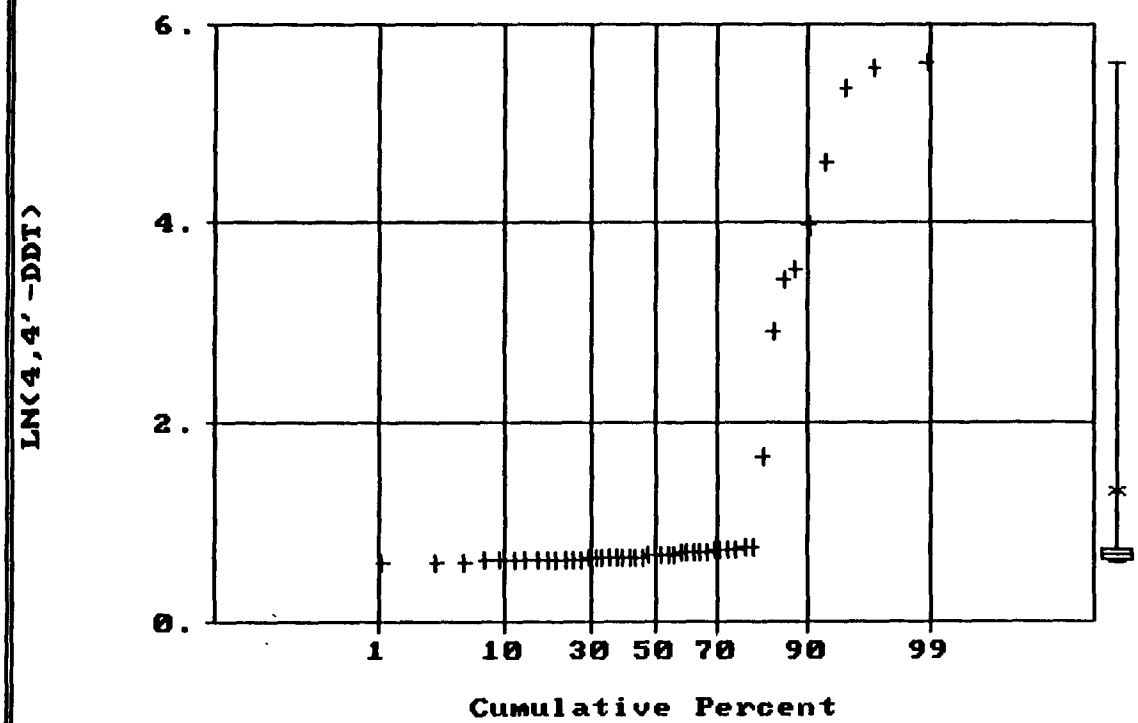

Normal Probability Plot for LN(a-chlordan)
Data file: organics.dat
LN(a-chlordan)
3.
2.
1.
0.
-1.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : .077
Variance: .201
Std. Dev: .449
% C.V. : 580.642
Skewness: 5.565
Kurtosis: 34.074
Minimum : -.083
25th % : -.041
Median : -.010
75th % : .020
Maximum : 2.874


Normal Probability Plot for LN(g-chlordan)
Data file: organics.dat
LN(g-chlordan)
3.
2.
1.
0.
-1.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : .103
Variance: .217
Std. Dev: .466
% C.V. : 452.621
Skewness: 4.984
Kurtosis: 28.998
Minimum : -.083
25th % : -.041
Median : -.010
75th % : .021
Maximum : 2.890


Normal Probability Plot for LN(4,4'-DDD)
Data file: organics.dat
LN(4,4'-DDD)
5.
4.
3.
2.
1.
0.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : .966
Variance: .700
Std. Dev: .837
% C.V. : 86.603
Skewness: 2.647
Kurtosis: 8.877
Minimum : .405
25th % : .623
Median : .660
75th % : .718
Maximum : 4.071


Normal Probability Plot for LN(4,4'-DDE)
Data file: organics.dat
LN(4,4'-DDE)
6.
4.
2.
0.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : 1.224
Variance: 1.750
Std. Dev: 1.323
% C.V. : 108.105
Skewness: 2.235
Kurtosis: 6.512
Minimum : .582
25th % : .625
Median : .668
75th % : .737
Maximum : 5.451

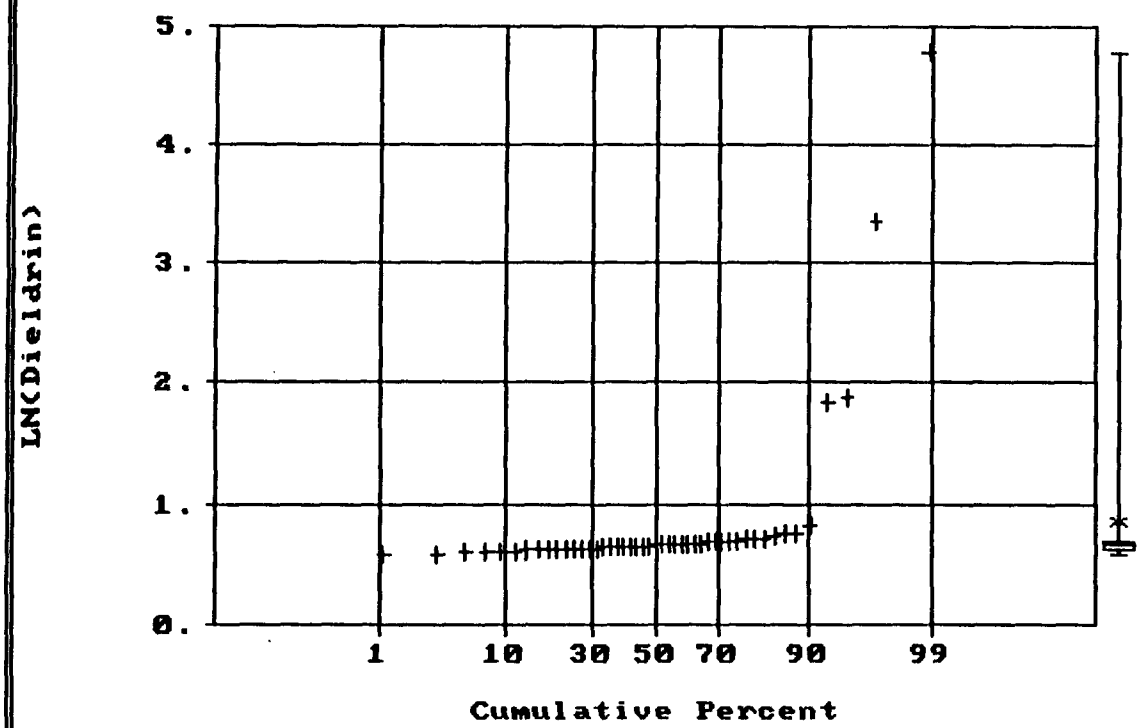
Normal Probability Plot for LN(4,4'-DDT)
Data file: organics.dat



Statistics

N Total :	47
N Miss :	0
N Used :	47
Mean :	1.308
Variance:	2.146
Std. Dev:	1.465
% C.V. :	112.018
Skewness:	2.015
Kurtosis:	5.537
Minimum :	.582
25th % :	.623
Median :	.665
75th % :	.721
Maximum :	5.606

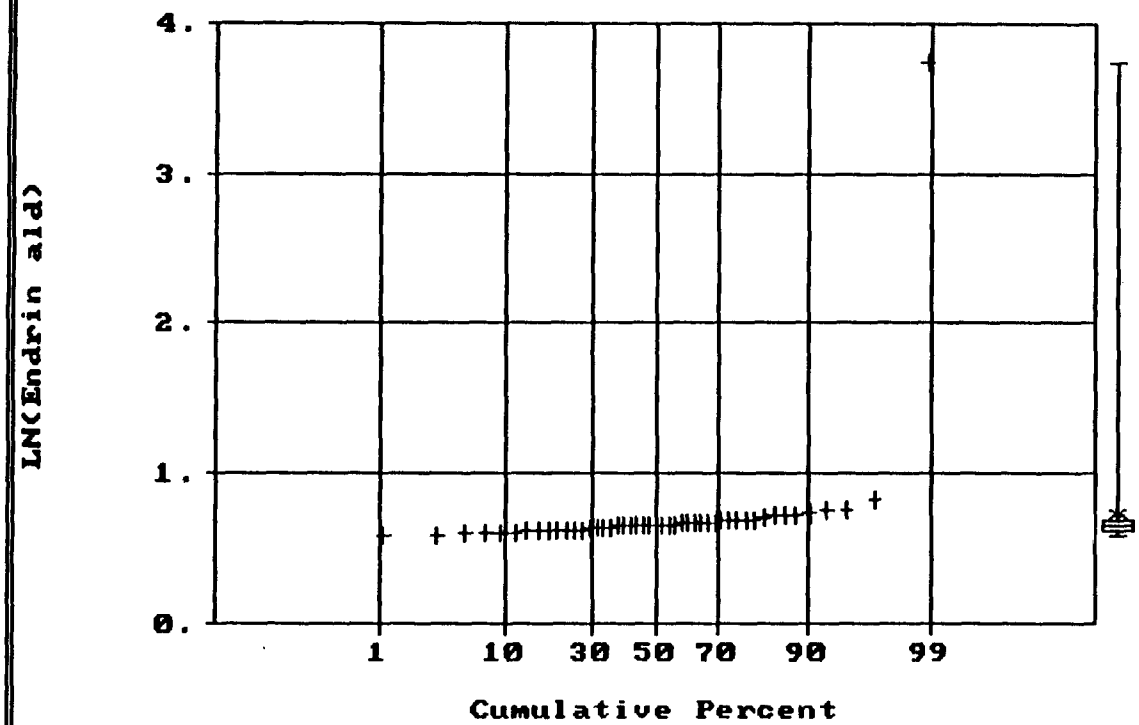
Normal Probability Plot for LN(Dieldrin)
Data file: organics.dat



Statistics

N Total :	47
N Miss :	0
N Used :	47
Mean :	.856
Variance:	.551
Std. Dev:	.742
% C.V. :	86.668
Skewness:	4.154
Kurtosis:	20.212
Minimum :	.582
25th % :	.625
Median :	.660
75th % :	.689
Maximum :	4.771

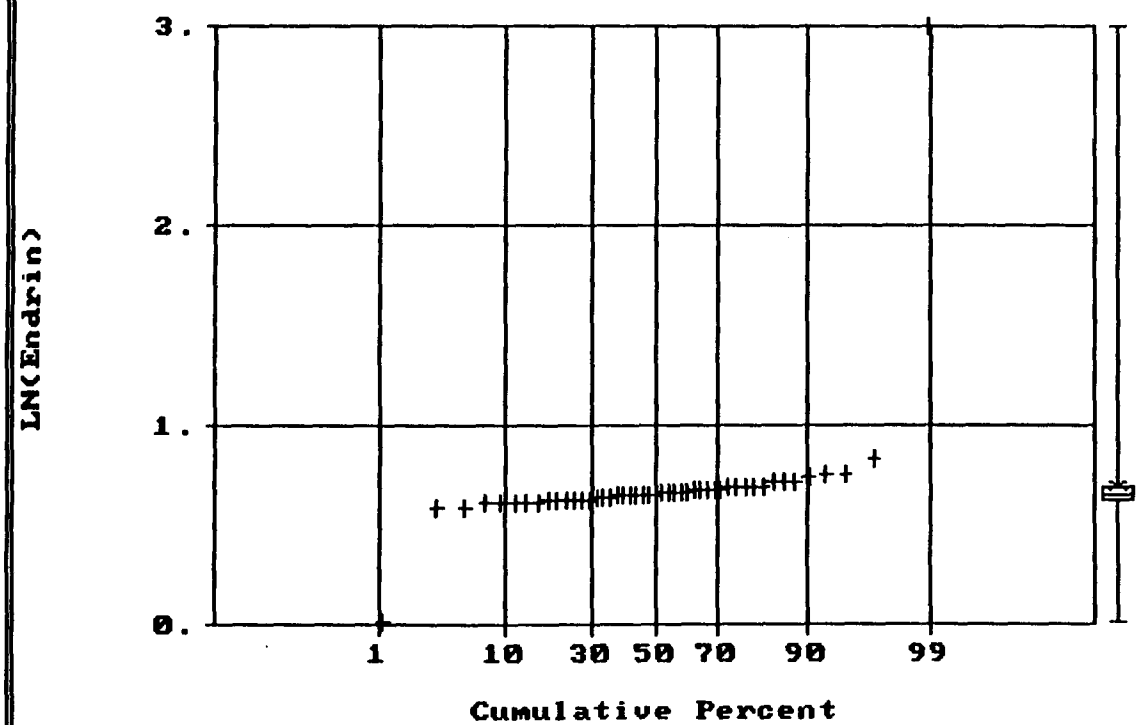
Normal Probability Plot for LN(Endrin ald)
Data file: organics.dat



S t a t i s t i c s

N Total :	47
N Miss :	0
N Used :	47
Mean :	.726
Variance:	.203
Std. Dev:	.450
% C.V. :	61.986
Skewness:	6.520
Kurtosis:	44.017
Minimum :	.582
25th % :	.623
Median :	.655
75th % :	.686
Maximum :	3.731

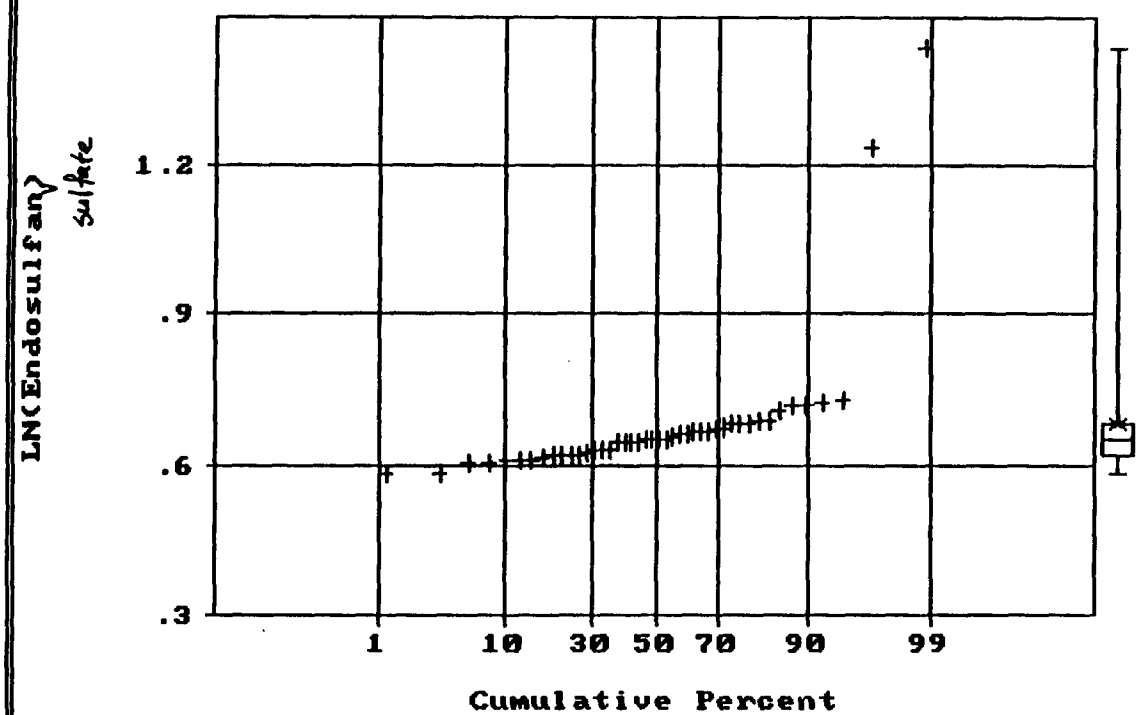
Normal Probability Plot for LN(Endrin)
Data file: organics.dat



Statistics

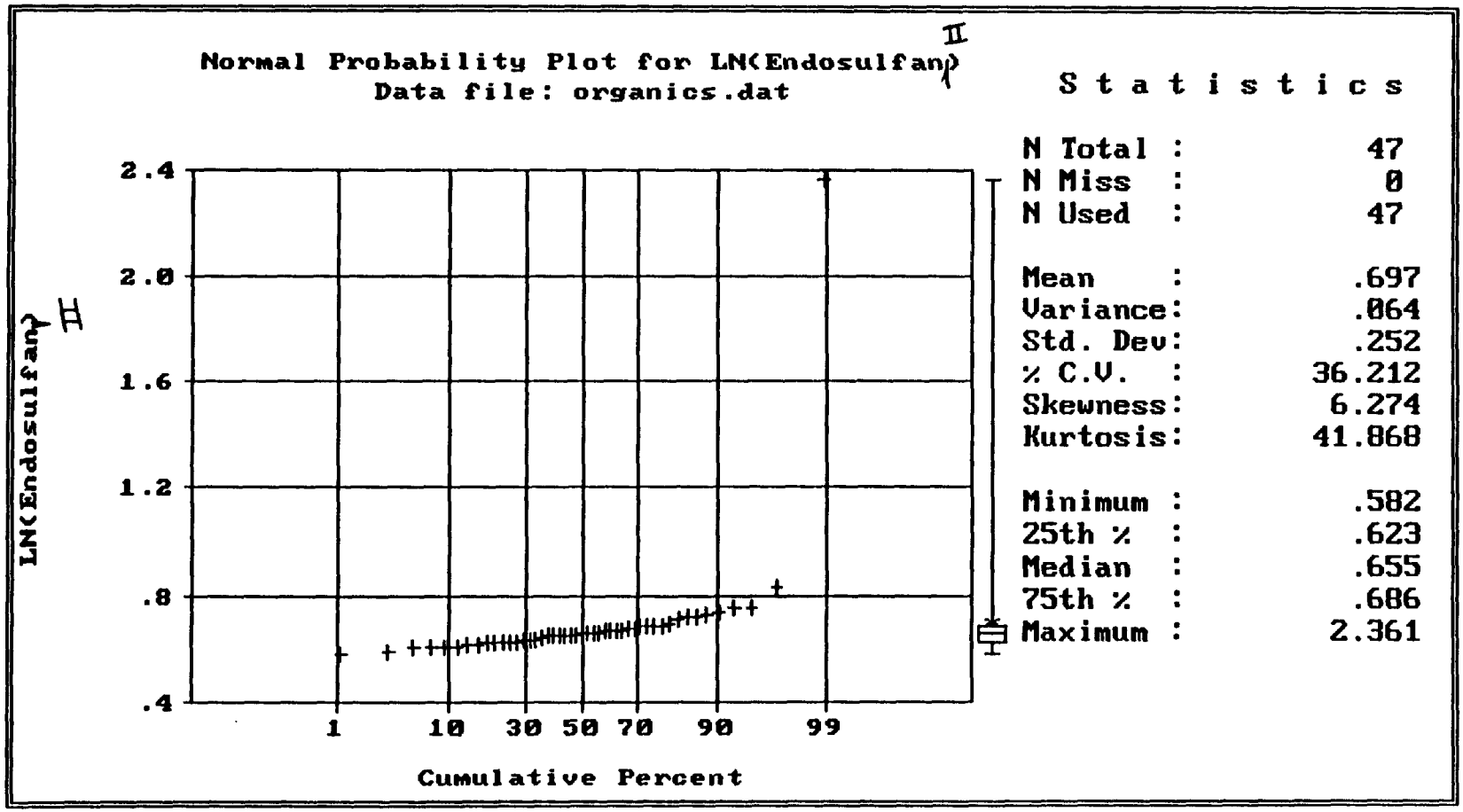
N Total :	47
N Miss :	0
N Used :	47
Mean :	.695
Variance:	.128
Std. Dev:	.358
% C.V. :	51.483
Skewness:	5.632
Kurtosis:	37.821
Minimum :	.010
25th % :	.623
Median :	.652
75th % :	.686
Maximum :	2.991

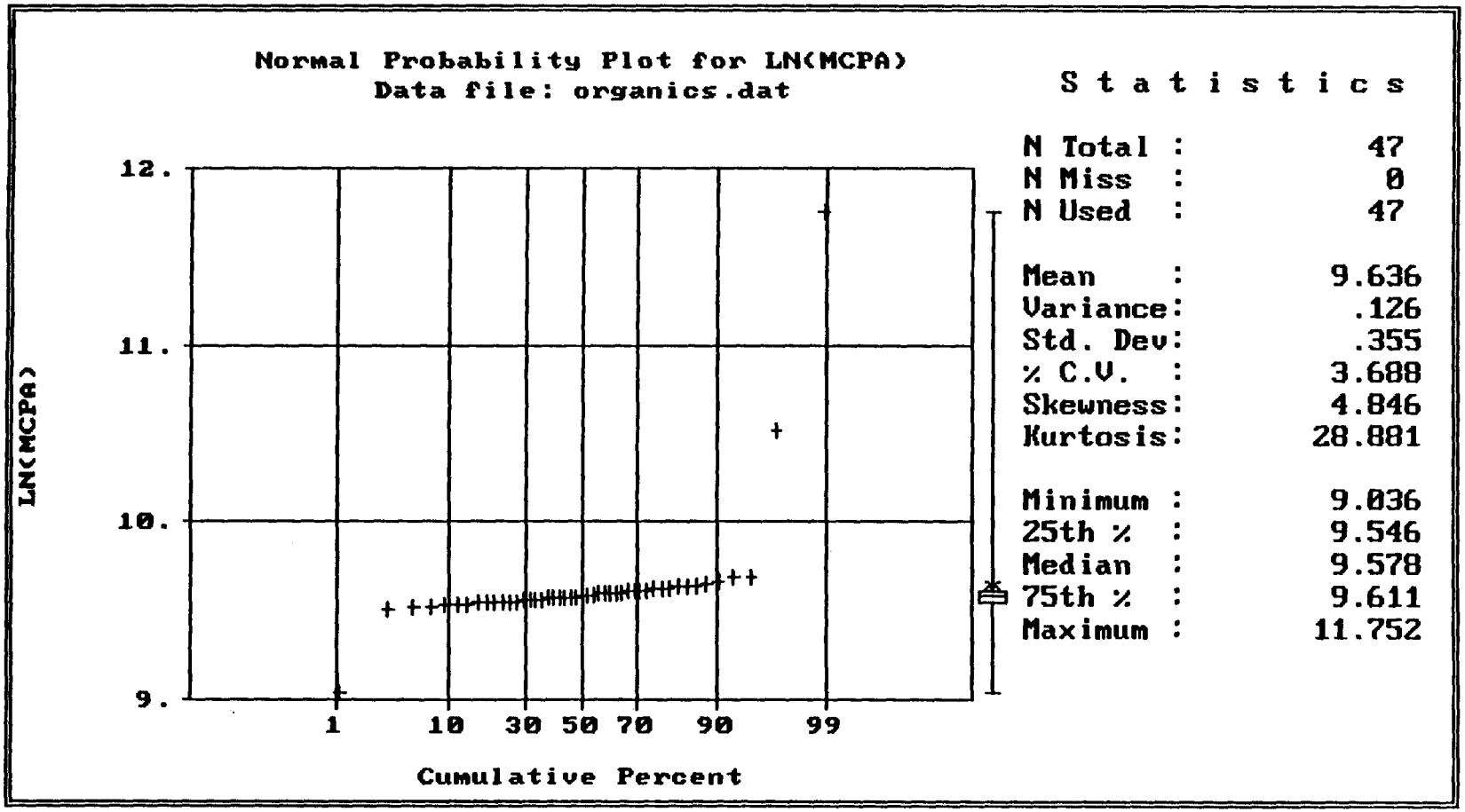
Normal Probability Plot for LN(Endosulfan sulfate)
Data file: endoslft.dat

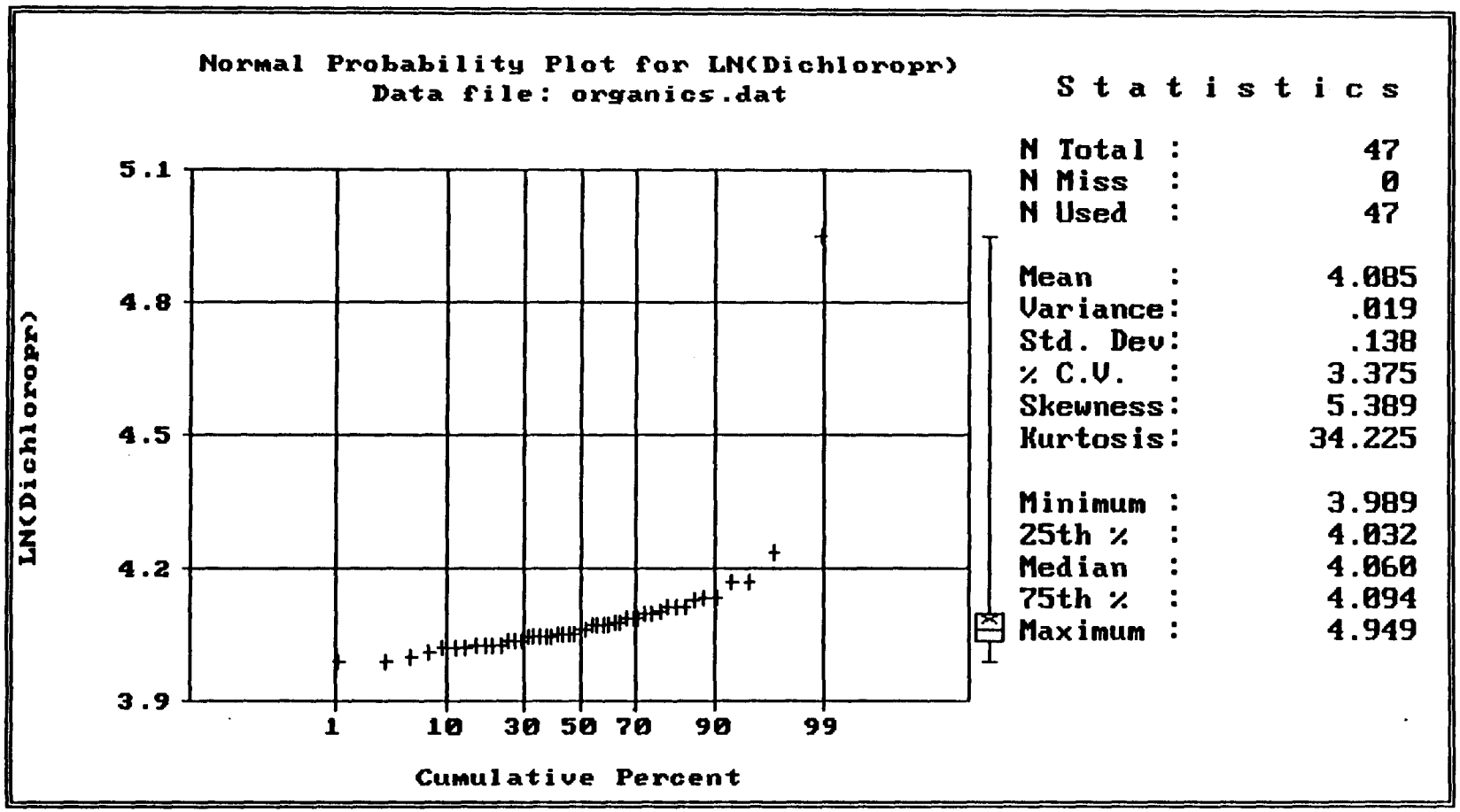


Statistics

N Total :	44
N Miss :	0
N Used :	44
Mean :	.683
Variance:	.023
Std. Dev:	.150
% C.V. :	21.996
Skewness:	4.095
Kurtosis:	19.430
Minimum :	.582
25th % :	.623
Median :	.652
75th % :	.686
Maximum :	1.437


Normal Probability Plot for LN(Endosulfan)
Data file: organics.dat
LN(Endosulfan)
2.4
2.0
1.6
1.2
.8
.4
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : .697
Variance: .064
Std. Dev: .252
% C.V. : 36.212
Skewness: 6.274
Kurtosis: 41.868
Minimum : .582
25th % : .623
Median : .655
75th % : .686
Maximum : 2.361


Normal Probability Plot for LN(MCPA)
Data file: organics.dat
LN(MCPA)
12.
11.
10.
9.
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : 9.636
Variance: .126
Std. Dev: .355
% C.V. : 3.688
Skewness: 4.846
Kurtosis: 28.881
Minimum : 9.036
25th % : 9.546
Median : 9.578
75th % : 9.611
Maximum : 11.752


Normal Probability Plot for LN(Dichloropr)
Data file: organics.dat
LN(Dichloropr)
5.1
4.8
4.5
4.2
3.9
1
10
30
50
70
90
99
Cumulative Percent
Statistics
N Total : 47
N Miss : 0
N Used : 47
Mean : 4.085
Variance: .019
Std. Dev: .138
% C.V. : 3.375
Skewness: 5.389
Kurtosis: 34.225
Minimum : 3.989
25th % : 4.032
Median : 4.060
75th % : 4.094
Maximum : 4.949

APPENDIX B

CALCULATIONS FOR METALS

Alumium
Statistical Calculatons

Aluminum (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
12-UGS	S1454210	2	17300		17300	9.758	0.3894	9.758	7.879	0.732
00-BGN1910	S1456663	0	15300		15300	9.636	0.2684	9.636	7.908	0.464
20-UGS	S1454360	2	14800		14800	9.602	0.2334	9.602	8.093	0.352
00-BGN112	S1456656	2	14000		14000	9.547	0.2078	9.547	8.108	0.299
00-BGN1910	S1456664	2	12900		12900	9.465	0.1871	9.465	8.175	0.241
13-UGS	S1454219	2	11400		11400	9.341	0.1695	9.341	8.261	0.183
00-BGN134	S1456787	2	11200		11200	9.324	0.1539	9.324	8.289	0.159
15-UGS	S1454266	2	11100		11100	9.315	0.1398	9.315	8.328	0.138
00-BGN156	S1456771	2	10700		10700	9.278	0.1269	9.278	8.345	0.118
00-BGN156	S1456650	2	10500		10500	9.259	0.1149	9.259	8.352	0.104
07-DBMW100	S1457114	8	10200		10200	9.230	0.1035	9.230	8.457	0.080
00-BGN112	S1456655	0	9930		9930	9.203	0.0927	9.203	8.464	0.069
06-UGS	S1454550	2	9280		9280	9.136	0.0824	9.136	8.481	0.054
03-UGS	S1454399	0	8550		8550	9.054	0.0724	9.054	8.499	0.040
21-UGS	S1454367	2	8120		8120	9.002	0.0628	9.002	8.509	0.031
20-UGS	S1454369	0	7970		7970	8.983	0.0534	8.983	8.515	0.025
00-BGN178	S1456661	0	7970		7970	8.983	0.0442	8.983	8.554	0.019
00-BGN134	S1456786	0	7730		7730	8.953	0.0352	8.953	8.566	0.014
00-BGN234	S1456779	2	6880		6880	8.836	0.0263	8.836	8.691	0.004
00-BGN156	S1456659	0	6870		6870	8.835	0.0175	8.835	8.731	0.002
00-BGN111	S1456775	2	6630		6630	8.799	0.0087	8.799	8.740	0.001
05-UGS	S1454402	0	6580		6580	8.792	0	8.792	8.792	0.000
00-BGN234	S1456778	0	6250		6250	8.740				
00-BGN178	S1456662	2	6190		6190	8.731				
07-DBMW100	S1457113	3	5950		5950	8.691				
00-BGN278	S1456782	0	5250		5250	8.566				
16-UGX	S1454302	2	5190		5190	8.554				
05-UGS	S1454040	0	4990		4990	8.515				
00-BGN256	S1456780	0	4960		4960	8.509				
03-UGS	S1454013	0	4910		4910	8.499				
16-UGX	S1454299	0	4820		4820	8.481				
00-BGN256	S1456773	2	4740		4740	8.464				
00-BGN278	S1456783	2	4710		4710	8.457				
02-UGS	S1454502	2	4240		4240	8.352				
00-BGN111	S1456665	0	4210		4210	8.345				
18-UGS	S1454528	0	4140		4140	8.328				
16-UGS	S1454529	2	3980		3980	8.289				
00-BGN256	S1456781	2	3870		3870	8.261				
00-BGN2910	S1456785	2	3550		3550	8.175				
00-BGN212	S1456777	2	3320		3320	8.108				
00-BGN2910	S1456784	0	3270		3270	8.093				
02-UGS	S1454008	0	2720		2720	7.908				
00-BGN212	S1456776	0	2640		2640	7.879				
Summary Statistics:				Mean	7437.442	8.79716				
				Standard Error	565.2885	0.07482				
				Median	6580	8.79179				

Alumium
Statistical Calculatons

			Mode	7970	8.98344				
		Standard Deviation		3706.844	0.49064				
		Sample Variance		13740696	0.24073				
			Kurtosis	0.077394	-0.8552				
			Skewness	0.894091	0.09092				
			Range	14660	1.87993				
			Minimum	2640	7.87853				
			Maximum	17300	9.75846				
			Sum	319810	378.278				
			Count	43	43				
		Confidence Level (95.0%)		1107.943	0.14665				
W Test for LN Distribution:			d =		10.1106				
			k =		21				
			W =		0.96813				
			W(5) =		0.943				
			W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:			Mean =		8.79716				
			StDev =		0.49064				
			N =		43				
			Z(95) =		1.64485				
			Q(95) =		9.60419	Exp =	**14826.8**		
			H(95) =		1.89				
			UCL(95) =		**8609.41**				

Antimony
Statistical Calculations

Antimony (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	ln(X)	Rank
00-BGN1910	S1456663	0	4.5	B	4.5	1.504077	36
20-UGS	S1454369	0	2.8	B	2.8	1.029619	35
00-BGN1910	S1456664	2	3	U	1.5	0.405465	34
06-UGS	S1454550	2	2.8	U	1.4	0.336472	33
07-DBMW100	S1457114	8	2.8	U	1.4	0.336472	32
07-DBMW100	S1457113	3	2.7	U	1.35	0.300105	31
13-UGS	S1454219	2	2.7	U	1.35	0.300105	30
00-BGN112	S1456656	2	2.7	U	1.35	0.300105	29
02-UGS	S1454502	2	2.6	U	1.3	0.262364	28
20-UGS	S1454360	2	2.6	U	1.3	0.262364	27
00-BGN256	S1456773	2	2.6	U	1.3	0.262364	26
00-BGN256	S1456781	2	2.6	U	1.3	0.262364	25
00-BGN278	S1456782	0	2.6	U	1.3	0.262364	24
00-BGN278	S1456783	2	2.6	U	1.3	0.262364	23
00-BGN111	S1456775	2	2.6	U	1.3	0.262364	22
00-BGN134	S1456786	0	2.6	U	1.3	0.262364	21
00-BGN134	S1456787	2	2.6	U	1.3	0.262364	20
00-BGN156	S1456650	2	2.6	U	1.3	0.262364	19
00-BGN156	S1456771	2	2.6	U	1.3	0.262364	18
00-BGN178	S1456661	0	2.6	U	1.3	0.262364	17
00-BGN2910	S1456785	2	2.6	U	1.3	0.262364	16
00-BGN212	S1456777	2	2.6	U	1.3	0.262364	15
00-BGN234	S1456778	0	2.6	U	1.3	0.262364	14
02-UGS	S1454008	0	2.5	U	1.25	0.223144	13
18-UGS	S1454528	0	2.5	U	1.25	0.223144	12
16-UGS	S1454529	2	2.5	U	1.25	0.223144	11
16-UGX	S1454299	0	2.5	U	1.25	0.223144	10
16-UGX	S1454302	2	2.5	U	1.25	0.223144	9
00-BGN256	S1456780	0	2.5	U	1.25	0.223144	8
00-BGN111	S1456665	0	2.5	U	1.25	0.223144	7
00-BGN112	S1456655	0	2.5	U	1.25	0.223144	6
00-BGN156	S1456659	0	2.5	U	1.25	0.223144	5
00-BGN178	S1456662	2	2.5	U	1.25	0.223144	4
00-BGN2910	S1456784	0	2.5	U	1.25	0.223144	3
00-BGN212	S1456776	0	2.5	U	1.25	0.223144	2
00-BGN234	S1456779	2	2.5	U	1.25	0.223144	1
Summary Statistics:				Mean	1.427778	0.315243	

Antimony
Statistical Calculations

			Standard Error		0.097599	0.040685	
				Median	1.3	0.262364	
				Mode	1.3	0.262364	
			Standard Deviation		0.585594	0.244108	
			Sample Variance		0.342921	0.059589	
				Kurtosis	23.44831	18.30418	
				Skewness	4.741784	4.228439	
				Range	3.25	1.280934	
				Minimum	1.25	0.223144	
				Maximum	4.5	1.504077	
				Sum	51.4	11.34875	
				Count	36	36	
		Confidence Level (95.0%)			0.19129	0.07974	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	36		
				Z(5) =	1.644853		
				k =	35.15	35	36
				Q(95) =	**3.055**	2.8	4.5
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	36		
				Z(5) =	1.644853		
				U =	23.43456		
			UCL(95,50) =		**1.3**		

Arsenic
Statistical Calculations

Arsenic (mg/kg)								
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	
00-BGN1910	S1456664	2	8.5		8.5	2.140066	43	
00-BGN1910	S1456663	0	7.4		7.4	2.00148	42	
00-BGN112	S1456656	2	4.7		4.7	1.547563	41	
20-UGS	S1454360	2	4.1		4.1	1.410987	40	
03-UGS	S1454013	0	3.5		3.5	1.252763	39	
07-DBMW100	S1457114	8	3.1		3.1	1.131402	38	
15-UGS	S1454266	2	3		3	1.098612	37	
00-BGN112	S1456655	0	2.8		2.8	1.029619	36	
03-UGS	S1454399	0	2.7		2.7	0.993252	35	
06-UGS	S1454550	2	2.7		2.7	0.993252	34	
20-UGS	S1454369	0	2.6		2.6	0.955511	33	
00-BGN134	S1456787	2	2.5		2.5	0.916291	32	
00-BGN156	S1456659	0	2.4		2.4	0.875469	31	
12-UGS	S1454210	2	2.1	B	2.1	0.741937	30	
00-BGN156	S1456650	2	2.1	B	2.1	0.741937	29	
00-BGN156	S1456771	2	2	B	2	0.693147	28	
02-UGS	S1454502	2	1.9	B	1.9	0.641854	27	
05-UGS	S1454402	0	1.9	B	1.9	0.641854	26	
13-UGS	S1454219	2	1.8	B	1.8	0.587787	25	
21-UGS	S1454367	2	1.8	B	1.8	0.587787	24	
00-BGN134	S1456786	0	1.6	B	1.6	0.470004	23	
05-UGS	S1454040	0	1.5	B	1.5	0.405465	22	
16-UGX	S1454302	2	1.4	B	1.4	0.336472	21	
07-DBMW100	S1457113	3	1.3	B	1.3	0.262364	20	
00-BGN278	S1456782	0	1.2	B	1.2	0.182322	19	
00-BGN234	S1456779	2	1.2	B	1.2	0.182322	18	
02-UGS	S1454008	0	1.1	B	1.1	0.09531	17	
16-UGX	S1454299	0	1.1	B	1.1	0.09531	16	
00-BGN278	S1456783	2	1.1	B	1.1	0.09531	15	
00-BGN234	S1456778	0	0.98	B	0.98	-0.0202	14	
18-UGS	S1454528	0	0.93	B	0.93	-0.07257	13	
00-BGN256	S1456781	2	0.91	B	0.91	-0.09431	12	
00-BGN111	S1456665	0	0.88	B	0.88	-0.12783	11	
00-BGN111	S1456775	2	0.74	B	0.74	-0.30111	10	
00-BGN256	S1456773	2	0.71	B	0.71	-0.34249	9	
00-BGN256	S1456780	0	0.65	B	0.65	-0.43078	8	
00-BGN178	S1456662	2	0.65	B	0.65	-0.43078	7	
00-BGN178	S1456661	0	0.46	B	0.46	-0.77653	6	
00-BGN212	S1456776	0	0.29	B	0.29	-1.23787	5	
16-UGS	S1454529	2	0.46	U	0.23	-1.46968	4	
00-BGN2910	S1456785	2	0.15	U	0.075	-2.59027	3	
00-BGN212	S1456777	2	0.15	U	0.075	-2.59027	2	
00-BGN2910	S1456784	0	0.14	U	0.07	-2.65926	1	
Summary Statistics:				Mean	1.924419	0.231709		

Arsenic
Statistical Calculations

Standard Error	0.264024	0.16543	
Median	1.5	0.405465	
Mode	1.1	0.09531	
Standard Deviation	1.731319	1.084798	
Sample Variance	2.997467	1.176787	
Kurtosis	5.737286	1.607164	
Skewness	2.132685	-1.12399	
Range	8.43	4.799326	
Minimum	0.07	-2.65926	
Maximum	8.5	2.140066	
Sum	82.75	9.963497	
Count	43	43	
Confidence Level (95.0%)	0.517476	0.324237	
Q(95) Nonparametric Distribution: P =	0.95		
N =	43		
Z(5) =	1.644853		
k =	41.8	41	42
Q(95) =	**6.86**	4.7	7.4
UCL(95,50) Nonparametric Distribution: P =	0.5		
N =	43		
Z(5) =	1.644853		
U =	27.39301		
UCL(95,50) =	**1.939301**		

Barium
Statistical Calculations

Barium (mg/kg)											
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456664	2	172		172	5.14749	43	0.3894	5.147	3.127	0.787
13-UGS	S1454219	2	160		160	5.07517	42	0.2684	5.075	3.254	0.489
15-UGS	S1454266	2	157		157	5.05625	41	0.2334	5.056	3.459	0.373
00-BGN1910	S1456663	0	153		153	5.03044	40	0.2078	5.030	3.550	0.308
12-UGS	S1454210	2	148		148	4.99721	39	0.1871	4.997	3.561	0.269
20-UGS	S1454360	2	136		136	4.91265	38	0.1695	4.913	3.584	0.225
21-UGS	S1454367	2	130		130	4.86753	37	0.1539	4.868	3.691	0.181
00-BGN134	S1456787	2	124		124	4.82028	36	0.1398	4.820	3.752	0.149
06-UGS	S1454550	2	116		116	4.75359	35	0.1269	4.754	3.782	0.123
20-UGS	S1454369	0	116		116	4.75359	34	0.1149	4.754	3.807	0.109
00-BGN156	S1456650	2	109		109	4.69135	33	0.1035	4.691	3.993	0.072
03-UGS	S1454399	0	108		108	4.68213	32	0.0927	4.682	3.993	0.064
00-BGN156	S1456771	2	108		108	4.68213	31	0.0824	4.682	3.996	0.057
00-BGN156	S1456659	0	105		105	4.65396	30	0.0724	4.654	4.052	0.044
07-DBMW100	S1457114	8	102		102	4.62497	29	0.0628	4.625	4.054	0.036
00-BGN112	S1456656	2	90.5		90.5	4.50535	28	0.0534	4.505	4.089	0.022
00-BGN134	S1456786	0	90.3		90.3	4.50314	27	0.0442	4.503	4.116	0.017
16-UGX	S1454302	2	89.2		89.2	4.49088	26	0.0352	4.491	4.130	0.013
16-UGS	S1454529	2	83.7		83.7	4.42724	25	0.0263	4.427	4.149	0.007
16-UGX	S1454299	0	80.3		80.3	4.38577	24	0.0175	4.386	4.157	0.004
03-UGS	S1454013	0	79.3		79.3	4.37324	23	0.0087	4.373	4.209	0.001
07-DBMW100	S1457113	3	77		77	4.34381	22	0	4.344	4.344	0.000
05-UGS	S1454402	0	67.3		67.3	4.20916	21				
18-UGS	S1454528	0	63.9		63.9	4.15732	20				
00-BGN112	S1456655	0	63.4		63.4	4.14946	19				
00-BGN278	S1456782	0	62.2		62.2	4.13035	18				
05-UGS	S1454040	0	61.3		61.3	4.11578	17				
00-BGN178	S1456661	0	59.7		59.7	4.08933	16				
00-BGN234	S1456778	0	57.6		57.6	4.05352	15				
00-BGN178	S1456662	2	57.5		57.5	4.05178	14				
00-BGN234	S1456779	2	54.4		54.4	3.99636	13				
02-UGS	S1454502	2	54.2		54.2	3.99268	12				
00-BGN278	S1456783	2	54.2		54.2	3.99268	11				
00-BGN256	S1456773	2	45		45	3.80666	10				
00-BGN256	S1456780	0	43.9		43.9	3.78191	9				
00-BGN256	S1456781	2	42.6	B	42.6	3.75185	8				
00-BGN111	S1456665	0	40.1	B	40.1	3.69138	7				
00-BGN212	S1456776	0	36	B	36	3.58352	6				
00-BGN111	S1456775	2	35.2	B	35.2	3.56105	5				
02-UGS	S1454008	0	34.8	B	34.8	3.54962	4				
00-BGN2910	S1456784	0	31.8	B	31.8	3.45947	3				
00-BGN212	S1456777	2	25.9	B	25.9	3.25424	2				
00-BGN2910	S1456785	2	22.8	B	22.8	3.12676	1				
Summary Statistics:				Mean	82.514	4.28565					
				Standard Error	6.19348	0.08032					
				Median	77	4.34381					

Barium
Statistical Calculations

				Mode	116	4.75359					
				Standard Deviation	40.6134	0.52671					
				Sample Variance	1649.45	0.27742					
				Kurtosis	-0.6764	-0.7334					
				Skewness	0.54739	-0.2708					
				Range	149.2	2.02073					
				Minimum	22.8	3.12676					
				Maximum	172	5.14749					
				Sum	3548.1	184.283					
				Count	43	43					
				Confidence Level (95.0%)	12.139	0.15743					
W Test for LN Distribution:				d =		11.6518					
				k =		21					
				W =		0.96285					
				W(5) =		0.943					
				W > W(5)	Accept	LN					
Q(95) & UCL(95) LN Distribution:				Mean =		4.28565					
				StDev =		0.52671					
				N =		43					
				Z(95) =		1.64485					
				Q(95) =		5.15202	Exp =	**172.78**			
				H(95) =		1.89					
				UCL(95) =		**97.3168**					

Beryllium
Statistical Calculations

Beryllium (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	0.79	B	0.79	-0.2357	0.3894	-0.236	-2.900	1.038
00-BGN1910	S1456664	2	0.66	B	0.66	-0.4155	0.2684	-0.416	-2.526	0.566
00-BGN112	S1456656	2	0.62	B	0.62	-0.478	0.2334	-0.478	-2.526	0.478
00-BGN2910	S1456784	0	0.6	B	0.6	-0.5108	0.2078	-0.511	-2.465	0.406
00-BGN156	S1456659	0	0.53	B	0.53	-0.6349	0.1871	-0.635	-2.354	0.322
00-BGN156	S1456650	2	0.53	B	0.53	-0.6349	0.1695	-0.635	-2.207	0.267
12-UGS	S1454210	2	0.51	B	0.51	-0.6733	0.1539	-0.673	-2.002	0.205
13-UGS	S1454219	2	0.47		0.47	-0.755	0.1398	-0.755	-1.966	0.169
06-UGS	S1454550	2	0.43	B	0.43	-0.844	0.1269	-0.844	-1.931	0.138
21-UGS	S1454367	2	0.4	B	0.4	-0.9163	0.1149	-0.916	-1.931	0.117
00-BGN156	S1456771	2	0.39	B	0.39	-0.9416	0.1035	-0.942	-1.931	0.102
15-UGS	S1454266	2	0.36	B	0.36	-1.0217	0.0927	-1.022	-1.743	0.067
00-BGN112	S1456655	0	0.35	B	0.35	-1.0498	0.0824	-1.050	-1.715	0.055
07-DBMW100	S1457114	8	0.55	U	0.275	-1.291	0.0724	-1.291	-1.687	0.029
00-BGN256	S1456781	2	0.27	B	0.27	-1.3093	0.0628	-1.309	-1.609	0.019
00-BGN256	S1456780	0	0.26	B	0.26	-1.3471	0.0534	-1.347	-1.514	0.009
00-BGN256	S1456773	2	0.26	B	0.26	-1.3471	0.0442	-1.347	-1.514	0.007
00-BGN2910	S1456785	2	0.26	B	0.26	-1.3471	0.0352	-1.347	-1.470	0.004
00-BGN212	S1456776	0	0.26	B	0.26	-1.3471	0.0263	-1.347	-1.427	0.002
20-UGS	S1454360	2	0.5	U	0.25	-1.3863	0.0175	-1.386	-1.427	0.001
07-DBMW100	S1457113	3	0.49	U	0.245	-1.4065	0.0087	-1.406	-1.427	0.000
00-BGN134	S1456786	0	0.49	U	0.245	-1.4065	0	-1.406	-1.406	0.000
00-BGN278	S1456782	0	0.24	B	0.24	-1.4271				
00-BGN178	S1456661	0	0.24	B	0.24	-1.4271				
00-BGN178	S1456662	2	0.24	B	0.24	-1.4271				
00-BGN234	S1456779	2	0.23	B	0.23	-1.4697				
03-UGS	S1454399	0	0.44	U	0.22	-1.5141				
00-BGN134	S1456787	2	0.44	U	0.22	-1.5141				
00-BGN212	S1456777	2	0.2	B	0.2	-1.6094				
00-BGN111	S1456665	0	0.37	U	0.185	-1.6874				
00-BGN111	S1456775	2	0.36	U	0.18	-1.7148				
20-UGS	S1454369	0	0.35	U	0.175	-1.743				
02-UGS	S1454502	2	0.29	U	0.145	-1.931				
03-UGS	S1454013	0	0.29	U	0.145	-1.931				
18-UGS	S1454528	0	0.29	U	0.145	-1.931				
05-UGS	S1454040	0	0.28	U	0.14	-1.9661				
05-UGS	S1454402	0	0.27	U	0.135	-2.0025				
00-BGN278	S1456783	2	0.11	B	0.11	-2.2073				
02-UGS	S1454008	0	0.19	U	0.095	-2.3539				
16-UGS	S1454529	2	0.17	U	0.085	-2.4651				
16-UGX	S1454299	0	0.16	U	0.08	-2.5257				
16-UGX	S1454302	2	0.16	U	0.08	-2.5257				
00-BGN234	S1456778	0	0.11	U	0.055	-2.9004				
Summary Statistics:				Mean	0.28628	-1.4319				

Beryllium
Statistical Calculations

			Standard Error	0.0266	0.09551				
			Median	0.245	-1.4065				
			Mode	0.26	-1.3471				
			Standard Deviation	0.17445	0.6263				
			Sample Variance	0.03043	0.39225				
			Kurtosis	0.64497	-0.2918				
			Skewness	1.07907	-0.2198				
			Range	0.735	2.6647				
			Minimum	0.055	-2.9004				
			Maximum	0.79	-0.2357				
			Sum	12.31	-61.573				
			Count	43	43				
			Confidence Level (95.0%)	0.05214	0.1872				
W Test for LN Distribution:			d =		16.4746				
			k =		21				
			W =		0.97111				
			W(5) =		0.943				
			W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:			Mean =		-1.4319				
			StDev =		0.6263				
			N =		43				
			Z(95) =		1.64485				
			Q(95) =		-0.4018	Exp =	**0.669**		
			H(95) =		1.997				
			UCL(95) =		**0.35246**				

Cadium
Statistical Calculations

Cadmium (mg/kg)					41						
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	Y_n-i+1	Y_i	
00-BGN134	S1456786	0	2.6		2.6	0.955511	41	0.394	0.9555	-2.08	1.196
20-UGS	S1454360	2	2.4		2.4	0.875469	40	0.2719	0.8755	-2.08	0.803
20-UGS	S1454369	0	1.9		1.9	0.641854	39	0.2357	0.6419	-2.08	0.641
06-UGS	S1454550	2	1.7		1.7	0.530628	38	0.2091	0.5306	-2.08	0.546
00-BGN156	S1456771	2	1.6		1.6	0.470004	37	0.1876	0.47	-2.04	0.471
07-DBMW10(	S1457114	8	1.5		1.5	0.405465	36	0.1693	0.4055	-2.04	0.414
12-UGS	S1454210	2	1.5		1.5	0.405465	35	0.1531	0.4055	-2.04	0.374
00-BGN134	S1456787	2	1.5		1.5	0.405465	34	0.1384	0.4055	-1.35	0.243
00-BGN156	S1456659	0	1.3		1.3	0.262364	33	0.1249	0.2624	-1.29	0.194
00-BGN156	S1456650	2	1.2		1.2	0.182322	32	0.1123	0.1823	-1.26	0.161
13-UGS	S1454219	2	1.1	B	1.1	0.09531	31	0.1004	0.0953	-0.98	0.108
00-BGN278	S1456782	0	1.1	B	1.1	0.09531	30	0.0891	0.0953	-0.97	0.095
05-UGS	S1454402	0	0.99	B	0.99	-0.01005	29	0.0782	-0.0101	-0.97	0.075
21-UGS	S1454367	2	0.97	B	0.97	-0.03046	28	0.0677	-0.0305	-0.9	0.059
05-UGS	S1454040	0	0.96	B	0.96	-0.04082	27	0.0575	-0.0408	-0.89	0.049
07-DBMW10(	S1457113	3	0.85	B	0.85	-0.16252	26	0.0476	-0.1625	-0.87	0.034
00-BGN112	S1456656	2	0.84	B	0.84	-0.17435	25	0.0379	-0.1744	-0.84	0.025
03-UGS	S1454399	0	0.75	B	0.75	-0.28768	24	0.0283	-0.2877	-0.73	0.013
00-BGN112	S1456655	0	0.75	B	0.75	-0.28768	23	0.0188	-0.2877	-0.43	0.003
00-BGN278	S1456783	2	0.73	B	0.73	-0.31471	22	0.0094	-0.3147	-0.43	0.001
15-UGS	S1454266	2	0.66	B	0.66	-0.41552	21	0	-0.4155	-0.42	0.000
00-BGN111	S1456665	0	0.65	B	0.65	-0.43078	20				
00-BGN234	S1456778	0	0.65	B	0.65	-0.43078	19				
00-BGN234	S1456779	2	0.48	B	0.48	-0.73397	18				
00-BGN178	S1456662	2	0.43	B	0.43	-0.84397	17				
16-UGX	S1454299	0	0.84	U	0.42	-0.8675	16				
03-UGS	S1454013	0	0.41	B	0.41	-0.8916	15				
16-UGX	S1454302	2	0.81	U	0.405	-0.90387	14				
00-BGN256	S1456780	0	0.38	B	0.38	-0.96758	13				
00-BGN178	S1456661	0	0.38	B	0.38	-0.96758	12				
18-UGS	S1454528	0	0.75	U	0.375	-0.98083	11				
02-UGS	S1454502	2	0.57	U	0.285	-1.25527	10				
02-UGS	S1454008	0	0.55	U	0.275	-1.29098	9				
16-UGS	S1454529	2	0.52	U	0.26	-1.34707	8				
00-BGN256	S1456773	2	0.26	U	0.13	-2.04022	7				
00-BGN256	S1456781	2	0.26	U	0.13	-2.04022	6				
00-BGN212	S1456777	2	0.26	U	0.13	-2.04022	5				
00-BGN111	S1456775	2	0.25	U	0.125	-2.07944	4				
00-BGN2910	S1456784	0	0.25	U	0.125	-2.07944	3				
00-BGN2910	S1456785	2	0.25	U	0.125	-2.07944	2				
00-BGN212	S1456776	0	0.25	U	0.125	-2.07944	1				
Exclude (Outliers):											
00-BGN1910	S1456664	2	11.4								
00-BGN1910	S1456663	0	10.6								
Summary Statistics:				Mean	0.80951	-0.55485					

Cadium
Statistical Calculations

	Standard Error	0.0985	0.1413
	Median	0.66	-0.41552
	Mode	0.125	-2.07944
	Standard Deviation	0.63072	0.904761
	Sample Variance	0.39781	0.818593
	Kurtosis	0.7754	-0.84797
	Skewness	1.0756	-0.36891
	Range	2.475	3.034953
	Minimum	0.125	-2.07944
	Maximum	2.6	0.955511
	Sum	33.19	-22.7488
	Count	41	41
	Confidence Level (95.0%)	0.19908	0.285578
W Test for LN Distribution:	d =		32.74371
	k =		20
	W =		0.925462
	W(5) =		0.941
	W < W(5)	Reject	LN
Q(95) Nonparametric Distribution:	P =	0.95	
	N =	41	
	Z(5) =	1.64485	
	k =	39.9	39 40
	Q(95) =	**2.35**	1.9 2.4
UCL(95,50) Nonparametric Distribution:	P =	0.5	
	N =	41	
	Z(5) =	1.64485	
	U =	26.2661	26 27
	UCL(95,50) =	**0.87927**	0.85 0.96

Calcium
Statistical Calculations

Calcium (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGN1910	S1456664	2	67600		67600	11.12136	43
00-BGN1910	S1456663	0	55100		55100	10.9169	42
13-UGS	S1454219	2	9540	B	9540	9.163249	41
15-UGS	S1454266	2	9530		9530	9.1622	40
16-UGX	S1454302	2	6990		6990	8.852236	39
00-BGN156	S1456659	0	6150		6150	8.724207	38
00-BGN178	S1456662	2	5810		5810	8.667336	37
20-UGS	S1454360	2	5740		5740	8.655214	36
16-UGS	S1454529	2	5260		5260	8.567886	35
03-UGS	S1454399	0	5220		5220	8.560253	34
07-DBMW100	S1457114	8	5140		5140	8.544808	33
00-BGN156	S1456650	2	5070		5070	8.531096	32
00-BGN256	S1456780	0	5020		5020	8.521185	31
00-BGN156	S1456771	2	4830		4830	8.482602	30
00-BGN256	S1456773	2	4810		4810	8.478452	29
00-BGN256	S1456781	2	4680		4680	8.451053	28
00-BGN178	S1456661	0	4550		4550	8.422883	27
06-UGS	S1454550	2	4490		4490	8.409608	26
20-UGS	S1454369	0	4380		4380	8.384804	25
03-UGS	S1454013	0	4300		4300	8.36637	24
00-BGN134	S1456787	2	4230		4230	8.349957	23
12-UGS	S1454210	2	4210		4210	8.345218	22
16-UGX	S1454299	0	4100		4100	8.318742	21
00-BGN134	S1456786	0	3430		3430	8.140316	20
21-UGS	S1454367	2	3370		3370	8.122668	19
00-BGN278	S1456782	0	3330		3330	8.110728	18
00-BGN111	S1456665	0	3220		3220	8.077137	17
05-UGS	S1454402	0	3080		3080	8.032685	16
00-BGN2910	S1456785	2	3060		3060	8.02617	15
07-DBMW100	S1457113	3	2930		2930	7.982758	14
05-UGS	S1454040	0	2920		2920	7.979339	13
00-BGN112	S1456656	2	2560		2560	7.847763	12
18-UGS	S1454528	0	2550		2550	7.843849	11
00-BGN2910	S1456784	0	2530		2530	7.835975	10
02-UGS	S1454502	2	2520		2520	7.832014	9
00-BGN111	S1456775	2	2450		2450	7.803843	8
00-BGN278	S1456783	2	2280		2280	7.731931	7
00-BGN212	S1456777	2	2250		2250	7.718685	6
00-BGN212	S1456776	0	2040		2040	7.620705	5
00-BGN112	S1456655	0	2000		2000	7.600902	4
02-UGS	S1454008	0	1800		1800	7.495542	3
00-BGN234	S1456779	2	1530		1530	7.333023	2
00-BGN234	S1456778	0	1500		1500	7.31322	1
Summary Statistics:				Mean	6700	8.335974	

Calcium
Statistical Calculations

			Standard Error		1894.343	0.113274	
				Median	4210	8.345218	
				Mode	#N/A	#N/A	
			Standard Deviation		12422.04	0.742787	
			Sample Variance		1.54E+08	0.551733	
				Kurtosis	18.97985	6.648878	
				Skewness	4.3988	2.164871	
				Range	66100	3.808143	
				Minimum	1500	7.31322	
				Maximum	67600	11.12136	
				Sum	288100	358.4469	
				Count	43	43	
			Confidence Level (95.0%)		3822.94	0.228596	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	43		
				Z(5) =	1.644853		
				k =	41.8	41	42
				Q(95) =	**45988**	9540	55100
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	43		
				Z(5) =	1.644853		
				U =	27.39301		
			UCL(95,50) =		**4601.091**		

Chromium
Statistical Calculations

Chromium (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	55		55	4.007333	0.3894	4.007	0.223	1.474
00-BGN1910	S1456664	2	43.7		43.7	3.777348	0.2684	3.777	0.300	0.933
00-BGN112	S1456656	2	25.5		25.5	3.238678	0.2334	3.239	0.438	0.654
20-UGS	S1454360	2	17.7		17.7	2.873565	0.2078	2.874	0.693	0.453
00-BGN134	S1456787	2	16		16	2.772589	0.1871	2.773	0.742	0.380
12-UGS	S1454210	2	15.9		15.9	2.766319	0.1695	2.766	0.811	0.331
00-BGN112	S1456655	0	12.4		12.4	2.517696	0.1539	2.518	0.811	0.263
20-UGS	S1454369	0	12.1		12.1	2.493205	0.1398	2.493	1.065	0.200
07-DBMW10(	S1457114	8	11.9		11.9	2.476538	0.1269	2.477	1.163	0.167
00-BGN156	S1456771	2	11.4		11.4	2.433613	0.1149	2.434	1.335	0.126
13-UGS	S1454219	2	10.7		10.7	2.370244	0.1035	2.370	1.504	0.090
06-UGS	S1454550	2	10.6		10.6	2.360854	0.0927	2.361	1.526	0.077
00-BGN156	S1456650	2	10.5		10.5	2.351375	0.0824	2.351	1.589	0.063
15-UGS	S1454266	2	10.3		10.3	2.332144	0.0724	2.332	1.609	0.052
00-BGN234	S1456778	0	10.2		10.2	2.322388	0.0628	2.322	1.629	0.044
00-BGN134	S1456786	0	9.2		9.2	2.219203	0.0534	2.219	1.668	0.029
21-UGS	S1454367	2	9		9	2.197225	0.0442	2.197	1.758	0.019
00-BGN156	S1456659	0	8		8	2.079442	0.0352	2.079	1.825	0.009
03-UGS	S1454399	0	7.9		7.9	2.066863	0.0263	2.067	1.872	0.005
00-BGN234	S1456779	2	7.6		7.6	2.028148	0.0175	2.028	1.902	0.002
07-DBMW10(	S1457113	3	7.1		7.1	1.960095	0.0087	1.960	1.946	0.000
00-BGN111	S1456775	2	7.1		7.1	1.960095	0	1.960	1.960	0.000
05-UGS	S1454402	0	7		7	1.94591				
00-BGN178	S1456661	0	6.7		6.7	1.902108				
00-BGN278	S1456782	0	6.5		6.5	1.871802				
00-BGN111	S1456665	0	6.2		6.2	1.824549				
05-UGS	S1454040	0	5.8		5.8	1.757858				
00-BGN178	S1456662	2	5.3		5.3	1.667707				
16-UGX	S1454299	0	5.1		5.1	1.629241				
02-UGS	S1454502	2	5		5	1.609438				
03-UGS	S1454013	0	4.9		4.9	1.589235				
16-UGX	S1454302	2	4.6		4.6	1.526056				
18-UGS	S1454528	0	4.5		4.5	1.504077				
16-UGS	S1454529	2	3.8		3.8	1.335001				
02-UGS	S1454008	0	3.2		3.2	1.163151				
00-BGN278	S1456783	2	5.8	U	2.9	1.064711				
00-BGN256	S1456780	0	4.5	U	2.25	0.81093				
00-BGN256	S1456773	2	4.5	U	2.25	0.81093				
00-BGN212	S1456777	2	2.1	B	2.1	0.741937				
00-BGN256	S1456781	2	4	U	2	0.693147				
00-BGN2910	S1456784	0	3.1	U	1.55	0.438255				
00-BGN212	S1456776	0	2.7	U	1.35	0.300105				
00-BGN2910	S1456785	2	2.5	U	1.25	0.223144				
Summary Statistics:				Mean	9.62907	1.907308				
			Standard Error		1.56085	0.128267				
				Median	7.1	1.960095				

Chromium
Statistical Calculations

				Mode	7.1	1.960095				
				Standard Deviation	10.2352	0.841105				
				Sample Variance	104.759	0.707458				
				Kurtosis	11.0176	0.325066				
				Skewness	3.09847	0.08703				
				Range	53.75	3.78419				
				Minimum	1.25	0.223144				
				Maximum	55	4.007333				
				Sum	414.05	82.01425				
				Count	43	43				
			Confidence Level (95.0%)		3.14993	0.258854				
W Test for LN Distribution:				d =		29.71322				
				k =		21				
				W =		0.970942				
				W(5) =		0.943				
				W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:				Mean =		1.907308				
				StDev =		0.841105				
				N =		43				
				Z(95) =		1.644853				
				Q(95) =		3.290802	Exp =	**26.8644**		
				H(95) =		2.188				
				UCL(95) =		**12.74332**				

Cobalt
Statistical Calculations

Cobalt (mg/kg)											
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	X_n-i+1	X_i	
00-BGN134	S1456786	0	9.7	B	9.7	2.272126	43	0.3894	9.700	0.600	3.544
12-UGS	S1454210	2	6.9	B	6.9	1.931521	42	0.2684	6.900	0.600	1.691
20-UGS	S1454360	2	6.8	B	6.8	1.916923	41	0.2334	6.800	0.600	1.447
13-UGS	S1454219	2	6.5	B	6.5	1.871802	40	0.2078	6.500	0.600	1.226
00-BGN112	S1456656	2	6.5	B	6.5	1.871802	39	0.1871	6.500	0.650	1.095
00-BGN1910	S1456664	2	6	B	6	1.791759	38	0.1695	6.000	0.650	0.907
06-UGS	S1454550	2	5.5	B	5.5	1.704748	37	0.1539	5.500	0.650	0.746
15-UGS	S1454266	2	5.4	B	5.4	1.686399	36	0.1398	5.400	1.700	0.517
00-BGN112	S1456655	0	5.2	B	5.2	1.648659	35	0.1269	5.200	1.700	0.444
00-BGN1910	S1456663	0	5.2	B	5.2	1.648659	34	0.1149	5.200	1.800	0.391
00-BGN134	S1456787	2	5	B	5	1.609438	33	0.1035	5.000	1.900	0.321
21-UGS	S1454367	2	4.9	B	4.9	1.589235	32	0.0927	4.900	1.900	0.278
07-DBMW100	S1457114	8	4.6	B	4.6	1.526056	31	0.0824	4.600	2.000	0.214
20-UGS	S1454369	0	4.6	B	4.6	1.526056	30	0.0724	4.600	2.300	0.167
03-UGS	S1454399	0	4.5	B	4.5	1.504077	29	0.0628	4.500	2.400	0.132
00-BGN156	S1456659	0	4.3	B	4.3	1.458615	28	0.0534	4.300	2.500	0.096
00-BGN156	S1456650	2	4.2	B	4.2	1.435085	27	0.0442	4.200	2.800	0.062
00-BGN156	S1456771	2	4.1	B	4.1	1.410987	26	0.0352	4.100	2.800	0.046
00-BGN178	S1456661	0	4	B	4	1.386294	25	0.0263	4.000	2.800	0.032
00-BGN178	S1456662	2	3.6	B	3.6	1.280934	24	0.0175	3.600	2.800	0.014
16-UGX	S1454302	2	3.2	B	3.2	1.163151	23	0.0087	3.200	2.900	0.003
03-UGS	S1454013	0	2.9	B	2.9	1.064711	22	0	2.900	2.900	0.000
16-UGX	S1454299	0	2.9	B	2.9	1.064711	21				
02-UGS	S1454502	2	2.8	B	2.8	1.029619	20				
07-DBMW100	S1457113	3	2.8	B	2.8	1.029619	19				
18-UGS	S1454528	0	2.8	B	2.8	1.029619	18				
00-BGN278	S1456782	0	2.8	B	2.8	1.029619	17				
00-BGN234	S1456779	2	2.5	B	2.5	0.916291	16				
05-UGS	S1454040	0	2.4	B	2.4	0.875469	15				
00-BGN111	S1456665	0	2.3	B	2.3	0.832909	14				
00-BGN234	S1456778	0	2	B	2	0.693147	13				
16-UGS	S1454529	2	1.9	B	1.9	0.641854	12				
00-BGN278	S1456783	2	1.9	B	1.9	0.641854	11				
05-UGS	S1454402	0	1.8	B	1.8	0.587787	10				
02-UGS	S1454008	0	1.7	B	1.7	0.530628	9				
00-BGN111	S1456775	2	1.7	B	1.7	0.530628	8				
00-BGN256	S1456773	2	1.3	U	0.65	-0.43078	7				
00-BGN256	S1456781	2	1.3	U	0.65	-0.43078	6				
00-BGN212	S1456777	2	1.3	U	0.65	-0.43078	5				
00-BGN256	S1456780	0	1.2	U	0.6	-0.51083	4				
00-BGN2910	S1456784	0	1.2	U	0.6	-0.51083	3				
00-BGN2910	S1456785	2	1.2	U	0.6	-0.51083	2				
00-BGN212	S1456776	0	1.2	U	0.6	-0.51083	1				
Summary Statistics:				Mean	3.49419	1.009236					

Cobalt
Statistical Calculations

Standard Error	0.32356	0.11981
Median	2.9	1.064711
Mode	2.8	1.029619
Standard Deviation	2.12175	0.785649
Sample Variance	4.50181	0.617244
Kurtosis	0.20162	-0.25516
Skewness	0.57807	-0.81579
Range	9.1	2.782952
Minimum	0.6	-0.51083
Maximum	9.7	2.272126
Sum	150.25	43.39714
Count	43	43
Confidence Level (95.0%)	0.65298	0.241787
W Test for N Distribution: d =	189.076	
k =	21	
W =	0.94555	
W(5) =	0.943	
W > W(5)	Accept	N
Q(95) & UCL(95) N Distribution: Mean =	3.49419	
StDev =	2.12175	
N =	43	
Z(95) =	1.64485	
Q(95) =	**6.98415**	
t(95) =	1.683	
UCL(95) =	**4.03874**	

Copper
Statistical Calculations

Copper (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	X_n-i+1	X_i	
00-BGN156	S1456659	0	11.1		11.1	2.40695	0.394	11.1	0.36	4.232
20-UGS	S1454360	2	10.3		10.3	2.33214	0.2719	10.3	0.72	2.605
07-DBMW100	S1457114	8	9.9		9.9	2.29253	0.2357	9.9	1.1	2.074
20-UGS	S1454369	0	9.7		9.7	2.27213	0.2091	9.7	1.4	1.736
12-UGS	S1454210	2	9.6		9.6	2.26176	0.1876	9.6	1.6	1.501
00-BGN134	S1456787	2	9.5		9.5	2.25129	0.1693	9.5	1.6	1.337
00-BGN156	S1456771	2	9.3		9.3	2.23001	0.1531	9.3	2	1.118
00-BGN156	S1456650	2	9		9	2.19722	0.1384	9	2.9	0.844
13-UGS	S1454219	2	8.7		8.7	2.16332	0.1249	8.7	3.2	0.687
06-UGS	S1454550	2	8.6		8.6	2.15176	0.1123	8.6	3.8	0.539
00-BGN134	S1456786	0	8.5		8.5	2.14007	0.1004	8.5	3.8	0.472
21-UGS	S1454367	2	7.2		7.2	1.97408	0.0891	7.2	4	0.285
00-BGN112	S1456656	2	7.1		7.1	1.96009	0.0782	7.1	4.1	0.235
15-UGS	S1454266	2	7		7	1.94591	0.0677	7	4.1	0.196
07-DBMW100	S1457113	3	6.8		6.8	1.91692	0.0575	6.8	4.2	0.150
05-UGS	S1454040	0	6.7		6.7	1.90211	0.0476	6.7	4.3	0.114
00-BGN112	S1456655	0	6.6		6.6	1.88707	0.0379	6.6	4.3	0.087
03-UGS	S1454399	0	6.4		6.4	1.8563	0.0283	6.4	4.6	0.051
05-UGS	S1454402	0	5.8		5.8	1.75786	0.0188	5.8	4.7	0.021
00-BGN178	S1456661	0	5.6		5.6	1.72277	0.0094	5.6	5.1	0.005
00-BGN234	S1456778	0	5.6		5.6	1.72277	0	5.6	5.6	0.000
00-BGN178	S1456662	2	5.1	B	5.1	1.62924				
00-BGN278	S1456782	0	4.7	B	4.7	1.54756				
03-UGS	S1454013	0	4.6	B	4.6	1.52606				
02-UGS	S1454502	2	4.3	B	4.3	1.45862				
00-BGN256	S1456780	0	4.3	B	4.3	1.45862				
16-UGX	S1454302	2	4.2	B	4.2	1.43508				
00-BGN111	S1456665	0	4.1	B	4.1	1.41099				
00-BGN234	S1456779	2	4.1	B	4.1	1.41099				
16-UGX	S1454299	0	4	B	4	1.38629				
18-UGS	S1454528	0	3.8	B	3.8	1.335				
16-UGS	S1454529	2	3.8	B	3.8	1.335				
00-BGN278	S1456783	2	3.2	B	3.2	1.16315				
02-UGS	S1454008	0	2.9	B	2.9	1.06471				
00-BGN212	S1456776	0	2	J	2	0.69315				
00-BGN256	S1456773	2	1.6	J	1.6	0.47				
00-BGN111	S1456775	2	1.6	B	1.6	0.47				
00-BGN256	S1456781	2	1.4	J	1.4	0.33647				
00-BGN2910	S1456784	0	1.1	J	1.1	0.09531				
00-BGN212	S1456777	2	0.72	J	0.72	-0.3285				
00-BGN2910	S1456785	2	0.36	J	0.36	-1.02165				
Excluded (Outliers):										
00-BGN1910	S1456664	2	37.9							
00-BGN1910	S1456663	0	36.2							
Summary Statistics:				Mean	5.63122	1.51759				
				Standard Error	0.46216	0.12045				
				Median	5.6	1.72277				

Copper
Statistical Calculations

Mode	5.6	1.72277
Standard Deviation	2.95927	0.77126
Sample Variance	8.7573	0.59484
Kurtosis	-0.9844	2.15189
Skewness	0.03052	-1.45018
Range	10.74	3.4286
Minimum	0.36	-1.02165
Maximum	11.1	2.40695
Sum	230.88	62.2212
Count	41	41
Confidence Level (95.0%)	0.93406	0.24344
W Test for N Distribution: d =	350.292	
k =	20	
W =	0.95471	
W(5) =	0.941	
W > W(5)	Accept	N
Q(95) & UCL(95) N Distribution: Mean =	5.63122	
StDev =	2.95927	
N =	41	
Z(95) =	1.64485	
Q(95) =	**10.4988**	
t(95) =	1.683	
UCL(95) =	**6.40904**	

Iron
Statistical Calculations

Iron (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
12-UGS	S1454210	2	19000		19000	9.852194	43
00-BGN1910	S1456663	0	18500		18500	9.825526	42
20-UGS	S1454360	2	17800		17800	9.786954	41
00-BGN1910	S1456664	2	17700		17700	9.78132	40
00-BGN112	S1456656	2	17400		17400	9.764225	39
00-BGN134	S1456787	2	16300		16300	9.69892	38
15-UGS	S1454266	2	15200		15200	9.629051	37
13-UGS	S1454219	2	14100		14100	9.55393	36
20-UGS	S1454369	0	12900		12900	9.464983	35
07-DBMW100	S1457114	8	12800		12800	9.4572	34
00-BGN156	S1456771	2	12500		12500	9.433484	33
06-UGS	S1454550	2	12400		12400	9.425452	32
00-BGN112	S1456655	0	12300		12300	9.417355	31
21-UGS	S1454367	2	12100		12100	9.400961	30
00-BGN156	S1456650	2	11600		11600	9.35876	29
03-UGS	S1454399	0	11300		11300	9.332558	28
00-BGN134	S1456786	0	10900		10900	9.296518	27
00-BGN178	S1456661	0	9640		9640	9.173676	26
00-BGN156	S1456659	0	9360		9360	9.144201	25
07-DBMW100	S1457113	3	8780		8780	9.080232	24
05-UGS	S1454402	0	8550		8550	9.053687	23
00-BGN178	S1456662	2	8410		8410	9.037177	22
16-UGX	S1454302	2	8390		8390	9.034796	21
00-BGN234	S1456779	2	8090		8090	8.998384	20
00-BGN234	S1456778	0	7540		7540	8.927977	19
16-UGX	S1454299	0	7450		7450	8.915969	18
05-UGS	S1454040	0	7350		7350	8.902456	17
03-UGS	S1454013	0	7260		7260	8.890135	16
00-BGN278	S1456782	0	7140		7140	8.873468	15
18-UGS	S1454528	0	6400		6400	8.764053	14
00-BGN278	S1456783	2	6310		6310	8.749891	13
02-UGS	S1454502	2	6030		6030	8.704502	12
16-UGS	S1454529	2	5740		5740	8.655214	11
02-UGS	S1454008	0	4030		4030	8.301522	10
00-BGN111	S1456665	0	3980		3980	8.289037	9
00-BGN256	S1456780	0	3890		3890	8.266164	8
00-BGN111	S1456775	2	3580		3580	8.183118	7
00-BGN256	S1456773	2	3300		3300	8.101678	6
00-BGN256	S1456781	2	2790		2790	7.933797	5
00-BGN2910	S1456784	0	2310		2310	7.745003	4
00-BGN212	S1456776	0	2310		2310	7.745003	3
00-BGN2910	S1456785	2	2260		2260	7.72312	2
00-BGN212	S1456777	2	1880		1880	7.539027	1
Summary Statistics:				Mean	9245.814	8.958434	

Iron
Statistical Calculations

			Standard Error		755.3085	0.097844	
				Median	8410	9.037177	
				Mode	2310	7.745003	
			Standard Deviation		4952.889	0.641605	
			Sample Variance		24531111	0.411656	
				Kurtosis	-0.80363	-0.48536	
				Skewness	0.356348	-0.63443	
				Range	17120	2.313167	
				Minimum	1880	7.539027	
				Maximum	19000	9.852194	
				Sum	397570	385.2127	
				Count	43	43	
		Confidence Level (95.0%)			1524.275	0.197457	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	43		
				Z(5) =	1.644853		
				k =	41.8	41	42
				Q(95) =	**18360**	17800	18500
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	43		
				Z(5) =	1.644853		
				U =	27.39301		
			UCL(95,50) =		**11057.2**		

Lead
Statistical Calculations

Lead (mg/kg)											
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	Y_n-i+1	Y_i	
00-BGN156	S1456659	0	22.4		22.4	3.10906	43	0.3894	3.109	-0.400	1.367
20-UGS	S1454369	0	21.4		21.4	3.06339	42	0.2684	3.063	-0.236	0.885
00-BGN234	S1456778	0	17.6		17.6	2.8679	41	0.2334	2.868	0.095	0.647
00-BGN1910	S1456663	0	12.4		12.4	2.5177	40	0.2078	2.518	0.095	0.503
03-UGS	S1454399	0	11		11	2.3979	39	0.1871	2.398	0.095	0.431
03-UGS	S1454013	0	10.9		10.9	2.38876	38	0.1695	2.389	0.336	0.348
00-BGN111	S1456665	0	10.8		10.8	2.37955	37	0.1539	2.380	0.336	0.314
00-BGN256	S1456780	0	10.6		10.6	2.36085	36	0.1398	2.361	0.470	0.264
00-BGN278	S1456782	0	10		10	2.30259	35	0.1269	2.303	0.531	0.225
00-BGN112	S1456655	0	8.6		8.6	2.15176	34	0.1149	2.152	0.588	0.180
16-UGX	S1454299	0	6.8		6.8	1.91692	33	0.1035	1.917	0.642	0.132
00-BGN212	S1456776	0	6.3		6.3	1.84055	32	0.0927	1.841	0.642	0.111
00-BGN134	S1456786	0	4.9		4.9	1.58924	31	0.0824	1.589	0.642	0.078
00-BGN178	S1456661	0	4.9		4.9	1.58924	30	0.0724	1.589	0.742	0.061
00-BGN1910	S1456664	2	4.8		4.8	1.56862	29	0.0628	1.569	0.742	0.052
06-UGS	S1454550	2	4.7		4.7	1.54756	28	0.0534	1.548	0.742	0.043
18-UGS	S1454528	0	4.5		4.5	1.50408	27	0.0442	1.504	0.788	0.032
07-DBMW100	S1457114	8	3.2		3.2	1.16315	26	0.0352	1.163	0.833	0.012
20-UGS	S1454360	2	3.1		3.1	1.1314	25	0.0263	1.131	0.833	0.008
02-UGS	S1454008	0	3		3	1.09861	24	0.0175	1.099	0.956	0.003
00-BGN112	S1456656	2	2.9		2.9	1.06471	23	0.0087	1.065	0.993	0.001
02-UGS	S1454502	2	2.8		2.8	1.02962	22	0	1.030	1.030	0.000
05-UGS	S1454040	0	2.7		2.7	0.99325	21				
05-UGS	S1454402	0	2.6		2.6	0.95551	20				
12-UGS	S1454210	2	2.3		2.3	0.83291	19				
00-BGN156	S1456650	2	2.3		2.3	0.83291	18				
00-BGN234	S1456779	2	2.2		2.2	0.78846	17				
15-UGS	S1454266	2	2.1		2.1	0.74194	16				
21-UGS	S1454367	2	2.1		2.1	0.74194	15				
00-BGN156	S1456771	2	2.1		2.1	0.74194	14				
13-UGS	S1454219	2	1.9		1.9	0.64185	13				
00-BGN111	S1456775	2	1.9		1.9	0.64185	12				
00-BGN134	S1456787	2	1.9		1.9	0.64185	11				
00-BGN2910	S1456784	0	1.8		1.8	0.58779	10				
07-DBMW100	S1457113	3	1.7		1.7	0.53063	9				
00-BGN178	S1456662	2	1.6		1.6	0.47	8				
00-BGN256	S1456773	2	1.4		1.4	0.33647	7				
00-BGN278	S1456783	2	1.4		1.4	0.33647	6				
16-UGX	S1454302	2	1.1		1.1	0.09531	5				
00-BGN256	S1456781	2	1.1		1.1	0.09531	4				
00-BGN212	S1456777	2	1.1		1.1	0.09531	3				
16-UGS	S1454529	2	0.79		0.79	-0.2357	2				
00-BGN2910	S1456785	2	0.67		0.67	-0.4005	1				
Summary Statistics:				Mean	5.21767	1.23369					

Lead
Statistical Calculations

			Standard Error	0.81875	0.13755					
			Median	2.8	1.02962					
			Mode	2.1	0.74194					
			Standard Deviation	5.36888	0.902					
			Sample Variance	28.8249	0.8136					
			Kurtosis	3.06051	-0.6398					
			Skewness	1.84585	0.41703					
			Range	21.73	3.50954					
			Minimum	0.67	-0.4005					
			Maximum	22.4	3.10906					
			Sum	224.36	53.0487					
			Count	43	43					
			Confidence Level (95.0%)	1.6523	0.27759					
W Test for LN Distribution:			d =		34.1712					
			k =		21					
			W =		0.94955					
			W(5) =		0.943					
			W > W(5)	Accept	LN					
Q(95) & UCL(95) LN Distribution:			Mean =		1.23369					
			StDev =		0.902					
			N =		43					
			Z(95) =		1.64485					
			Q(95) =		2.71734	Exp =	**15.14**			
			H(95) =		2.188					
			UCL(95) =		**6.99376**					

Magnesium
Statistical Calculations

Magnesium (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	13600		13600	9.51783	0.3894	9.518	6.850	1.039
00-BGN1910	S1456664	2	7630		7630	8.93984	0.2684	8.940	6.876	0.554
12-UGS	S1454210	2	7570		7570	8.93195	0.2334	8.932	7.039	0.442
13-UGS	S1454219	2	6960		6960	8.84793	0.2078	8.848	7.170	0.349
20-UGS	S1454360	2	6890		6890	8.83783	0.1871	8.838	7.193	0.308
15-UGS	S1454266	2	6780		6780	8.82173	0.1695	8.822	7.193	0.276
00-BGN112	S1456656	2	6610		6610	8.79634	0.1539	8.796	7.272	0.235
07-DBMW100	S1457114	8	5170		5170	8.55063	0.1398	8.551	7.365	0.166
00-BGN134	S1456787	2	4940		4940	8.50512	0.1269	8.505	7.365	0.145
20-UGS	S1454369	0	4810		4810	8.47845	0.1149	8.478	7.560	0.106
06-UGS	S1454550	2	4550		4550	8.42288	0.1035	8.423	7.591	0.086
21-UGS	S1454367	2	4500		4500	8.41183	0.0927	8.412	7.664	0.069
03-UGS	S1454399	0	4390		4390	8.38708	0.0824	8.387	7.673	0.059
00-BGN156	S1456771	2	4030		4030	8.30152	0.0724	8.302	7.682	0.045
00-BGN156	S1456650	2	3930		3930	8.27639	0.0628	8.276	7.728	0.034
00-BGN112	S1456655	0	3810		3810	8.24538	0.0534	8.245	7.762	0.026
00-BGN178	S1456661	0	3700		3700	8.21609	0.0442	8.216	7.808	0.018
07-DBMW100	S1457113	3	3420		3420	8.1374	0.0352	8.137	7.824	0.011
16-UGX	S1454302	2	3330		3330	8.11073	0.0263	8.111	7.919	0.005
00-BGN178	S1456662	2	3290		3290	8.09864	0.0175	8.099	7.990	0.002
00-BGN156	S1456659	0	3270		3270	8.09255	0.0087	8.093	8.058	0.000
03-UGS	S1454013	0	3190		3190	8.06778	0	8.068	8.068	0.000
00-BGN134	S1456786	0	3160		3160	8.05833				
16-UGX	S1454299	0	2950		2950	7.98956				
05-UGS	S1454402	0	2750		2750	7.91936				
00-BGN111	S1456775	2	2500		2500	7.82405				
05-UGS	S1454040	0	2460		2460	7.80792				
18-UGS	S1454528	0	2350		2350	7.76217				
16-UGS	S1454529	2	2270		2270	7.72754				
00-BGN234	S1456779	2	2170		2170	7.68248				
00-BGN234	S1456778	0	2150		2150	7.67322				
00-BGN278	S1456782	0	2130		2130	7.66388				
02-UGS	S1454502	2	1980		1980	7.59085				
00-BGN278	S1456783	2	1920		1920	7.56008				
00-BGN256	S1456780	0	1580		1580	7.36518				
00-BGN111	S1456665	0	1580		1580	7.36518				
00-BGN212	S1456777	2	1440		1440	7.2724				
02-UGS	S1454008	0	1330		1330	7.19293				
00-BGN256	S1456773	2	1330		1330	7.19293				
00-BGN212	S1456776	0	1300		1300	7.17012				
00-BGN256	S1456781	2	1140		1140	7.03878				
00-BGN2910	S1456785	2	969	B	969	6.87626				
00-BGN2910	S1456784	0	944	B	944	6.85013				
Summary Statistics:				Mean	3645.88	8.01347				

Magnesium
Statistical Calculations

			Standard Error	371.664	0.09447				
			Median	3190	8.06778				
			Mode	1580	7.36518				
			Standard Deviation	2437.16	0.61948				
			Sample Variance	5939761	0.38376				
			Kurtosis	5.38259	-0.392				
			Skewness	1.89152	0.08176				
			Range	12656	2.6677				
			Minimum	944	6.85013				
			Maximum	13600	9.51783				
			Sum	156773	344.579				
			Count	43	43				
			Confidence Level (95.0%)	750.048	0.19065				
W Test for LN Distribution:			d =		16.1179				
			k =		21				
			W =		0.9794				
			W(5) =		0.943				
			W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:			Mean =		8.01347				
			StDev =		0.61948				
			N =		43				
			Z(95) =		1.64485				
			Q(95) =		9.03243	Exp =	**8370.17**		
			H(95) =		1.988				
			UCL(95) =		**4426.57**				

Manganese
Statistical Calculations

Manganese (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGN134	S1456786	0	574		574	6.352629	43
12-UGS	S1454210	2	293		293	5.680173	42
20-UGS	S1454360	2	281		281	5.638355	41
00-BGN156	S1456659	0	276		276	5.620401	40
00-BGN156	S1456650	2	272		272	5.605802	39
00-BGN156	S1456771	2	264		264	5.575949	38
00-BGN1910	S1456663	0	263		263	5.572154	37
13-UGS	S1454219	2	253		253	5.533389	36
00-BGN112	S1456655	0	251		251	5.525453	35
15-UGS	S1454266	2	247		247	5.509388	34
21-UGS	S1454367	2	247		247	5.509388	33
00-BGN1910	S1456664	2	241		241	5.484797	32
06-UGS	S1454550	2	238		238	5.472271	31
20-UGS	S1454369	0	238		238	5.472271	30
00-BGN112	S1456656	2	236		236	5.463832	29
07-DBMW100	S1457114	8	225		225	5.4161	28
00-BGN134	S1456787	2	195		195	5.273	27
03-UGS	S1454399	0	189		189	5.241747	26
00-BGN178	S1456661	0	185		185	5.220356	25
07-DBMW100	S1457113	3	176		176	5.170484	24
16-UGX	S1454302	2	174		174	5.159055	23
00-BGN178	S1456662	2	174		174	5.159055	22
00-BGN234	S1456778	0	171		171	5.141664	21
16-UGX	S1454299	0	161		161	5.081404	20
00-BGN278	S1456782	0	150		150	5.010635	19
16-UGS	S1454529	2	149		149	5.003946	18
05-UGS	S1454402	0	148		148	4.997212	17
03-UGS	S1454013	0	140		140	4.941642	16
05-UGS	S1454040	0	136		136	4.912655	15
18-UGS	S1454528	0	131		131	4.875197	14
00-BGN111	S1456775	2	126		126	4.836282	13
00-BGN278	S1456783	2	118		118	4.770685	12
02-UGS	S1454502	2	116		116	4.75359	11
00-BGN256	S1456780	0	105		105	4.65396	10
00-BGN234	S1456779	2	97.4		97.4	4.578826	9
00-BGN111	S1456665	0	92.9		92.9	4.531524	8
02-UGS	S1454008	0	79.7		79.7	4.37827	7
00-BGN256	S1456773	2	64.3		64.3	4.16356	6
00-BGN256	S1456781	2	59.8		59.8	4.091006	5
00-BGN2910	S1456784	0	49.6		49.6	3.903991	4
00-BGN2910	S1456785	2	49.6		49.6	3.903991	3
00-BGN212	S1456776	0	49.3		49.3	3.897924	2
00-BGN212	S1456777	2	13.9		13.9	2.631889	1
Summary Statistics:				Mean	179.0581	5.016649	

Manganese
Statistical Calculations

				Standard Error	14.91762	0.100818		
				Median	174	5.159055		
				Mode	247	5.509388		
				Standard Deviation	97.82135	0.661105		
				Sample Variance	9569.016	0.43706		
				Kurtosis	4.952831	2.951408		
				Skewness	1.377147	-1.29551		
				Range	560.1	3.720741		
				Minimum	13.9	2.631889		
				Maximum	574	6.352629		
				Sum	7699.5	215.7159		
				Count	43	43		
				Confidence Level (95.0%)	30.10498	0.203458		
Q(95) Nonparametric Distribution:				P =	0.95			
				N =	43			
				Z(5) =	1.644853			
				k =	41.8	41	42	
				Q(95) =	**290.6**	281	293	
UCL(95,50) Nonparametric Distribution:				P =	0.5			
				N =	43			
				Z(5) =	1.644853			
				U =	27.39301			
				UCL(95,50) =	**206.7903**			

Mercury
Statistical Calculations

Mercury (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGN112	S1456655	0	0.41		0.41	-0.8916	39
20-UGS	S1454360	2	0.22		0.22	-1.51413	38
00-BGN1910	S1456664	2	0.12		0.12	-2.12026	37
00-BGN1910	S1456663	0	0.11		0.11	-2.20727	36
00-BGN156	S1456659	0	0.09		0.09	-2.40795	35
00-BGN156	S1456771	2	0.09		0.09	-2.40795	34
00-BGN256	S1456780	0	0.07		0.07	-2.65926	33
00-BGN178	S1456661	0	0.04	B	0.04	-3.21888	32
00-BGN234	S1456778	0	0.04	B	0.04	-3.21888	31
20-UGS	S1454369	0	0.06	U	0.03	-3.50656	30
00-BGN278	S1456782	0	0.03	B	0.03	-3.50656	29
00-BGN212	S1456776	0	0.03	B	0.03	-3.50656	28
00-BGN111	S1456665	0	0.05	U	0.025	-3.68888	27
02-UGS	S1454008	0	0.04	U	0.02	-3.91202	26
02-UGS	S1454502	2	0.04	U	0.02	-3.91202	25
03-UGS	S1454013	0	0.04	U	0.02	-3.91202	24
00-BGN134	S1456786	0	0.04	U	0.02	-3.91202	23
00-BGN134	S1456787	2	0.04	U	0.02	-3.91202	22
03-UGS	S1454399	0	0.03	U	0.015	-4.19971	21
05-UGS	S1454040	0	0.03	U	0.015	-4.19971	20
05-UGS	S1454402	0	0.03	U	0.015	-4.19971	19
06-UGS	S1454550	2	0.03	U	0.015	-4.19971	18
07-DBMW100	S1457113	3	0.03	U	0.015	-4.19971	17
07-DBMW100	S1457114	8	0.03	U	0.015	-4.19971	16
12-UGS	S1454210	2	0.03	U	0.015	-4.19971	15
13-UGS	S1454219	2	0.03	U	0.015	-4.19971	14
15-UGS	S1454266	2	0.03	U	0.015	-4.19971	13
21-UGS	S1454367	2	0.03	U	0.015	-4.19971	12
00-BGN256	S1456773	2	0.03	U	0.015	-4.19971	11
00-BGN256	S1456781	2	0.03	U	0.015	-4.19971	10
00-BGN278	S1456783	2	0.03	U	0.015	-4.19971	9
00-BGN111	S1456775	2	0.03	U	0.015	-4.19971	8
00-BGN112	S1456656	2	0.03	U	0.015	-4.19971	7
00-BGN156	S1456650	2	0.03	U	0.015	-4.19971	6
00-BGN178	S1456662	2	0.03	U	0.015	-4.19971	5
00-BGN2910	S1456784	0	0.03	U	0.015	-4.19971	4
00-BGN2910	S1456785	2	0.03	U	0.015	-4.19971	3
00-BGN212	S1456777	2	0.03	U	0.015	-4.19971	2
00-BGN234	S1456779	2	0.03	U	0.015	-4.19971	1
Summary Statistics:				Mean	0.044103	-3.65663	

Mercury
Statistical Calculations

			Standard Error		0.01166	0.136916	
			Median		0.015	-4.19971	
			Mode		0.015	-4.19971	
			Standard Deviation		0.072818	0.855039	
			Sample Variance		0.005302	0.731091	
			Kurtosis		17.53103	2.357294	
			Skewness		3.933919	1.742221	
			Range		0.395	3.308107	
			Minimum		0.015	-4.19971	
			Maximum		0.41	-0.8916	
			Sum		1.72	-142.609	
			Count		39	39	
			Confidence Level (95.0%)		0.022854	0.26835	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	39		
				Z(5) =	1.644853		
				k =	38	38	39
				Q(95) =	**0.22**	0.22	0.41
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	39		
				Z(5) =	1.644853		
				U =	25.13605		
				UCL(95,50) =	**0.02**		

Nickel
Statistical Calculations

Nickel (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN134	S1456787	2	14.5		14.5	2.674149	0.3964	2.67415	-0.22314	1.148
07-DBMW100	S1457114	8	14.3		14.3	2.66026	0.2737	2.66026	-0.22314	0.789
20-UGS	S1454360	2	12.7		12.7	2.541602	0.2368	2.5416	-0.16252	0.640
06-UGS	S1454550	2	10.8		10.8	2.379546	0.2098	2.37955	0.47	0.401
12-UGS	S1454210	2	10.6		10.6	2.360854	0.1878	2.36085	0.58779	0.333
00-BGN112	S1456656	2	10.6		10.6	2.360854	0.1691	2.36085	0.58779	0.300
00-BGN156	S1456771	2	10.1		10.1	2.312535	0.1526	2.31254	0.71784	0.243
20-UGS	S1454369	0	9.9		9.9	2.292535	0.1376	2.29253	0.78846	0.207
13-UGS	S1454219	2	8.4	B	8.4	2.128232	0.1237	2.12823	0.91629	0.150
00-BGN156	S1456659	0	8	B	8	2.079442	0.1108	2.07944	1.09861	0.109
15-UGS	S1454266	2	7.6	B	7.6	2.028148	0.0986	2.02815	1.11514	0.090
00-BGN156	S1456650	2	7.4	B	7.4	2.00148	0.087	2.00148	1.16315	0.073
21-UGS	S1454367	2	7.2	B	7.2	1.974081	0.0759	1.97408	1.22378	0.057
00-BGN278	S1456782	0	6.4	B	6.4	1.856298	0.0651	1.8563	1.22378	0.041
00-BGN112	S1456655	0	5.7	B	5.7	1.740466	0.0546	1.74047	1.22378	0.028
00-BGN234	S1456778	0	5.6	B	5.6	1.722767	0.0444	1.72277	1.25276	0.021
00-BGN278	S1456783	2	5.3	B	5.3	1.667707	0.0343	1.66771	1.28093	0.013
00-BGN111	S1456665	0	5.3	B	5.3	1.667707	0.0244	1.66771	1.28093	0.009
02-UGS	S1454502	2	5.1	B	5.1	1.629241	0.0146	1.62924	1.36098	0.004
00-BGN111	S1456775	2	4.6	B	4.6	1.526056	0.0049	1.52606	1.38629	0.001
18-UGS	S1454528	0	4	B	4	1.386294				
16-UGS	S1454529	2	3.9	B	3.9	1.360977				
07-DBMW100	S1457113	3	7.2	U	3.6	1.280934				
16-UGX	S1454302	2	3.6	B	3.6	1.280934				
00-BGN234	S1456779	2	3.5	B	3.5	1.252763				
16-UGX	S1454299	0	3.4	B	3.4	1.223775				
00-BGN256	S1456780	0	3.4	B	3.4	1.223775				
00-BGN178	S1456661	0	3.4	B	3.4	1.223775				
05-UGS	S1454040	0	6.4	U	3.2	1.163151				
05-UGS	S1454402	0	6.1	U	3.05	1.115142				
00-BGN178	S1456662	2	3	B	3	1.098612				
02-UGS	S1454008	0	2.5	B	2.5	0.916291				
00-BGN256	S1456773	2	2.2	B	2.2	0.788457				
03-UGS	S1454399	0	4.1	U	2.05	0.71784				
00-BGN212	S1456776	0	1.8	B	1.8	0.587787				
00-BGN212	S1456777	2	1.8	B	1.8	0.587787				
03-UGS	S1454013	0	3.2	U	1.6	0.470004				
00-BGN256	S1456781	2	1.7	U	0.85	-0.16252				
00-BGN2910	S1456784	0	1.6	U	0.8	-0.22314				
00-BGN2910	S1456785	2	1.6	U	0.8	-0.22314				
Excluded (Outliers):										
00-BGN1910	S1456664	2	71.1							
00-BGN1910	S1456663	0	64.3							
00-BGN134	S1456786	0	57.9							
Summary Statistics:				Mean	5.56375	1.466836				
			Standard Error		0.591183	0.120976				
				Median	4.3	1.456175				

Nickel
Statistical Calculations

				Mode	3.4	1.223775				
			Standard Deviation		3.738966	0.765117				
			Sample Variance		13.97987	0.585405				
				Kurtosis	-0.10357	-0.16719				
				Skewness	0.859658	-0.49783				
				Range	13.7	2.897292				
				Minimum	0.8	-0.22314				
				Maximum	14.5	2.674149				
				Sum	222.55	58.67345				
				Count	40	40				
			Confidence Level (95.0%)		1.195778	0.244696				
W Test for LN Distribution:				d =		22.83079				
				k =		20				
				W =		0.950261				
				W(5) =		0.941				
				W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:				Mean =		1.466836				
				StDev =		0.765117				
				N =		40				
				Z(95) =		1.644853				
				Q(95) =		2.725342	Exp =	**15.2616**		
				H(95) =		2.1175				
				UCL(95) =		**7.53055**				

Potassium
Statistical Calculations

Potassium (mg/kg)											
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	X_n-i+1	X_i	
00-BGN1910	S1456663	0	6230		6230	8.7371	43	0.3894	6230	276	2318.49
20-UGS	S1454360	2	4940		4940	8.5051	42	0.2684	4940	353	1231.15
12-UGS	S1454210	2	4910		4910	8.499	41	0.2334	4910	435	1044.47
00-BGN1910	S1456664	2	4880		4880	8.4929	40	0.2078	4880	451	920.35
15-UGS	S1454266	2	4520		4520	8.4163	39	0.1871	4520	522	748.03
20-UGS	S1454369	0	4500		4500	8.4118	38	0.1695	4500	852	618.34
13-UGS	S1454219	2	4370		4370	8.3825	37	0.1539	4370	890	535.57
00-BGN112	S1456656	2	3780		3780	8.2375	36	0.1398	3780	891	403.88
21-UGS	S1454367	2	3610		3610	8.1915	35	0.1269	3610	1170	309.64
03-UGS	S1454399	0	3460		3460	8.149	34	0.1149	3460	1250	253.93
06-UGS	S1454550	2	3340		3340	8.1137	33	0.1035	3340	1350	205.97
00-BGN156	S1456659	0	3290		3290	8.0986	32	0.0927	3290	1470	168.71
00-BGN112	S1456655	0	3110		3110	8.0424	31	0.0824	3110	1500	132.66
00-BGN134	S1456786	0	2990		2990	8.003	30	0.0724	2990	1630	98.46
00-BGN156	S1456650	2	2990		2990	8.003	29	0.0628	2990	1950	65.31
00-BGN134	S1456787	2	2910		2910	7.9759	28	0.0534	2910	2020	47.53
00-BGN156	S1456771	2	2870		2870	7.9621	27	0.0442	2870	2070	35.36
16-UGX	S1454299	0	2830		2830	7.948	26	0.0352	2830	2110	25.34
03-UGS	S1454013	0	2780		2780	7.9302	25	0.0263	2780	2160	16.31
07-DBMW100	S1457114	8	2690		2690	7.8973	24	0.0175	2690	2250	7.70
00-BGN178	S1456661	0	2670		2670	7.8898	23	0.0087	2670	2310	3.13
16-UGX	S1454302	2	2530		2530	7.836	22	0	2530	2530	0.00
18-UGS	S1454528	0	2310		2310	7.745	21				
00-BGN278	S1456782	0	2250		2250	7.7187	20				
07-DBMW100	S1457113	3	2160		2160	7.6779	19				
05-UGS	S1454402	0	2110		2110	7.6544	18				
00-BGN234	S1456778	0	2070		2070	7.6353	17				
00-BGN178	S1456662	2	2020		2020	7.6109	16				
05-UGS	S1454040	0	1950		1950	7.5756	15				
16-UGS	S1454529	2	1630		1630	7.3963	14				
02-UGS	S1454502	2	1500		1500	7.3132	13				
00-BGN256	S1456780	0	1470		1470	7.293	12				
00-BGN234	S1456779	2	1350		1350	7.2079	11				
02-UGS	S1454008	0	1250		1250	7.1309	10				
00-BGN278	S1456783	2	1170		1170	7.0648	9				
00-BGN2910	S1456784	0	891	B	891	6.7923	8				
00-BGN212	S1456776	0	890	B	890	6.7912	7				
00-BGN111	S1456665	0	852	B	852	6.7476	6				
00-BGN256	S1456773	2	522	B	522	6.2577	5				
00-BGN256	S1456781	2	451	B	451	6.1115	4				
00-BGN2910	S1456785	2	435	B	435	6.0753	3				
00-BGN212	S1456777	2	353	B	353	5.8665	2				
00-BGN111	S1456775	2	276	B	276	5.6204	1				
Summary Statistics:				Mean	2514.19	7.6049					

Potassium
Statistical Calculations

Standard Error	220.519	0.1169
Median	2530	7.836
Mode	2990	8.003
Standard Deviation	1446.04	0.7669
Sample Variance	2091036	0.5881
Kurtosis	-0.26902	0.3804
Skewness	0.42214	-1.0009
Range	5954	3.1167
Minimum	276	5.6204
Maximum	6230	8.7371
Sum	108110	327.01
Count	43	43
Confidence Level (95.0%)	432.209	0.2292
W Test for N Distribution: d =	8.8E+07	
k =	21	
W =	0.96172	
W(5) =	0.943	
W > W(5)	Accept	N
Q(95) & UCL(95) N Distribution: Mean =	2514.19	
StDev =	1446.04	
N =	43	
Z(95) =	1.64485	
Q(95) =	**4892.71**	
t(95) =	1.683	
UCL(95) =	**2885.32**	

Selenium
Statistical Calculations

Selenium (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGN1910	S1456663	0	0.37	B	0.37	-0.99425	39
00-BGN1910	S1456664	2	0.32	B	0.32	-1.13943	38
20-UGS	S1454369	0	0.29	B	0.29	-1.23787	37
20-UGS	S1454360	2	0.29	B	0.29	-1.23787	36
00-BGN112	S1456656	2	0.22	B	0.22	-1.51413	35
00-BGN134	S1456787	2	0.21	B	0.21	-1.56065	34
16-UGS	S1454529	2	0.2	B	0.2	-1.60944	33
00-BGN178	S1456661	0	0.16	B	0.16	-1.83258	32
15-UGS	S1454266	2	0.14	B	0.14	-1.96611	31
07-DBMW100	S1457113	3	0.27	U	0.135	-2.00248	30
00-BGN112	S1456655	0	0.13	B	0.13	-2.04022	29
18-UGS	S1454528	0	0.11	B	0.11	-2.20727	28
16-UGX	S1454299	0	0.11	B	0.11	-2.20727	27
05-UGS	S1454402	0	0.1	B	0.1	-2.30259	26
00-BGN256	S1456780	0	0.16	U	0.08	-2.52573	25
00-BGN278	S1456783	2	0.15	U	0.075	-2.59027	24
00-BGN212	S1456777	2	0.13	U	0.065	-2.73337	23
06-UGS	S1454550	2	0.12	U	0.06	-2.81341	22
07-DBMW100	S1457114	8	0.12	U	0.06	-2.81341	21
12-UGS	S1454210	2	0.12	U	0.06	-2.81341	20
00-BGN278	S1456782	0	0.12	U	0.06	-2.81341	19
13-UGS	S1454219	2	0.11	U	0.055	-2.90042	18
21-UGS	S1454367	2	0.11	U	0.055	-2.90042	17
00-BGN256	S1456773	2	0.11	U	0.055	-2.90042	16
00-BGN256	S1456781	2	0.11	U	0.055	-2.90042	15
00-BGN111	S1456775	2	0.11	U	0.055	-2.90042	14
00-BGN134	S1456786	0	0.11	U	0.055	-2.90042	13
00-BGN156	S1456650	2	0.11	U	0.055	-2.90042	12
00-BGN156	S1456771	2	0.11	U	0.055	-2.90042	11
00-BGN2910	S1456785	2	0.11	U	0.055	-2.90042	10
00-BGN234	S1456778	0	0.11	U	0.055	-2.90042	9
05-UGS	S1454040	0	0.1	U	0.05	-2.99573	8
16-UGX	S1454302	2	0.1	U	0.05	-2.99573	7
00-BGN111	S1456665	0	0.1	U	0.05	-2.99573	6
00-BGN156	S1456659	0	0.1	U	0.05	-2.99573	5
00-BGN178	S1456662	2	0.1	U	0.05	-2.99573	4
00-BGN2910	S1456784	0	0.1	U	0.05	-2.99573	3
00-BGN212	S1456776	0	0.1	U	0.05	-2.99573	2
00-BGN234	S1456779	2	0.1	U	0.05	-2.99573	1
Exclude (IDL > Max Detect):							
02-UGS	S1454502	2	0.43	U	0.215	-1.53712	
02-UGS	S1454008	0	0.42	U	0.21	-1.56065	
Summary Statistics:				Mean	0.107564	-2.45962	

Selenium
Statistical Calculations

				Standard Error	0.013848	0.101651	
				Median	0.06	-2.81341	
				Mode	0.055	-2.90042	
				Standard Deviation	0.08648	0.634812	
				Sample Variance	0.007479	0.402987	
				Kurtosis	2.003263	-0.31372	
				Skewness	1.705227	1.036994	
				Range	0.32	2.00148	
				Minimum	0.05	-2.99573	
				Maximum	0.37	-0.99425	
				Sum	4.195	-95.9253	
				Count	39	39	
				Confidence Level (95.0%)	0.027141	0.199233	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	39		
				Z(5) =	1.644853		
				k =	38	38	39
				Q(95) =	**0.32**	0.32	0.37
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	39		
				Z(5) =	1.644853		
				U =	25.13605		
				UCL(95,50) =	**0.082721**		

Silver
Statistical Calculations

Silver (mg/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGN1910	S1456663	0	0.65	B	0.65	-0.43078	42
20-UGS	S1454360	2	0.54	B	0.54	-0.61619	41
00-BGN1910	S1456664	2	0.53	B	0.53	-0.63488	40
06-UGS	S1454550	2	0.49	U	0.245	-1.4065	39
07-DBMW100	S1457114	8	0.49	U	0.245	-1.4065	38
15-UGS	S1454266	2	0.49	U	0.245	-1.4065	37
12-UGS	S1454210	2	0.48	U	0.24	-1.42712	36
13-UGS	S1454219	2	0.47	U	0.235	-1.44817	35
07-DBMW100	S1457113	3	0.46	U	0.23	-1.46968	34
00-BGN278	S1456783	2	0.46	U	0.23	-1.46968	33
00-BGN112	S1456656	2	0.46	U	0.23	-1.46968	32
00-BGN134	S1456786	0	0.46	U	0.23	-1.46968	31
00-BGN178	S1456661	0	0.46	U	0.23	-1.46968	30
00-BGN212	S1456777	2	0.46	U	0.23	-1.46968	29
00-BGN234	S1456778	0	0.46	U	0.23	-1.46968	28
00-BGN256	S1456773	2	0.45	U	0.225	-1.49165	27
00-BGN256	S1456781	2	0.45	U	0.225	-1.49165	26
00-BGN278	S1456782	0	0.45	U	0.225	-1.49165	25
00-BGN134	S1456787	2	0.45	U	0.225	-1.49165	24
00-BGN156	S1456650	2	0.45	U	0.225	-1.49165	23
00-BGN156	S1456771	2	0.45	U	0.225	-1.49165	22
16-UGS	S1454529	2	0.44	U	0.22	-1.51413	21
16-UGX	S1454302	2	0.44	U	0.22	-1.51413	20
00-BGN256	S1456780	0	0.44	U	0.22	-1.51413	19
00-BGN111	S1456665	0	0.44	U	0.22	-1.51413	18
00-BGN111	S1456775	2	0.44	U	0.22	-1.51413	17
00-BGN112	S1456655	0	0.44	U	0.22	-1.51413	16
00-BGN156	S1456659	0	0.44	U	0.22	-1.51413	15
00-BGN178	S1456662	2	0.44	U	0.22	-1.51413	14
00-BGN2910	S1456785	2	0.44	U	0.22	-1.51413	13
00-BGN234	S1456779	2	0.44	U	0.22	-1.51413	12
03-UGS	S1454013	0	0.43	U	0.215	-1.53712	11
03-UGS	S1454399	0	0.43	U	0.215	-1.53712	10
05-UGS	S1454040	0	0.43	U	0.215	-1.53712	9
05-UGS	S1454402	0	0.43	U	0.215	-1.53712	8
18-UGS	S1454528	0	0.43	U	0.215	-1.53712	7
16-UGX	S1454299	0	0.43	U	0.215	-1.53712	6
20-UGS	S1454369	0	0.43	U	0.215	-1.53712	5
00-BGN2910	S1456784	0	0.43	U	0.215	-1.53712	4
00-BGN212	S1456776	0	0.43	U	0.215	-1.53712	3
02-UGS	S1454502	2	0.31	U	0.155	-1.86433	2
02-UGS	S1454008	0	0.3	U	0.15	-1.89712	1
Summary Statistics:				Mean	0.245952	-1.44645	

Silver
Statistical Calculations

				Standard Error	0.014615	0.041025	
				Median	0.2225	-1.50289	
				Mode	0.22	-1.51413	
				Standard Deviation	0.094715	0.265876	
				Sample Variance	0.008971	0.07069	
				Kurtosis	11.08402	8.327269	
				Skewness	3.379964	2.697812	
				Range	0.5	1.466337	
				Minimum	0.15	-1.89712	
				Maximum	0.65	-0.43078	
				Sum	10.33	-60.7511	
				Count	42	42	
				Confidence Level (95.0%)	0.028645	0.080408	
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	42		
				Z(5) =	1.644853		
				k =	40.85	40	41
				Q(95) =	**0.5385**	0.53	0.54
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	42		
				Z(5) =	1.644853		
				U =	26.82993		
				UCL(95,50) =	**0.225**		

Sodium
Statistical Calculations

Sodium (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN112	S1456656	2	506	B	506	6.22654	0.3894	6.227	4.527	0.662
00-BGN1910	S1456664	2	450	B	450	6.10925	0.2684	6.109	4.644	0.393
00-BGN1910	S1456663	0	419	B	419	6.03787	0.2334	6.038	4.682	0.316
15-UGS	S1454266	2	393	B	393	5.97381	0.2078	5.974	4.745	0.255
07-DBMW100	S1457114	8	353	B	353	5.86647	0.1871	5.866	4.927	0.176
05-UGS	S1454402	0	304	B	304	5.71703	0.1695	5.717	4.984	0.124
21-UGS	S1454367	2	303	B	303	5.71373	0.1539	5.714	5.011	0.108
13-UGS	S1454219	2	302	B	302	5.71043	0.1398	5.710	5.106	0.085
06-UGS	S1454550	2	299	B	299	5.70044	0.1269	5.700	5.118	0.074
07-DBMW100	S1457113	3	282	B	282	5.64191	0.1149	5.642	5.118	0.060
00-BGN134	S1456787	2	277	B	277	5.62402	0.1035	5.624	5.124	0.052
12-UGS	S1454210	2	275	B	275	5.61677	0.0927	5.617	5.130	0.045
00-BGN234	S1456779	2	261	B	261	5.56452	0.0824	5.565	5.198	0.030
20-UGS	S1454369	0	257	B	257	5.54908	0.0724	5.549	5.209	0.025
05-UGS	S1454040	0	252	B	252	5.52943	0.0628	5.529	5.215	0.020
20-UGS	S1454360	2	251	B	251	5.52545	0.0534	5.525	5.220	0.016
00-BGN134	S1456786	0	241	B	241	5.4848	0.0442	5.485	5.242	0.011
00-BGN156	S1456650	2	230	B	230	5.43808	0.0352	5.438	5.283	0.005
00-BGN178	S1456661	0	225	B	225	5.4161	0.0263	5.416	5.293	0.003
16-UGS	S1454529	2	224	B	224	5.41165	0.0175	5.412	5.313	0.002
00-BGN112	S1456655	0	224	B	224	5.41165	0.0087	5.412	5.318	0.001
00-BGN156	S1456771	2	206	B	206	5.32788	0	5.328	5.328	0.000
00-BGN156	S1456659	0	204	B	204	5.31812				
00-BGN111	S1456775	2	203	B	203	5.31321				
00-BGN234	S1456778	0	199	B	199	5.2933				
00-BGN178	S1456662	2	197	B	197	5.2832				
03-UGS	S1454013	0	189	B	189	5.24175				
00-BGN278	S1456782	0	185	B	185	5.22036				
18-UGS	S1454528	0	184	B	184	5.21494				
03-UGS	S1454399	0	183	B	183	5.20949				
00-BGN111	S1456665	0	181	B	181	5.1985				
16-UGX	S1454302	2	169	B	169	5.1299				
16-UGX	S1454299	0	168	B	168	5.12396				
00-BGN256	S1456780	0	167	B	167	5.11799				
00-BGN212	S1456777	2	167	B	167	5.11799				
00-BGN278	S1456783	2	165	B	165	5.10595				
00-BGN2910	S1456785	2	150	B	150	5.01064				
00-BGN212	S1456776	0	146	B	146	4.98361				
00-BGN256	S1456773	2	138	B	138	4.92725				
00-BGN2910	S1456784	0	115	B	115	4.74493				
00-BGN256	S1456781	2	108	B	108	4.68213				
02-UGS	S1454502	2	208	U	104	4.64439				
02-UGS	S1454008	0	185	U	92.5	4.52721				
Summary Statistics:				Mean	231.36	5.37223				

Sodium
Statistical Calculations

			Standard Error	13.9497	0.05846				
			Median	206	5.32788				
			Mode	224	5.41165				
			Standard Deviation	91.4745	0.38335				
			Sample Variance	8367.59	0.14696				
			Kurtosis	1.31148	0.02761				
			Skewness	1.09051	0.01053				
			Range	413.5	1.69933				
			Minimum	92.5	4.52721				
			Maximum	506	6.22654				
			Sum	9948.5	231.006				
			Count	43	43				
			Confidence Level (95.0%)	27.3409	0.11458				
W Test for LN Distribution:			d =		6.1722				
			k =		21				
			W =		0.983				
			W(5) =		0.943				
			W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:			Mean =		5.37223				
			StDev =		0.38335				
			N =		43				
			Z(95) =		1.64485				
			Q(95) =		6.00278	Exp =	**404.552**		
			H(95) =		1.819				
			UCL(95) =		**258.088**				

Thallium
Statistical Calculations

Thallium (mg/kg)											
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	0.53	B	0.53	-0.6349	43	0.3894	-0.635	-2.659	0.788
07-DBMW100	S1457114	8	0.42	B	0.42	-0.8675	42	0.2684	-0.868	-2.659	0.481
00-BGN1910	S1456664	2	0.42	B	0.42	-0.8675	41	0.2334	-0.868	-2.590	0.402
03-UGS	S1454399	0	0.28	B	0.28	-1.273	40	0.2078	-1.273	-2.590	0.274
13-UGS	S1454219	2	0.25	B	0.25	-1.3863	39	0.1871	-1.386	-2.590	0.225
20-UGS	S1454369	0	0.25	B	0.25	-1.3863	38	0.1695	-1.386	-2.590	0.204
00-BGN134	S1456787	2	0.24	B	0.24	-1.4271	37	0.1539	-1.427	-2.590	0.179
06-UGS	S1454550	2	0.23	B	0.23	-1.4697	36	0.1398	-1.470	-2.590	0.157
03-UGS	S1454013	0	0.22	B	0.22	-1.5141	35	0.1269	-1.514	-2.590	0.137
00-BGN134	S1456786	0	0.22	B	0.22	-1.5141	34	0.1149	-1.514	-2.590	0.124
00-BGN178	S1456661	0	0.22	B	0.22	-1.5141	33	0.1035	-1.514	-2.590	0.111
07-DBMW100	S1457113	3	0.2	B	0.2	-1.6094	32	0.0927	-1.609	-2.590	0.091
21-UGS	S1454367	2	0.2	B	0.2	-1.6094	31	0.0824	-1.609	-2.590	0.081
00-BGN112	S1456656	2	0.2	B	0.2	-1.6094	30	0.0724	-1.609	-2.526	0.066
00-BGN278	S1456783	2	0.39	U	0.195	-1.6348	29	0.0628	-1.635	-2.354	0.045
00-BGN234	S1456779	2	0.39	U	0.195	-1.6348	28	0.0534	-1.635	-2.002	0.020
00-BGN112	S1456655	0	0.19	B	0.19	-1.6607	27	0.0442	-1.661	-1.966	0.013
12-UGS	S1454210	2	0.18	B	0.18	-1.7148	26	0.0352	-1.715	-1.931	0.008
00-BGN256	S1456780	0	0.34	U	0.17	-1.772	25	0.0263	-1.772	-1.897	0.003
02-UGS	S1454502	2	0.33	U	0.165	-1.8018	24	0.0175	-1.802	-1.833	0.001
02-UGS	S1454008	0	0.32	U	0.16	-1.8326	23	0.0087	-1.833	-1.833	0.000
05-UGS	S1454402	0	0.16	B	0.16	-1.8326	22	0	-1.833	-1.833	0.000
00-BGN256	S1456781	2	0.32	U	0.16	-1.8326	21				
00-BGN278	S1456782	0	0.32	U	0.16	-1.8326	20				
00-BGN156	S1456771	2	0.15	B	0.15	-1.8971	19				
00-BGN2910	S1456784	0	0.29	U	0.145	-1.931	18				
05-UGS	S1454040	0	0.14	B	0.14	-1.9661	17				
00-BGN212	S1456776	0	0.27	U	0.135	-2.0025	16				
00-BGN2910	S1456785	2	0.19	U	0.095	-2.3539	15				
15-UGS	S1454266	2	0.16	U	0.08	-2.5257	14				
16-UGS	S1454529	2	0.15	U	0.075	-2.5903	13				
16-UGX	S1454302	2	0.15	U	0.075	-2.5903	12				
20-UGS	S1454360	2	0.15	U	0.075	-2.5903	11				
00-BGN256	S1456773	2	0.15	U	0.075	-2.5903	10				
00-BGN111	S1456665	0	0.15	U	0.075	-2.5903	9				
00-BGN111	S1456775	2	0.15	U	0.075	-2.5903	8				
00-BGN156	S1456659	0	0.15	U	0.075	-2.5903	7				
00-BGN156	S1456650	2	0.15	U	0.075	-2.5903	6				
00-BGN178	S1456662	2	0.15	U	0.075	-2.5903	5				
00-BGN212	S1456777	2	0.15	U	0.075	-2.5903	4				
00-BGN234	S1456778	0	0.15	U	0.075	-2.5903	3				
18-UGS	S1454528	0	0.14	U	0.07	-2.6593	2				
16-UGX	S1454299	0	0.14	U	0.07	-2.6593	1				
Summary Statistics:				Mean	0.1703	-1.9237					

Thallium
Statistical Calculations

Standard Error	0.0155	0.08491	
Median	0.16	-1.8326	
Mode	0.075	-2.5903	
Standard Deviation	0.1019	0.55682	
Sample Variance	0.0104	0.31005	
Kurtosis	3.3837	-0.7251	
Skewness	1.6068	0.19252	
Range	0.46	2.02438	
Minimum	0.07	-2.6593	
Maximum	0.53	-0.6349	
Sum	7.325	-82.72	
Count	43	43	
Confidence Level (95.0%)	0.0305	0.16643	
W Test for LN Distribution: d =		13.0222	
k =		21	
W =		0.89266	
W(5) =		0.943	
W < W(5)	Reject	LN	
Q(95) Nonparametric Distribution: P =	0.95		
N =	43		
Z(5) =	1.6449		
k =	41.8	41	42
Q(95) =	**0.42**	0.42	0.42
UCL(95,50) Nonparametric Distribution: P =	0.5		
N =	43		
Z(5) =	1.6449		
U =	27.393		
UCL(95,50) =	**0.192**		

Vanadium
Statistical Calculations

Vanadium (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	134		134	4.89784	0.3894	4.89784	1.62924	1.27279
00-BGN1910	S1456664	2	117		117	4.76217	0.2684	4.76217	1.6864	0.82554
00-BGN112	S1456656	2	85.4		85.4	4.44735	0.2334	4.44735	1.6864	0.64441
20-UGS	S1454360	2	53		53	3.97029	0.2078	3.97029	1.80829	0.44926
12-UGS	S1454210	2	47.9		47.9	3.86912	0.1871	3.86912	1.97408	0.35456
00-BGN134	S1456787	2	44.8		44.8	3.80221	0.1695	3.80221	2.09186	0.2899
00-BGN112	S1456655	0	39.2		39.2	3.66868	0.1539	3.66868	2.10413	0.24078
15-UGS	S1454266	2	35.8		35.8	3.57795	0.1398	3.57795	2.27213	0.18255
13-UGS	S1454219	2	34		34	3.52636	0.1269	3.52636	2.3979	0.1432
07-DBMW100	S1457114	8	33.1		33.1	3.49953	0.1149	3.49953	2.58776	0.10476
20-UGS	S1454369	0	32.7		32.7	3.48738	0.1035	3.48738	2.64617	0.08706
06-UGS	S1454550	2	29.7		29.7	3.39115	0.0927	3.39115	2.68785	0.0652
00-BGN134	S1456786	0	28.5		28.5	3.3499	0.0824	3.3499	2.69463	0.05399
21-UGS	S1454367	2	27.9		27.9	3.32863	0.0724	3.32863	2.72785	0.0435
00-BGN156	S1456771	2	26.8		26.8	3.2884	0.0628	3.2884	2.74727	0.03398
03-UGS	S1454399	0	26.7		26.7	3.28466	0.0534	3.28466	2.79117	0.02635
00-BGN156	S1456650	2	25.7		25.7	3.24649	0.0442	3.24649	2.82731	0.01853
00-BGN178	S1456661	0	24.4		24.4	3.19458	0.0352	3.19458	2.84491	0.01231
07-DBMW100	S1457113	3	21.6		21.6	3.07269	0.0263	3.07269	2.90142	0.0045
00-BGN178	S1456662	2	21.5		21.5	3.06805	0.0175	3.06805	2.95491	0.00198
05-UGS	S1454402	0	21		21	3.04452	0.0087	3.04452	3.03013	0.00013
00-BGN156	S1456659	0	20.8		20.8	3.03495	0	3.03495	3.03495	0
16-UGX	S1454302	2	20.7		20.7	3.03013				
00-BGN234	S1456779	2	19.2		19.2	2.95491				
05-UGS	S1454040	0	18.2		18.2	2.90142				
16-UGX	S1454299	0	17.2		17.2	2.84491				
00-BGN234	S1456778	0	16.9		16.9	2.82731				
03-UGS	S1454013	0	16.3		16.3	2.79117				
00-BGN278	S1456782	0	15.6		15.6	2.74727				
18-UGS	S1454528	0	15.3		15.3	2.72785				
16-UGS	S1454529	2	14.8		14.8	2.69463				
02-UGS	S1454502	2	14.7		14.7	2.68785				
00-BGN111	S1456775	2	14.1		14.1	2.64617				
00-BGN278	S1456783	2	13.3		13.3	2.58776				
00-BGN111	S1456665	0	11		11	2.3979				
02-UGS	S1454008	0	9.7	B	9.7	2.27213				
00-BGN256	S1456773	2	8.2	B	8.2	2.10413				
00-BGN256	S1456780	0	8.1	B	8.1	2.09186				
00-BGN256	S1456781	2	7.2	B	7.2	1.97408				
00-BGN2910	S1456785	2	6.1	B	6.1	1.80829				
00-BGN2910	S1456784	0	5.4	B	5.4	1.6864				
00-BGN212	S1456777	2	5.4	B	5.4	1.6864				
00-BGN212	S1456776	0	5.1	B	5.1	1.62924				
Summary Statistics:				Mean	27.7674	3.02104				
				Standard Error	4.06078	0.1162				
				Median	20.8	3.03495				

Vanadium
Statistical Calculations

				Mode	5.4	1.6864				
				Standard Deviation	26.6283	0.76195				
				Sample Variance	709.066	0.58057				
				Kurtosis	7.93829	0.31031				
				Skewness	2.68891	0.27046				
				Range	128.9	3.2686				
				Minimum	5.1	1.62924				
				Maximum	134	4.89784				
				Sum	1194	129.905				
				Count	43	43				
				Confidence Level (95.0%)	7.95896	0.22774				
W Test for LN Distribution:				d =		24.3841				
				k =		21				
				W =		0.96677				
				W(5) =		0.943				
				W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:				Mean =		3.02104				
				StDev =		0.76195				
				N =		43				
				Z(95) =		1.64485				
				Q(95) =		4.27434	Exp =	**71.8329**		
				H(95) =		2.111				
				UCL(95) =		**35.1464**				

Zinc
Statistical Calculations

Zinc (mg/kg)										
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	a_i	Y_n-i+1	Y_i	
00-BGN1910	S1456663	0	99.5		99.5	4.60016	0.3894	4.600	1.825	1.081
00-BGN1910	S1456664	2	97.9		97.9	4.58395	0.2684	4.584	2.128	0.659
20-UGS	S1454369	0	57.4		57.4	4.05004	0.2334	4.050	2.262	0.417
20-UGS	S1454360	2	55.4		55.4	4.01458	0.2078	4.015	2.370	0.342
12-UGS	S1454210	2	53.6		53.6	3.98155	0.1871	3.982	2.380	0.300
13-UGS	S1454219	2	49.4		49.4	3.89995	0.1695	3.900	2.434	0.249
00-BGN112	S1456656	2	48		48	3.8712	0.1539	3.871	2.557	0.202
15-UGS	S1454266	2	47.1		47.1	3.85227	0.1398	3.852	2.874	0.137
00-BGN134	S1456787	2	46		46	3.82864	0.1269	3.829	2.885	0.120
00-BGN156	S1456659	0	45.4		45.4	3.81551	0.1149	3.816	2.929	0.102
07-DBMW100	S1457114	8	43.9		43.9	3.78191	0.1035	3.782	2.955	0.086
06-UGS	S1454550	2	43.2		43.2	3.76584	0.0927	3.766	2.965	0.074
03-UGS	S1454399	0	42.4		42.4	3.74715	0.0824	3.747	3.082	0.055
00-BGN134	S1456786	0	41.7		41.7	3.7305	0.0724	3.731	3.100	0.046
21-UGS	S1454367	2	39.8		39.8	3.68387	0.0628	3.684	3.186	0.031
00-BGN112	S1456655	0	37.6		37.6	3.627	0.0534	3.627	3.235	0.021
00-BGN156	S1456650	2	35.3		35.3	3.56388	0.0442	3.564	3.246	0.014
00-BGN156	S1456771	2	35.1		35.1	3.5582	0.0352	3.558	3.285	0.010
03-UGS	S1454013	0	33.3		33.3	3.50556	0.0263	3.506	3.296	0.006
00-BGN178	S1456661	0	32.1		32.1	3.46886	0.0175	3.469	3.353	0.002
05-UGS	S1454402	0	29.3		29.3	3.37759	0.0087	3.378	3.374	0.000
07-DBMW100	S1457113	3	29.2		29.2	3.37417	0	3.374	3.374	0.000
16-UGX	S1454299	0	29.2		29.2	3.37417				
00-BGN278	S1456782	0	28.6		28.6	3.35341				
05-UGS	S1454040	0	27		27	3.29584				
00-BGN234	S1456778	0	26.7		26.7	3.28466				
16-UGX	S1454302	2	25.7		25.7	3.24649				
00-BGN178	S1456662	2	25.4		25.4	3.23475				
18-UGS	S1454528	0	24.2		24.2	3.18635				
02-UGS	S1454502	2	22.2		22.2	3.10009				
00-BGN256	S1456780	0	21.8		21.8	3.08191				
00-BGN278	S1456783	2	19.4		19.4	2.96527				
00-BGN234	S1456779	2	19.2		19.2	2.95491				
16-UGS	S1454529	2	18.7		18.7	2.92852				
00-BGN111	S1456665	0	17.9		17.9	2.8848				
02-UGS	S1454008	0	17.7		17.7	2.87356				
00-BGN212	S1456776	0	12.9		12.9	2.55723				
00-BGN256	S1456773	2	11.4		11.4	2.43361				
00-BGN2910	S1456784	0	10.8		10.8	2.37955				
00-BGN256	S1456781	2	10.7		10.7	2.37024				
00-BGN2910	S1456785	2	9.6		9.6	2.26176				
00-BGN111	S1456775	2	8.4		8.4	2.12823				
00-BGN212	S1456777	2	6.2		6.2	1.82455				
Summary Statistics:				Mean	33.4023	3.33494				
				Standard Error	3.06546	0.09456				
				Median	29.2	3.37417				

Zinc
Statistical Calculations

				Mode	29.2	3.37417				
				Standard Deviation	20.1016	0.62009				
				Sample Variance	404.073	0.38451				
				Kurtosis	3.47665	0.06307				
				Skewness	1.51648	-0.3959				
				Range	93.3	2.77561				
				Minimum	6.2	1.82455				
				Maximum	99.5	4.60016				
				Sum	1436.3	143.402				
				Count	43	43				
				Confidence Level (95.0%)	6.00818	0.18534				
W Test for LN Distribution:				d =		16.1494				
				k =		21				
				W =		0.96697				
				W(5) =		0.943				
				W > W(5)	Accept	LN				
Q(95) & UCL(95) LN Distribution:				Mean =		3.33494				
				StDev =		0.62009				
				N =		43				
				Z(95) =		1.64485				
				Q(95) =		4.35489	Exp =	**77.8585**		
				H(95) =		1.988				
				UCL(95) =		**41.1576**				

APPENDIX C

CALCULATIONS FOR ORGANICS

a-chlordane
Statistical Calculations

a-chlordane (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGR356	S1454629	2	17.7		17.7	2.873565	47
00-BGA234	S1454597	0	3.01		3.01	1.10194	46
00-BGR134	S1454622	0	2.18	U	1.09	0.086178	45
00-BGR334	S1454626	0	2.18	U	1.09	0.086178	44
00-BGA234	S1454601	2	2.14	U	1.07	0.067659	43
00-BGA212	S1454588	2	2.13	U	1.065	0.062975	42
00-BGR312	S1454624	0	2.11	U	1.055	0.053541	41
00-BGC434	S1454616	0	2.1	U	1.05	0.04879	40
00-BGR312	S1454636	0	2.06	U	1.03	0.029559	39
00-BGA134	S1454590	2	2.05	U	1.025	0.024693	38
00-BGR112	S1454621	2	2.05	U	1.025	0.024693	37
00-BGC434	S1454617	2	2.04	U	1.02	0.019803	36
00-BGR134	S1454623	0	2.04	U	1.02	0.019803	35
00-BGR412	S1454634	0	2.03	U	1.015	0.014889	34
00-BGR390	S1454632	0	2.02	U	1.01	0.00995	33
00-BGA134	S1454602	2	2.01	U	1.005	0.004988	32
00-BGA312	S1454599	0	2.01	U	1.005	0.004988	31
00-BGC412	S1454614	0	2.01	U	1.005	0.004988	30
00-BGA312	S1454600	2	2	U	1	0	29
00-BGR112	S1454620	0	2	U	1	0	28
00-BGR356	S1454628	0	2	U	1	0	27
00-BGC334	S1454608	0	1.99	U	0.995	-0.00501	26
00-BGC212	S1454604	0	1.98	U	0.99	-0.01005	25
00-BGC312	S1454606	0	1.98	U	0.99	-0.01005	24
00-BGR334	S1454627	2	1.98	U	0.99	-0.01005	23
00-BGR412	S1454635	2	1.98	U	0.99	-0.01005	22
00-BGC356	S1454610	0	1.97	U	0.985	-0.01511	21
00-BGC378	S1454612	0	1.97	U	0.985	-0.01511	20
00-BGR390	S1454633	2	1.97	U	0.985	-0.01511	19
00-BGA212	S1454587	0	1.96	U	0.98	-0.0202	18
00-BGC412	S1454615	2	1.96	U	0.98	-0.0202	17
00-BGA234	S1454598	2	1.94	U	0.97	-0.03046	16
00-BGR356	S1454637	2	1.94	U	0.97	-0.03046	15
00-BGR378	S1454630	0	1.94	U	0.97	-0.03046	14
00-BGA156	S1454592	2	1.93	U	0.965	-0.03563	13
00-BGA156	S1454591	0	1.92	U	0.96	-0.04082	12
00-BGA178	S1454594	2	1.92	U	0.96	-0.04082	11
00-BGC356	S1454611	2	1.92	U	0.96	-0.04082	10
00-BGR312	S1454625	2	1.92	U	0.96	-0.04082	9
00-BGR378	S1454631	2	1.91	U	0.955	-0.04604	8
00-BGC378	S1454613	2	1.9	U	0.95	-0.05129	7
00-BGC334	S1454609	2	1.9	U	0.95	-0.05129	6
00-BGA134	S1454589	0	1.89	U	0.945	-0.05657	5
00-BGC312	S1454607	2	1.89	U	0.945	-0.05657	4
00-BGA178	S1454593	0	1.88	U	0.94	-0.06188	3
00-BGC212	S1454605	2	1.85	U	0.925	-0.07796	2
00-BGC212	S1454618	2	1.84	U	0.92	-0.08338	1
Sample Statistics:				Mean	1.391596		

a-chlordane
Statistical Calculations

				Standard Error	0.357164		
				Median	0.99		
				Mode	0.99		
				Standard Deviation	2.448593		
				Sample Variance	5.995607		
				Kurtosis	45.54063		
				Skewness	6.71032		
				Range	16.78		
				Minimum	0.92		
				Maximum	17.7		
				Sum	65.405		
				Count	47		
				Confidence Level (95.0%)	0.718933		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**2.242**	1.09	3.01
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**1.003191**		

g-chlordane
Statistical Calculations

g-chlordane (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGR356	S1454629	2	18	J	18	2.890372	47
00-BGA212	S1454587	0	2.84		2.84	1.043804	46
00-BGA234	S1454597	0	2.49		2.49	0.912283	45
00-BGA212	S1454588	2	1.46		1.46	0.378436	44
00-BGR134	S1454622	0	2.18	U	1.09	0.086178	43
00-BGR334	S1454626	0	2.18	U	1.09	0.086178	42
00-BGA234	S1454601	2	2.14	U	1.07	0.067659	41
00-BGR312	S1454624	0	2.11	U	1.055	0.053541	40
00-BGC434	S1454616	0	2.1	U	1.05	0.04879	39
00-BGR312	S1454636	0	2.06	U	1.03	0.029559	38
00-BGA134	S1454590	2	2.05	U	1.025	0.024693	37
00-BGR112	S1454621	2	2.05	U	1.025	0.024693	36
00-BGC434	S1454617	2	2.04	U	1.02	0.019803	35
00-BGR134	S1454623	0	2.04	U	1.02	0.019803	34
00-BGR412	S1454634	0	2.03	U	1.015	0.014889	33
00-BGR390	S1454632	0	2.02	U	1.01	0.00995	32
00-BGA134	S1454602	2	2.01	U	1.005	0.004988	31
00-BGA312	S1454599	0	2.01	U	1.005	0.004988	30
00-BGC412	S1454614	0	2.01	U	1.005	0.004988	29
00-BGA312	S1454600	2	2	U	1	0	28
00-BGR112	S1454620	0	2	U	1	0	27
00-BGR356	S1454628	0	2	U	1	0	26
00-BGC334	S1454608	0	1.99	U	0.995	-0.00501	25
00-BGC212	S1454604	0	1.98	U	0.99	-0.01005	24
00-BGC312	S1454606	0	1.98	U	0.99	-0.01005	23
00-BGR334	S1454627	2	1.98	U	0.99	-0.01005	22
00-BGR412	S1454635	2	1.98	U	0.99	-0.01005	21
00-BGC356	S1454610	0	1.97	U	0.985	-0.01511	20
00-BGC378	S1454612	0	1.97	U	0.985	-0.01511	19
00-BGR390	S1454633	2	1.97	U	0.985	-0.01511	18
00-BGC412	S1454615	2	1.96	U	0.98	-0.0202	17
00-BGA234	S1454598	2	1.94	U	0.97	-0.03046	16
00-BGR356	S1454637	2	1.94	U	0.97	-0.03046	15
00-BGR378	S1454630	0	1.94	U	0.97	-0.03046	14
00-BGA156	S1454592	2	1.93	U	0.965	-0.03563	13
00-BGA156	S1454591	0	1.92	U	0.96	-0.04082	12
00-BGA178	S1454594	2	1.92	U	0.96	-0.04082	11
00-BGC356	S1454611	2	1.92	U	0.96	-0.04082	10
00-BGR312	S1454625	2	1.92	U	0.96	-0.04082	9
00-BGR378	S1454631	2	1.91	U	0.955	-0.04604	8
00-BGC378	S1454613	2	1.9	U	0.95	-0.05129	7
00-BGC334	S1454609	2	1.9	U	0.95	-0.05129	6
00-BGA134	S1454589	0	1.89	U	0.945	-0.05657	5
00-BGC312	S1454607	2	1.89	U	0.945	-0.05657	4
00-BGA178	S1454593	0	1.88	U	0.94	-0.06188	3
00-BGC212	S1454605	2	1.85	U	0.925	-0.07796	2
00-BGC212	S1454618	2	1.84	U	0.92	-0.08338	1
Summary Statistics:				Mean	1.434894		

g-chlordane
Statistical Calculations

			Standard Error		0.363709		
				Median	0.99		
				Mode	0.99		
			Standard Deviation		2.493464		
			Sample Variance		6.21736		
				Kurtosis	45.04652		
				Skewness	6.657524		
				Range	17.08		
				Minimum	0.92		
				Maximum	18		
				Sum	67.44		
				Count	47		
		Confidence Level (95.0%)			0.732108		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**2.7**	2.49	2.84
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
			UCL(95,50) =		**1.005**		

4,4'-DDD
Statistical Calculations

4,4'-DDD (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA312	S1454599	0	58.6		58.6	4.070735	35
00-BGA212	S1454587	0	45.1		45.1	3.808882	40
00-BGC356	S1454610	0	22.6		22.6	3.11795	18
00-BGA312	S1454600	2	18.6		18.6	2.923162	34
00-BGC334	S1454608	0	6.43		6.43	1.860975	20
00-BGC412	S1454614	0	6.19		6.19	1.822935	30
00-BGC334	S1454609	2	5.17		5.17	1.642873	19
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	38
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	24
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	11
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	36
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	14
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	8
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	28
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	13
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	25
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	46
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	27
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	15
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	2
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	4
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	45
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	26
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	9
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	1
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	33
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	22
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	10
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	3
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	16
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	29
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	37
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	7
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	6
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	43
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	17
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	12
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	44
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	41
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	5
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	31
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	21
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	47
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	42
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	32
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	23
00-BGA212	S1454588	2	1.5		1.5	0.405465	39
Summary Statistics:				Mean	5.102128		

4,4'-DDD
Statistical Calculations

				Standard Error	1.574075		
				Median	1.935		
				Mode	1.985		
				Standard Deviation	10.79132		
				Sample Variance	116.4525		
				Kurtosis	16.66924		
				Skewness	4.040621		
				Range	57.1		
				Minimum	1.5		
				Maximum	58.6		
				Sum	239.8		
				Count	47		
				Confidence Level (95.0%)	3.168446		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**36.1**	22.6	45.1
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**1.985**		

4,4'-DDE
Statistical Calculations

4,4'-DDE (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	233		233	5.451038	47
00-BGA312	S1454599	0	158		158	5.062595	46
00-BGA312	S1454600	2	126		126	4.836282	45
00-BGC334	S1454608	0	89.9		89.9	4.498698	44
00-BGC356	S1454610	0	57.9		57.9	4.058717	43
00-BGA212	S1454588	2	17.3		17.3	2.850707	42
00-BGC334	S1454609	2	7.99		7.99	2.078191	41
00-BGR378	S1454630	0	6.15		6.15	1.816452	40
00-BGC412	S1454614	0	5.62		5.62	1.726332	39
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	38
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	37
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	36
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	35
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	34
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	33
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	32
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	31
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	30
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	29
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	28
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	27
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	26
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	25
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	24
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	23
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	22
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	21
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	20
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	19
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	18
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	17
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	16
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	15
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	14
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	13
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	12
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	11
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	10
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	9
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	8
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Summary Statistics:				Mean	16.50191		

4,4'-DDE
Statistical Calculations

			Standard Error		6.605743		
				Median	1.95		
				Mode	1.985		
			Standard Deviation		45.28669		
			Sample Variance		2050.884		
				Kurtosis	13.13712		
				Skewness	3.578831		
				Range	231.21		
				Minimum	1.79		
				Maximum	233		
				Sum	775.59		
				Count	47		
			Confidence Level (95.0%)		13.29666		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**145.2**	126	158
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.959961		
				U =	30.71841		
			UCL(95,50) =		**1.988592**		

4,4'-DDT
Statistical Calculations

4,4'-DDT (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	272		272	5.605802	47
00-BGA312	S1454600	2	255	J	255	5.541264	46
00-BGA312	S1454599	0	208	J	208	5.337538	45
00-BGC334	S1454608	0	97.6		97.6	4.580877	44
00-BGC356	S1454610	0	52.2	J	52.2	3.955082	43
00-BGA212	S1454588	2	34.2		34.2	3.532226	42
00-BGC412	S1454614	0	31		31	3.433987	41
00-BGA234	S1454597	0	18.4		18.4	2.912351	40
00-BGR378	S1454630	0	5.21		5.21	1.65058	39
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	38
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	37
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	36
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	35
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	34
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	33
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	32
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	31
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	30
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	29
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	28
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	27
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	26
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	25
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	24
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	23
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	22
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	21
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	20
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	19
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	18
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	17
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	16
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	15
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	14
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	13
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	12
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	11
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	10
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	9
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	8
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Summary Statistics:				Mean	22.27436		

4,4'-DDT
Statistical Calculations

			Standard Error		8.967065		
				Median	1.945		
				Mode	1.985		
			Standard Deviation		61.4751		
			Sample Variance		3779.188		
				Kurtosis	10.7584		
				Skewness	3.39283		
				Range	270.21		
				Minimum	1.79		
				Maximum	272		
				Sum	1046.895		
				Count	47		
			Confidence Level (95.0%)		18.04975		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**236.2**	208	255
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
			UCL(95,50) =		**1.985**		

Dichloroprop
Statistical Calculations

Dichloroprop (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGR378	S1454630	0	141		141	4.94876	47
00-BGA234	S1454597	0	138	U	69	4.234107	46
00-BGR134	S1454622	0	129	U	64.5	4.166665	45
00-BGR334	S1454626	0	129	U	64.5	4.166665	44
00-BGA212	S1454588	2	125	U	62.5	4.135167	43
00-BGA234	S1454601	2	125	U	62.5	4.135167	42
00-BGR312	S1454624	0	124	U	62	4.127134	41
00-BGC434	S1454616	0	122	U	61	4.110874	40
00-BGR112	S1454621	2	122	U	61	4.110874	39
00-BGR312	S1454636	0	122	U	61	4.110874	38
00-BGR134	S1454623	0	121	U	60.5	4.102643	37
00-BGA134	S1454590	2	120	U	60	4.094345	36
00-BGC434	S1454617	2	120	U	60	4.094345	35
00-BGA312	S1454599	0	119	U	59.5	4.085976	34
00-BGR112	S1454620	0	119	U	59.5	4.085976	33
00-BGR356	S1454629	2	119	U	59.5	4.085976	32
00-BGA134	S1454602	2	118	U	59	4.077537	31
00-BGC412	S1454614	0	118	U	59	4.077537	30
00-BGA312	S1454600	2	117	U	58.5	4.069027	29
00-BGC312	S1454606	0	117	U	58.5	4.069027	28
00-BGC334	S1454608	0	117	U	58.5	4.069027	27
00-BGR390	S1454632	0	117	U	58.5	4.069027	26
00-BGC212	S1454604	0	116	U	58	4.060443	25
00-BGC412	S1454615	2	116	U	58	4.060443	24
00-BGC356	S1454610	0	115	U	57.5	4.051785	23
00-BGR334	S1454627	2	115	U	57.5	4.051785	22
00-BGR412	S1454634	0	115	U	57.5	4.051785	21
00-BGR412	S1454635	2	115	U	57.5	4.051785	20
00-BGA156	S1454592	2	114	U	57	4.043051	19
00-BGA212	S1454587	0	114	U	57	4.043051	18
00-BGC356	S1454611	2	114	U	57	4.043051	17
00-BGR356	S1454628	0	114	U	57	4.043051	16
00-BGR378	S1454631	2	114	U	57	4.043051	15
00-BGA234	S1454598	2	113	U	56.5	4.034241	14
00-BGC312	S1454607	2	113	U	56.5	4.034241	13
00-BGR312	S1454625	2	113	U	56.5	4.034241	12
00-BGA156	S1454591	0	112	U	56	4.025352	11
00-BGA178	S1454594	2	112	U	56	4.025352	10
00-BGC378	S1454612	0	112	U	56	4.025352	9
00-BGR390	S1454633	2	112	U	56	4.025352	8
00-BGA134	S1454589	0	111	U	55.5	4.016383	7
00-BGC334	S1454609	2	111	U	55.5	4.016383	6
00-BGR356	S1454637	2	111	U	55.5	4.016383	5
00-BGA178	S1454593	0	110	U	55	4.007333	4
00-BGC378	S1454613	2	109	U	54.5	3.998201	3
00-BGC212	S1454605	2	108	U	54	3.988984	2
00-BGC212	S1454618	2	108	U	54	3.988984	1
Summary Statistics:				Mean	60.18085		

Dichloroprop
Statistical Calculations

				Standard Error	1.809525		
				Median	58		
				Mode	57		
				Standard Deviation	12.40548		
				Sample Variance	153.8959		
				Kurtosis	41.42906		
				Skewness	6.266864		
				Range	87		
				Minimum	54		
				Maximum	141		
				Sum	2828.5		
				Count	47		
				Confidence Level (95.0%)	3.642382		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**67.2**	64.5	69
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**58.81914**		

Dieldrin
Statistical Calculations

Dieldrin (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	118		118	4.770685	47
00-BGR378	S1454631	2	28.8		28.8	3.360375	46
00-BGA212	S1454588	2	6.6		6.6	1.88707	45
00-BGC334	S1454608	0	6.21		6.21	1.826161	44
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	43
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	42
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	41
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	40
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	39
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	38
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	37
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	36
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	35
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	34
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	33
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	32
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	31
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	30
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	29
00-BGA312	S1454599	0	3.9	U	1.95	0.667829	28
00-BGC412	S1454614	0	3.9	U	1.95	0.667829	27
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	26
00-BGA312	S1454600	2	3.87	U	1.935	0.660107	25
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	24
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	23
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	22
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	21
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	20
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	19
00-BGC356	S1454610	0	3.82	U	1.91	0.647103	18
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	17
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	16
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	15
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	14
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	13
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	12
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	11
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	10
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	9
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	8
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Summary Statistics:				Mean	5.169255		

Dieldrin
Statistical Calculations

				Standard Error	2.521105		
				Median	1.935		
				Mode	1.985		
				Standard Deviation	17.28382		
				Sample Variance	298.7305		
				Kurtosis	41.86669		
				Skewness	6.368355		
				Range	116.21		
				Minimum	1.79		
				Maximum	118		
				Sum	242.955		
				Count	47		
				Confidence Level (95.0%)	5.074716		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**19.92**	6.6	28.8
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**1.956383**		

Endrin
Statistical Calculations

Endrin (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	19.9		19.9	2.99072	47
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	46
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	45
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	44
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	43
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	42
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	41
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	40
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	39
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	38
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	37
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	36
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	35
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	34
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	33
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	32
00-BGA312	S1454599	0	3.9	U	1.95	0.667829	31
00-BGC412	S1454614	0	3.9	U	1.95	0.667829	30
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	29
00-BGA312	S1454600	2	3.87	U	1.935	0.660107	28
00-BGC334	S1454608	0	3.87	U	1.935	0.660107	27
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	26
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	25
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	24
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	23
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	22
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	21
00-BGC356	S1454610	0	3.82	U	1.91	0.647103	20
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	19
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	18
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	17
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	16
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	15
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	14
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	13
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	12
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	11
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	10
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	9
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	8
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	7
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	6
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	5
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	4
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	3
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	2
00-BGA212	S1454588	2	1.01		1.01	0.00995	1
Summary Statistics:				Mean	2.29883		

Endrin
Statistical Calculations

				Standard Error	0.383382		
				Median	1.92		
				Mode	1.985		
				Standard Deviation	2.628335		
				Sample Variance	6.908143		
				Kurtosis	46.61086		
				Skewness	6.812998		
				Range	18.89		
				Minimum	1.01		
				Maximum	19.9		
				Sum	108.045		
				Count	47		
				Confidence Level (95.0%)	0.771707		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**2.222**	2.12	2.29
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**1.948191**		

Endrin aldehyde
Statistical Calculations

Endrin aldehyde (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	41.7		41.7	3.730501	47
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	46
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	45
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	44
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	43
00-BGA212	S1454588	2	4.13	U	2.065	0.72513	42
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	41
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	40
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	39
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	38
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	37
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	36
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	35
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	34
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	33
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	32
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	31
00-BGA312	S1454599	0	3.9	U	1.95	0.667829	30
00-BGC412	S1454614	0	3.9	U	1.95	0.667829	29
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	28
00-BGA312	S1454600	2	3.87	U	1.935	0.660107	27
00-BGC334	S1454608	0	3.87	U	1.935	0.660107	26
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	25
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	24
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	23
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	22
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	21
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	20
00-BGC356	S1454610	0	3.82	U	1.91	0.647103	19
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	18
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	17
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	16
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	15
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	14
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	13
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	12
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	11
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	10
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	9
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	8
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Summary Statistics:				Mean	2.785106		

Endrin aldehyde
Statistical Calculations

			Standard Error		0.846089		
				Median	1.925		
				Mode	1.985		
			Standard Deviation		5.800497		
			Sample Variance		33.64577		
				Kurtosis	46.97309		
				Skewness	6.852778		
				Range	39.91		
				Minimum	1.79		
				Maximum	41.7		
				Sum	130.9		
				Count	47		
			Confidence Level (95.0%)		1.703088		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**2.222**	2.12	2.29
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
			UCL(95,50) =		**1.95**		

Endosulfan sulfate
Statistical Calculations

Endosulfan sulfate (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA312	S1454599	0	4.21		4.21	1.437463	44
00-BGA312	S1454600	2	3.44		3.44	1.235471	43
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	42
00-BGA212	S1454588	2	4.13	U	2.065	0.72513	41
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	40
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	39
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	38
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	37
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	36
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	35
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	34
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	33
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	32
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	31
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	30
00-BGC412	S1454614	0	3.9	U	1.95	0.667829	29
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	28
00-BGC334	S1454608	0	3.87	U	1.935	0.660107	27
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	26
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	25
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	24
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	23
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	22
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	21
00-BGC356	S1454610	0	3.82	U	1.91	0.647103	20
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	19
00-BGA212	S1454587	0	3.81	U	1.905	0.644482	18
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	17
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	16
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	15
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	14
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	13
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	12
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	11
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	10
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	9
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	8
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Exclude (IDL > Max Detect):							
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	
Summary Statistics:				Mean	2.007727		

Endosulfan sulfate
Statistical Calculations

				Standard Error	0.062667		
				Median	1.92		
				Mode	1.985		
				Standard Deviation	0.415687		
				Sample Variance	0.172796		
				Kurtosis	21.62487		
				Skewness	4.593295		
				Range	2.42		
				Minimum	1.79		
				Maximum	4.21		
				Sum	88.34		
				Count	44		
				Confidence Level (95.0%)	0.12638		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	44		
				Z(5) =	1.644853		
				k =	42.75	42	43
				Q(95) =	**3.1**	2.08	3.44
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	44		
				Z(5) =	1.644853		
				U =	27.95536		
				UCL(95,50) =	**1.944554**		

Endosulfan I
Statistical Calculations

Endosulfan I (ug/kg)						
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)
00-BGA312	S1454600	2	0.179		0.179	-1.72037
00-BGA312	S1454599	0	0.144		0.144	-1.93794
Exclude (IDL > Max Detect):						
00-BGA234	S1454597	0	2.36	U	1.18	0.165514
00-BGR134	S1454622	0	2.18	U	1.09	0.086178
00-BGR334	S1454626	0	2.18	U	1.09	0.086178
00-BGA234	S1454601	2	2.14	U	1.07	0.067659
00-BGA212	S1454588	2	2.13	U	1.065	0.062975
00-BGR312	S1454624	0	2.11	U	1.055	0.053541
00-BGR356	S1454629	2	2.11	U	1.055	0.053541
00-BGC434	S1454616	0	2.1	U	1.05	0.04879
00-BGR312	S1454636	0	2.06	U	1.03	0.029559
00-BGA134	S1454590	2	2.05	U	1.025	0.024693
00-BGR112	S1454621	2	2.05	U	1.025	0.024693
00-BGC434	S1454617	2	2.04	U	1.02	0.019803
00-BGR134	S1454623	0	2.04	U	1.02	0.019803
00-BGR412	S1454634	0	2.03	U	1.015	0.014889
00-BGR390	S1454632	0	2.02	U	1.01	0.00995
00-BGA134	S1454602	2	2.01	U	1.005	0.004988
00-BGC412	S1454614	0	2.01	U	1.005	0.004988
00-BGR112	S1454620	0	2	U	1	0
00-BGR356	S1454628	0	2	U	1	0
00-BGC334	S1454608	0	1.99	U	0.995	-0.00501
00-BGC212	S1454604	0	1.98	U	0.99	-0.01005
00-BGC312	S1454606	0	1.98	U	0.99	-0.01005
00-BGR334	S1454627	2	1.98	U	0.99	-0.01005
00-BGR412	S1454635	2	1.98	U	0.99	-0.01005
00-BGC356	S1454610	0	1.97	U	0.985	-0.01511
00-BGC378	S1454612	0	1.97	U	0.985	-0.01511
00-BGR390	S1454633	2	1.97	U	0.985	-0.01511
00-BGA212	S1454587	0	1.96	U	0.98	-0.0202
00-BGC412	S1454615	2	1.96	U	0.98	-0.0202
00-BGA234	S1454598	2	1.94	U	0.97	-0.03046
00-BGR356	S1454637	2	1.94	U	0.97	-0.03046
00-BGR378	S1454630	0	1.94	U	0.97	-0.03046
00-BGA156	S1454592	2	1.93	U	0.965	-0.03563
00-BGA156	S1454591	0	1.92	U	0.96	-0.04082
00-BGA178	S1454594	2	1.92	U	0.96	-0.04082
00-BGC356	S1454611	2	1.92	U	0.96	-0.04082
00-BGR312	S1454625	2	1.92	U	0.96	-0.04082
00-BGR378	S1454631	2	1.91	U	0.955	-0.04604
00-BGC378	S1454613	2	1.9	U	0.95	-0.05129
00-BGC334	S1454609	2	1.9	U	0.95	-0.05129
00-BGA134	S1454589	0	1.89	U	0.945	-0.05657
00-BGC312	S1454607	2	1.89	U	0.945	-0.05657
00-BGA178	S1454593	0	1.88	U	0.94	-0.06188
00-BGC212	S1454605	2	1.85	U	0.925	-0.07796
00-BGC212	S1454618	2	1.84	U	0.92	-0.08338

Endosulfan II
Statistical Calculations

Endosulfan II (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA212	S1454587	0	10.6		10.6	2.360854	47
00-BGA234	S1454597	0	4.58	U	2.29	0.828552	46
00-BGR134	S1454622	0	4.24	U	2.12	0.751416	45
00-BGR334	S1454626	0	4.24	U	2.12	0.751416	44
00-BGA234	S1454601	2	4.16	U	2.08	0.732368	43
00-BGA212	S1454588	2	4.13	U	2.065	0.72513	42
00-BGR312	S1454624	0	4.1	U	2.05	0.71784	41
00-BGR356	S1454629	2	4.1	U	2.05	0.71784	40
00-BGC434	S1454616	0	4.07	U	2.035	0.710496	39
00-BGR312	S1454636	0	3.99	U	1.995	0.690644	38
00-BGR112	S1454621	2	3.98	U	1.99	0.688135	37
00-BGA134	S1454590	2	3.97	U	1.985	0.685619	36
00-BGC434	S1454617	2	3.97	U	1.985	0.685619	35
00-BGR134	S1454623	0	3.97	U	1.985	0.685619	34
00-BGR412	S1454634	0	3.93	U	1.965	0.675492	33
00-BGR390	S1454632	0	3.92	U	1.96	0.672944	32
00-BGA134	S1454602	2	3.9	U	1.95	0.667829	31
00-BGA312	S1454599	0	3.9	U	1.95	0.667829	30
00-BGC412	S1454614	0	3.9	U	1.95	0.667829	29
00-BGR112	S1454620	0	3.89	U	1.945	0.665262	28
00-BGA312	S1454600	2	3.87	U	1.935	0.660107	27
00-BGC334	S1454608	0	3.87	U	1.935	0.660107	26
00-BGR356	S1454628	0	3.87	U	1.935	0.660107	25
00-BGR412	S1454635	2	3.85	U	1.925	0.654926	24
00-BGC212	S1454604	0	3.84	U	1.92	0.652325	23
00-BGC312	S1454606	0	3.84	U	1.92	0.652325	22
00-BGR334	S1454627	2	3.84	U	1.92	0.652325	21
00-BGR390	S1454633	2	3.83	U	1.915	0.649718	20
00-BGC356	S1454610	0	3.82	U	1.91	0.647103	19
00-BGC378	S1454612	0	3.82	U	1.91	0.647103	18
00-BGC412	S1454615	2	3.81	U	1.905	0.644482	17
00-BGA234	S1454598	2	3.77	U	1.885	0.633928	16
00-BGR356	S1454637	2	3.77	U	1.885	0.633928	15
00-BGR378	S1454630	0	3.76	U	1.88	0.631272	14
00-BGA156	S1454592	2	3.74	U	1.87	0.625938	13
00-BGC356	S1454611	2	3.73	U	1.865	0.623261	12
00-BGR312	S1454625	2	3.73	U	1.865	0.623261	11
00-BGA156	S1454591	0	3.72	U	1.86	0.620576	10
00-BGA178	S1454594	2	3.72	U	1.86	0.620576	9
00-BGR378	S1454631	2	3.71	U	1.855	0.617885	8
00-BGC334	S1454609	2	3.69	U	1.845	0.612479	7
00-BGC378	S1454613	2	3.68	U	1.84	0.609766	6
00-BGC312	S1454607	2	3.68	U	1.84	0.609766	5
00-BGA134	S1454589	0	3.67	U	1.835	0.607044	4
00-BGA178	S1454593	0	3.66	U	1.83	0.604316	3
00-BGC212	S1454605	2	3.59	U	1.795	0.585005	2
00-BGC212	S1454618	2	3.58	U	1.79	0.582216	1
Summary Statistics:				Mean	2.123404		

Endosulfan II
Statistical Calculations

			Standard Error		0.184794		
				Median	1.925		
				Mode	1.985		
			Standard Deviation		1.266886		
			Sample Variance		1.605		
				Kurtosis	46.4374		
				Skewness	6.795873		
				Range	8.81		
				Minimum	1.79		
				Maximum	10.6		
				Sum	99.8		
				Count	47		
		Confidence Level (95.0%)			0.371971		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**2.222**	2.12	2.29
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
			UCL(95,50) =		**1.95**		

MCPA
Statistical Calculatins

MCPA (ug/kg)							
Location ID	Sample ID	Depth (ft)	Result	Qualifier	X	Y=ln(X)	Rank
00-BGA234	S1454601	2	127000		127000	11.75194	47
00-BGA234	S1454598	2	73400	U	36700	10.51053	46
00-BGR134	S1454622	0	32200	U	16100	9.686575	45
00-BGR334	S1454626	0	32200	U	16100	9.686575	44
00-BGA212	S1454588	2	31200	U	15600	9.655026	43
00-BGR312	S1454624	0	31100	U	15550	9.651816	42
00-BGC434	S1454616	0	30500	U	15250	9.632335	41
00-BGR112	S1454621	2	30500	U	15250	9.632335	40
00-BGR312	S1454636	0	30400	U	15200	9.629051	39
00-BGR134	S1454623	0	30300	U	15150	9.625756	38
00-BGC434	S1454617	2	30100	U	15050	9.619133	37
00-BGA134	S1454590	2	30000	U	15000	9.615805	36
00-BGR112	S1454620	0	29800	U	14900	9.609116	35
00-BGA312	S1454599	0	29700	U	14850	9.605755	34
00-BGR356	S1454629	2	29700	U	14850	9.605755	33
00-BGC412	S1454614	0	29600	U	14800	9.602382	32
00-BGA134	S1454602	2	29500	U	14750	9.598998	31
00-BGA312	S1454600	2	29300	U	14650	9.592196	30
00-BGC312	S1454606	0	29300	U	14650	9.592196	29
00-BGC334	S1454608	0	29200	U	14600	9.588777	28
00-BGR390	S1454632	0	29200	U	14600	9.588777	27
00-BGC212	S1454604	0	29000	U	14500	9.581904	26
00-BGC412	S1454615	2	28900	U	14450	9.57845	25
00-BGR334	S1454627	2	28900	U	14450	9.57845	24
00-BGC356	S1454610	0	28800	U	14400	9.574983	23
00-BGR412	S1454634	0	28800	U	14400	9.574983	22
00-BGR412	S1454635	2	28800	U	14400	9.574983	21
00-BGA212	S1454587	0	28500	U	14250	9.564512	20
00-BGC356	S1454611	2	28500	U	14250	9.564512	19
00-BGR356	S1454628	0	28500	U	14250	9.564512	18
00-BGA156	S1454592	2	28400	U	14200	9.560997	17
00-BGC312	S1454607	2	28400	U	14200	9.560997	16
00-BGR378	S1454631	2	28400	U	14200	9.560997	15
00-BGR312	S1454625	2	28300	U	14150	9.55747	14
00-BGA178	S1454594	2	28000	U	14000	9.546813	13
00-BGR390	S1454633	2	28000	U	14000	9.546813	12
00-BGA156	S1454591	0	27900	U	13950	9.543235	11
00-BGC378	S1454612	0	27900	U	13950	9.543235	10
00-BGC334	S1454609	2	27800	U	13900	9.539644	9
00-BGR356	S1454637	2	27800	U	13900	9.539644	8
00-BGA134	S1454589	0	27700	U	13850	9.536041	7
00-BGR378	S1454630	0	27600	U	13800	9.532424	6
00-BGA178	S1454593	0	27500	U	13750	9.528794	5
00-BGC378	S1454613	2	27300	U	13650	9.521495	4
00-BGC212	S1454618	2	27000	U	13500	9.510445	3
00-BGC212	S1454605	2	26900	U	13450	9.506734	2
00-BGA234	S1454597	0	16800	U	8400	9.035987	1
Summary Statistics:				Mean	17251.06		

MCPA
Statistical Calculatins

				Standard Error	2437.752		
				Median	14450		
				Mode	14400		
				Standard Deviation	16712.38		
				Sample Variance	2.79E+08		
				Kurtosis	42.90656		
				Skewness	6.457407		
				Range	118600		
				Minimum	8400		
				Maximum	127000		
				Sum	810800		
				Count	47		
				Confidence Level (95.0%)	4906.935		
Q(95) Nonparametric Distribution:				P =	0.95		
				N =	47		
				Z(5) =	1.644853		
				k =	45.6	45	46
				Q(95) =	**28460**	16100	36700
UCL(95,50) Nonparametric Distribution:				P =	0.5		
				N =	47		
				Z(5) =	1.644853		
				U =	29.63827		
				UCL(95,50) =	**14650**		